What works in conversation therapy for aphasia, and how?

Searching for mechanisms of change and active ingredients using tools and theory from behaviour change research

Fiona Maclean Johnson

PhD Thesis, 2015

Supervised by Dr Suzanne Beeke and Professor Wendy Best

UCL

Declaration

I, Fiona Maclean Johnson, confirm that the work presented in this thesis is my own. Where information has been derived from other sources, I confirm that this has been indicated in the thesis.

Signed: .....

Abstract

While there is a growing evidence base to suggest that conversation therapies for aphasia produce beneficial changes to conversation (Simmons-Mackie, Raymer, Armstrong, Holland & Cherney 2010; Wilkinson & Wielaert 2012) the process and tasks by which these changes are produced have yet to be formally investigated. The Medical Research Council (2008) recommends that developing a theoretically-grounded account of how an intervention creates change should be a key task when designing and evaluating complex interventions. This thesis investigates pathways to change within conversation therapy for people with aphasia and their partners. In order to formally examine processes of change, tools and theoretical models developed to help describe and understand behaviour change interventions within the field of health psychology are drawn on.

The primary data for this thesis consist of interviews and discussions held with 16 participants in the Better Conversations with Aphasia programme (Beeke, Sirman Beckley, Maxim, Edwards, Swinburn & Best 2013). Data are analysed using the qualitative method of Framework Analysis (Ritchie & Spencer 1994). Study 1 explores the influences that determine speakers' behaviour in conversation, with a view to identifying possible routes and obstacles to change. Study 2 then considers participants' accounts of how and why their behaviour changed as a result of therapy. Study 3 codes the content of therapy using a recently published taxonomy of Behaviour Change Techniques (Michie, Richardson, Johnston, Abraham, Francis, Hardeman, Eccles, Cane & Wood 2013), while Study 4 considers participants' perceptions of BCA's most and least successful content.

Clinically-relevant outputs include a theory-linked account of how BCA is expected to create change in conversational behaviour, identification of the intervention's proposed 'active ingredients' and recommendations for optimising the therapy. In addition, the benefits and challenges of applying behaviour change theory and research methods to intervention for conversation will be evaluated.

Contents

Glossary of Abbreviations 14

Glossary of Terms 15

1 Introduction 19

1.1 Aims of the Thesis 20

1.2 Structuring the Thesis to Meet these Aims 21

2 Background: Better Conversations with Aphasia 25

2.1 Background to the Original BCA Evaluation Project 25

2.2 The Therapy Programme 26

2.2.1 Barriers and Facilitators 26

2.2.2 Therapy Structure and Content 28

2.2.3 Evaluation and Outcomes of BCA 29

2.2.4 Research Design 29

2.2.5 Measuring Change in Conversation 30

2.2.6 Outcomes: Barriers and Facilitators 30

2.3 Final Notes 31

3 Literature Review Part I: Perspectives on Changing Conversation 35

3.1 Overview of Conversation Therapy for Aphasia 36

3.1.1 Conversation Partner Training 36

3.1.2 Compensatory Strategy Training 42

3.2 The Need for a Theory of Change 44

3.3 Theory in Aphasia Therapy: The Story So Far 46

3.4 Looking to the Field of Behaviour Change 50

3.4.1 Conceptual Clarity about Outcomes 50

3.4.2 Conceptual Clarity about Targets for Change in Intervention 51

3.4.3 A Systematic Method for Mapping the Determinants of Conversational Behaviour 52

3.4.4 Theory for Identifying Potential Mechanisms of Conversational Change 56

3.4.5 Improved Specification of Active Therapy Procedures 57
3.5 Conclusions 59
4 Literature Review Part II: Exploring Conversational Behaviour Change 61
4.1 What Determines Conversational Behaviour? 61
4.1.1 Determinants Relating to OPPORTUNITY 61
4.1.2 Determinants Relating to CAPABILITY 62
4.1.3 Determinants Relating to MOTIVATION 64
4.1.4 Conclusions: Determinants of Conversational Behaviour and its Change 66
4.2 Changing Communicative Behaviour in Other Fields 67
4.2.1 Conclusions: Changing Communicative Behaviour in Other Fields 69
4.3 Looking for Active Ingredients in Conversation Therapy 70
4.3.1 Education 70
4.3.2 Practice 71
4.3.3 Video Feedback 71
4.3.4 Other Ingredients 72
4.3.5 Conclusions: Active Ingredients in Conversation Therapy 73
4.4 Conclusions 73
5 Methods 75
5.1 Defining Conversational Behaviour 76
5.2 Participants 77
5.3 Description of Data 78
5.3.1 Pre-Therapy Data 80
5.3.2 During-Therapy Data 81
5.3.3 Post-Therapy Data 83
5.4 Screening and Transcribing Data 84
5.4.1 Pre-Therapy Data 84
5.4.2 During-Therapy Data 86
5.4.3 Post-Therapy Data 87
5.4.4 Summary of Data for Analysis 87

5.5 Procedure: Framework Analysis 87
5.5.1 Familiarisation 88
5.5.2 Developing a Coding Framework 88
5.5.3 Coding 89
5.5.4 Charting 89
5.5.5 Mapping and Interpretation 89
5.6 Applying Framework Analysis to the Current Data 90
5.6.1 Developing and Applying a Coding Framework 91
5.6.2 Linking the Coding Framework to the Analysis Chapters 94
5.7 Data Management and Analysis 95
5.8 Presentation of the Findings 97
5.9 Chapter Summary 98
6 Study 1: Identifying Determinants of Conversational Behaviour 99
6.1 Methods & Structure of Chapter 100
6.2 Contexts Determining Conversational Behaviour 100
6.2.1 Physical Environment 102
6.2.2 Social Situation 102
6.2.3 Cues from Conversation 104
6.2.4 Summary of Contexts Determining Conversational Behaviour 105
6.3 Reasons Determining Conversational Behaviour 106
6.3.1 Behaviour's Expected Impact on Communication 108
6.3.2 Social Reasons 113
6.3.3 Emotional Reasons 114
6.3.4 Fit with Identity 115
6.3.5 Internal Fluctuations 115
6.3.6 Skills 116
6.3.7 Summary of Reasons Determining Conversational Behaviour 116
6.4 Linking Findings to Theory 119
6.4.1 Determinants Relating to OPPORTUNITY 120

6.4.2 Determinants Relating to CAPABILITY 121
6.4.3 Determinants Relating to MOTIVATION 123
6.4.4 Summary: Linking Findings to Theory 127
6.5 Conclusions 129
7 Study 2: Accounts of Change 131
7.1 Methods & Structure of Chapter 131
7.2 Hierarchy I: Factors Determining the Success of Making Changes 132
7.2.1 MOTIVATION for Conversational Behaviour Change 133
7.2.2 CAPABILITY for Conversational Behaviour Change 137
7.2.3 Summary of Factors Determining the Success of Making Changes 146
7.3 Hierarchy II: Mechanisms of Conversational Behaviour Change 148
7.3.1 Changing OPPORTUNITY to Change Behaviour 150
7.3.2 Changing CAPABILITY to Change Behaviour 153
7.3.3 Changing MOTIVATION to Change Behaviour 158
7.3.4 Summary: Mechanisms of Conversational Behaviour Change 167
7.4 Discussion 170
7.4.1 Changing Conversational Behaviour via BCA 171
7.4.2 Candidacy Issues within BCA 174
7.5 Conclusions 174
8 Study 3: Looking for Active Ingredients 177
8.1 Recap of the Intervention 178
8.2 Describing Intervention with Behaviour Change Techniques 180
8.3 Methods 181
8.3.1 Description of Data 181
8.3.2 Procedure for Coding Better Conversations with Aphasia 183
8.3.3 Procedure for Establishing IRR of BCT Coding 184
8.3.4 Calculating IRR 186
8.4 Findings: Behaviour Change Techniques 187
8.4.1 IRR for Applying the BCT Taxonomy to Better Conversations with Aphasia 187

8.4.2 Coding Better Conversations with Aphasia's Key Activities 189
8.4.3 Key Findings from Coding Therapy Content 196
8.4.4 Summary of Key Findings from Coding Therapy Content 201
8.5 Mapping Better Conversations with Aphasia's BCTs to Theory 203
8.5.1 Summary: Mapping Better Conversations with Aphasia's BCTs to Theory 209
8.6 Comparing BCTs Targeted at Barriers versus Facilitators 210
8.7 Comparing BCTs Targeted at PWA versus CPs 212
8.8 Discussion 214
8.8.1 Describing Better Conversations with Aphasia with BCTs 215
8.8.2 Building a Theory of Change 216
8.8.3 Optimising Better Conversations with Aphasia 217
8.9 Conclusions 217
9 Study 4: Participant Perspectives on Therapy Content 219
9.1 Methods & Structure of Chapter 220
9.2 Therapy Ingredients Supporting Change 220
9.2.1 Involvement of the CP 221
9.2.2 Practice Conversations 222
9.2.3 Analysing Conversation 224
9.2.4 Therapist Advice 225
9.2.5 Video 227
9.2.6 Summary: Therapy Ingredients Supporting Conversational Behaviour Change 230
9.2.7 Participant Reported Ingredients and Behaviour Change 232
9.3 Barriers to Conversational Behaviour Change 240
9.3.1 Difficulties Understanding Therapy Content and Aims 241
9.3.2 Therapy Format Hard to Engage With 241
9.3.3 Value of Therapy Not Obvious 242
9.3.4 Summary: Barriers to Conversational Behaviour Change 242
9.4 Discussion 243
9.5 Conclusions 245

10 Discussion 247
10.1 Key Findings: Conversational Behaviour 248
10.2 Key Findings: Mechanisms of Change 250
10.3 Key Findings: Active Ingredients 253
10.4 Implications of Findings: A Theory of Change 258
10.4.1 Pathway 1: Reducing Barriers 262
10.4.2 Pathway 2: Developing Self-Initiated Use of Facilitators 264
10.4.3 Pathway 3: Enabling PWA Use of Facilitators 267
10.4.4 Summary: Theory of Change 267
10.5 Understanding Cognitive Effort: Implications from the Psychological Literature on Behaviour Change 268
10.6 Implications of Findings: Optimising BCA 271
10.6.1 Targeting Therapy Appropriately 272
10.6.2 Optimising the Design of the BCA Programme 273
10.6.3 Reporting and Specifying Therapy Content 276
10.7 Reflections on Applying Behaviour Change Perspectives to Communication 277
11 Conclusions 281
11.1 Key Contributions and Findings 281
11.2 Clinical Implications 284
11.3 Methodological Limitations 286
11.3.1 Limitations of the Qualitative Dataset 286
11.3.2 Limitations to the Uses of the Taxonomy of Behaviour Change Techniques 288
11.4 Areas for Future Research 289
11.4.1 Effectiveness of Therapy 289
11.4.2 Testing BCA's Theory of Change 290
11.4.3 Extending the Use of the Taxonomy 292
11.5 Final Conclusions 292
References 294
Appendix 1 308

Appendix 2 309

Appendix 3 318

Appendix 4 340

Appendix 5 342

Appendix 6 346

Appendix 7 355

Appendix 8 360

Appendix 9 364

Appendix 10 383

Appendix 11 387

Appendix 12 390

List of Figures

Figure 1. BCA Therapy Programme 28
Figure 2. BCA Intervention Study Design 30
Figure 3. COM-B Model of Behaviour (Michie, van Stralen & West 2011) 54
Figure 4. Theoretical Domain Framework mapped to COM-B model (Cane et al 2012) 54
Figure 5. Summary of Data Type and Collection Point 80
Figure 6. Example CAPPA Question 81
Figure 7. Five Step Process in Framework Analysis, based on Ritchie & Spencer (1994) 88
Figure 8. Qualitative Coding Framework Applied to Pre- During- and Post-Therapy Datasets .. 91
Figure 9. Mapping Data Sources to Qualitative Coding Categories and Analysis Chapters 95
Figure 10. Pre-therapy Framework Chart 96
Figure 11: Developing an Analytic Theme from the Data using Framework Analysis 97
Figure 12. Analytic Themes Representing Contexts for Using/ Not Using Conversational Behaviour 101
Figure 13. Analytic Themes Representing Reasons for Using/ Not Using Conversational Behaviour 107
Figure 14. Determinants of Conversational Behaviour Mapped to Theoretical Domains (Cane et al 2012) 128
Figure 15. Hierarchy I: Analytic Themes Representing Factors Determining the Success of Making Changes 133
Figure 16. Factors Determining Success of Making Changes Mapped to Theoretical Domains147
Figure 17. Hierarchy II: Analytic Themes representing Mechanisms of Conversational Behaviour Change 149
Figure 18. BCA Mechanisms of Conversational Behaviour Change Mapped to Theoretical Domains 168
Figure 19. Example Taxonomy BCT 180
Figure 20: Better Conversations with Aphasia BCTs Mapped to Mechanisms of Conversational Behaviour Change 208
Figure 21. Analytic Themes Representing Therapy Ingredients Supporting Change 221
Figure 22. Analytic Themes Representing Barriers to Conversational Behaviour Change 240
Figure 23. A Theory of Change for BCA 260
Figure 24. BCA Change Pathway 1: Reducing Barrier Behaviour 263
Figure 25. BCA Change Pathway 2: Developing Self-Initiated Use of Facilitators 265
Figure 26. BCA Change Pathway 3: Enabling PWA Use of Facilitators 267

List of Tables

Table 1 Details of Participants 26
Table 2 Summary of Dyad Outcomes for the BCA Evaluation Project (at July 2014) 32
Table 3. Overview of Methods Used in Each Study 75
Table 4. Qualitative Research Objectives Guiding Studies 1, 2 and 4 76
Table 5. Discussion-Based Therapy Activities Used in During-Therapy Dataset 82
Table 6. Post-therapy Interview Procedure 83
Table 7. CAPPA Questions Transcribed for Data Analysis 85
Table 8. Transcribed Data for Analysis per Dyad and Data Source 87
Table 9: Objectives of Qualitative Analysis for Each Study 90
Table 10. Comparison of CP and PWA Contexts Determining use of Conversational Behaviours 105
Table 11. Comparison of CP and PWA Reasons Determining use of Conversational Behaviours 118
Table 12. Analytic Themes Mapped to the Theoretical Domains of OPPORTUNITY 121
Table 13. Analytic Themes Mapped to the Theoretical Domains of CAPABILITY 123
Table 14. Analytic Themes Mapped to the Theoretical Domains of MOTIVATION 126
Table 15. MOTIVATION for Conversational Behaviour Change: Themes Mapped to Theoretical Domains 137
Table 16. CAPABILITY for Conversational Behaviour Change: Themes Mapped to Theoretical Domains 146
Table 17. Changing OPPORTUNITY to Change Behaviour: Analytic Themes Mapped to Theoretical Domains 153
Table 18. Changing CAPABILITY to Change Behaviour: Analytic Themes Mapped to Theoretical Domains (Cane et al 2012) 158
Table 19. Changing MOTIVATION to Change Behaviour: Analytic Themes Mapped to Theoretical Domains 165
Table 20. Comparing Mechanisms of Change: Barriers vs. Facilitators 169
Table 21. Comparing Mechanisms of Change: CPs vs. PWA 170
Table 22. Structure, Aims and Activities within Better Conversations with Aphasia 179
Table 23. Agreements and Disagreements in BCT Coding: Totals 187
Table 24. Calculations for the Kappa Coefficient 188
Table 25: BCT Coding of Better Conversations with Aphasia 190
Table 26: Reliably Agreed BCTs Identified in Better Conversations with Aphasia 197
Table 27: Rejected BCTs for Better Conversations with Aphasia 199

Table 28. Better Conversations with Aphasia Activities Agreed to have NO BCTs..... 200
Table 29: Better Conversations with Aphasia's BCTs Mapped to Theoretical Domains..... 204
Table 30: Comparison of Better Conversations with Aphasia's BCTs Targeted at Barriers and Facilitators..... 210
Table 31: Comparison of Better Conversations with Aphasia's BCTs Targeted at CPs and PWA 213
Table 32: Therapy Ingredients Supporting Conversational Behaviour Change Mapped to Better Conversations with Aphasia's BCTs and Mechanisms of Change..... 234
Table 33. BCA's Mechanisms of Change 251
Table 34. BCA's Proposed Active Ingredients 257

Glossary of Abbreviations

AAC	Alternative and Augmentative Communication
ACM	Aphasia Conversation Measure
BCA	Better Conversations with Aphasia
BCT	Behaviour Change Technique
CA	Conversation Analysis
CAPPA	Conversation Analysis Profile for People with Aphasia
CP	Conversation Partner
COM-B	Capability Opportunity Motivation model of Behaviour
EFL	English as a Foreign Language
IRR	Inter-Rater Reliability
MRC	Medical Research Council
PWA	Person/People with Aphasia
SLT(s)	Speech & Language Therapist(s)
SPPARC	Supporting Partners of People with Aphasia in Relationships and Conversation
TDF	Theoretical Domain Framework

Glossary of Terms

CAPABILITY	The physical, social and cognitive capacity to carry out a behaviour
Determinant	A specific factor influencing the performance of a behaviour
DOMAIN	A conceptually similar cluster of behavioural determinants which are common across a variety of behavioural theories
Framework Analysis	Method of qualitative Analysis developed by the National Centre for Social Research (Ritchie & Spencer 1994)
MOTIVATION	All attitudes, beliefs, goals and dispositions, both those that are consciously held and those which are automatic or emotional, which influence and shape behaviour
OPPORTUNITY	All aspects of the social and physical environment which enable or constrain behaviour
Self efficacy	Commonly used term derived from Bandura's social cognitive theory (1977, 1997) which represents the belief one has in one's abilities to carry out a behaviour successfully despite obstacles
Therapy Activity	A distinct task or topic for discussion listed in the Better Conversations with Aphasia session plans

Acknowledgements

Acknowledgements and thanks should first and foremost go to my supervisors Dr Suzanne Beeke and Professor Wendy Best. Their willingness to follow me into uncharted territory enabled this research to grow and find its focus at the start, while at the end, their detailed thoughts and comments have helped to shape the research into a thesis.

In addition, researchers in the Health Psychology department at UCL – especially Caroline Wood, Susan Michie, Michelle Richardson and Fabiana Lorencatto - should be thanked for their comments, time and interest along the way. The opportunity to discuss my ideas and questions among colleagues with expertise in behaviour change has been enormously helpful.

A huge thank you also goes to Firle Beckley, who was instrumental in developing and delivering the Better Conversations with Aphasia therapy programme. Her willingness to share her skills and her ideas, as well as to allow the therapy to be put under such scrutiny is hugely appreciated. Thanks too to the participants in Better Conversations with Aphasia. Their thoughts, experiences and opinions form the bedrock of this investigation.

As well as those who have inputted into the development of this research, there are a number of people whose ongoing support has been greatly valued during the writing up process. The cheerleading I have received from my colleagues in the Community Neuro Rehab Team has been fantastic. And Hannah Luff's astonishing flexibility and good humour has made trying to manage two part-time working lives a whole lot easier.

And of course there's Mike. I'm sorry Mike! For all the bits that weren't that fun. But thank you, thank you for all the coffee, meals, patience, support and love you've given me along the way. I owe you one. Or maybe one hundred.

Perhaps one very final special mention should go to Fergus the cat. Definitely a constant (if not always very constructive) companion throughout the writing of this thesis.

1 Introduction

In addressing the professional responsibility to establish an evidence base for clinical intervention in aphasia, inevitably – and appropriately - the primary focus is on the question: Does this treatment work? Outcome-focussed evaluations of intervention in Speech & Language Therapy serve the crucial purpose of instilling professional confidence, both amongst therapists themselves, but also amongst our colleagues, clients, and those who commission our services. However, the emphasis on reporting the outcomes of complex interventions - which may be comprised of multiple components, described in inconsistent detail - offers the individual clinician surprisingly little guidance on how to select, design and adapt evidence-based treatments in response to the wide range of novel situations routinely encountered on the average clinical caseload. In the effort to find out 'does intervention work?', questions of key clinical relevance remain underexplored, i.e. How does this treatment work? What in this treatment works?

In line with the guidelines produced by the Medical Research Council (MRC) for developing complex interventions (2008), this thesis seeks to develop a systematic, theoretically-linked and data-driven account of how a particular, socially-focussed treatment for aphasia operates to produce its most immediate outcomes. The intervention in question is 'Better Conversations with Aphasia' (BCA): a treatment which seeks to support people with aphasia (PWA) and their conversation partners (CPs) to manage the impact of aphasia on their everyday interactions as successfully and naturally as possible (Beckley, Best, Johnson, Edwards, Maxim & Beeke 2013; Beeke, Maxim, Best & Cooper 2011; Beeke, Sirman et al 2013; Beeke, Beckley, Johnson, Heilemann, Edwards, Maxim and Best 2014; Beeke, Johnson, Beckley, Heilemann, Edwards, Maxim & Best 2014). Interventions for aphasia like BCA, which seek to reduce its social impact through compensation and adaptation rather than treat underlying language function, currently lack tools and theory to systematically describe and understand the mechanisms by which treatments produce change, or the components of intervention that activate these mechanisms. This thesis therefore turns to recent developments in the field of health psychology, where attempts are being made to develop the accumulation of scientific theory and evidence about how people change their behaviour, into practical tools and models that can support the planning and description of intervention. Linking treatment for conversation to theoretical accounts of behaviour change is expected to lead to an explanatory 'theory of change' for how intervention may be producing its outcomes.

This work represents a novel approach to intervention research within Speech & Language Therapy. It is the first known attempt to apply behaviour change research to aphasia

rehabilitation, and also the first attempt to generate a systematic account of change in socially-focussed, compensatory treatments for aphasia. This thesis is intended to produce a complementary evidence base to other outcome-focussed evaluations of BCA and conversation therapies more generally. In doing so, the case is made for a more rigorous investigation and detailing of intervention processes in rehabilitation research, and for the potential of using behavioural science within Speech & Language Therapy research and practice. Nonetheless, it should be highlighted that – being an initial attempt - the work reported here is exploratory in nature. Furthermore, that the application of behavioural science to healthcare intervention is an emergent field in itself, and so far has primarily been used in conjunction with interventions for health behaviours such as smoking or medication adherence. The application to communicative behaviour is therefore also an innovation, and issues concerning the benefits, challenges and validity of transferring these tools and theoretical concepts to conversation therapy will be acknowledged and discussed across this thesis.

1.1 Aims of the Thesis

The aims of the thesis are both applied and theoretical. The primary aim of the research is to develop an account of how the BCA therapy programme produces change. This effort is intended to generate clinically useful principles concerning the design of intervention for conversation in aphasia, which are both data-driven and coherent with theoretical knowledge about behaviour change. Underpinning the aims of this research is the 'real-world' expectation that clinicians will inevitably need to adapt evaluated therapy approaches according to local context and individual client profiles. Therefore in order to support optimal replication of therapy's effects, clinicians need to know which are the essential mechanisms and procedures that they must remain faithful to, and what aspects of content can be varied according to need.

The theoretical aim of the thesis is to give an appraisal of how well concepts from the field of behaviour change 'fit' the field of communication therapy. This issue will be referenced throughout the thesis, with consideration specifically given to the validity and reliability of the concepts and tools used in this study for investigating conversation therapy, and an ongoing exploration of the benefits and challenges of applying behaviour change research within Speech & Language Therapy.

In summary, the aims for the thesis are to:

- Identify and characterise the factors that determine and shape the conversational behaviours used by speakers to manage aphasia
- Identify possible mechanisms by which BCA creates change
- Consider similarities and differences in how change is achieved amongst different types of speaker (CP and PWA) and for different types of behaviour (barrier and facilitator)
- Identify a core group of 'active ingredients' within the BCA programme and explore how they may be delivered
- Synthesise findings into an explanatory 'theory of change' for the BCA programme
- Identify aspects of the BCA programme which have potential to be further optimised
- Explore the suitability of using tools and concepts from behaviour change research to describe interventions targeted at changing social communication

1.2 Structuring the Thesis to Meet these Aims

Following this introductory chapter, Chapter 2: Background to BCA summarises key information about the BCA therapy programme and the research project that sought to evaluate it. This includes a summary of the known outcomes of the project.

The Literature Review is presented across two chapters. Chapter 3: Perspectives on Changing Conversation reviews the literature most relevant to the work of this thesis. It explores what is already known about conversation therapy for aphasia, and introduces the tools and concepts from behaviour change research that will be used throughout the thesis to organise information and guide interpretation of data. It will identify the gaps in current knowledge about how conversation therapy works, and discuss in more detail the potential benefits and challenges of using behaviour change research. Chapter 4: Exploring Behaviour Change aims to draw links between concepts from the field of behaviour change, and current knowledge in conversation therapy. This chapter also reviews supplementary evidence about communicative behaviour change from related fields such as communication skills training for health professionals or adult learners of English as a Foreign Language (EFL).

The next chapter, Chapter 5: Methods, outlines the specific methods used for the bulk of analytic work carried out in this thesis. The qualitative methodology of Framework Analysis will be introduced, as will a working definition for the key concept of 'conversational behaviour'. Details of the participants and data sources will be included here, as well as a description of how Framework Analysis has been applied to the data and used to develop interpretations.

Chapter 6 is the first analysis chapter of the thesis and presents Study 1: Identifying the Determinants of Conversational Behaviour. The aim of this study is to systematically map out the behavioural influences that determine how speakers respond to aphasia in conversation. Participants' own accounts of the contexts and rationales that shape their behaviour will be analysed to develop a comprehensive description of the range of influences they report. In order to further the explanatory power of this analysis, and to identify any gaps, findings will be compared with theoretical models of behaviour.

Chapter 7 presents Study 2: Accounts of Change. The focus here is participants' accounts of attempting to change their conversational behaviour as a result of participating in BCA. The analysis will include the identification of factors reported to affect participants' success or failure to make changes, and also the mechanisms involved in activating behavioural change for participants. Key outputs for this chapter will include a proposed set of mechanisms operating within BCA that have the potential to trigger behavioural change, and in addition some possible parameters of candidacy for being able to benefit from BCA.

Study 3: Looking for Active Ingredients forms Chapter 8. This study looks at the design of the BCA intervention programme itself in order to identify the therapy components most likely to be involved in activating behavioural change. Intervention content will be coded using a taxonomy of Behaviour Change Techniques (BCTs) developed within the field of health psychology, and the inter-rater reliability (IRR) of the coding process will be evaluated. This procedure and the additional methods used will be described within this chapter. The key output for this chapter will be a reliably identified group of BCTs included within the therapy programme, alongside a discussion of how these techniques may be operating to create change. Discussion will also focus on the benefits and challenges of using the taxonomy to describe the content of BCA.

In Study 4: Participant Perspectives on Therapy Content, presented in Chapter 9, converging evidence for the active ingredients of therapy is sought by returning to the qualitative data and analysing participant accounts of beneficial content occurring within BCA. This study will also consider qualitative evidence from participants about the less effective aspects of therapy.

A discussion of the key findings emerging across the four studies is presented in Chapter 10: Discussion. The implications of these findings for developing a 'theory of change' for BCA are considered, as are the implications for optimising the therapy programme. The benefits and limitations of using tools and concepts from behaviour change research to explore conversation therapy are also discussed in this chapter.

The final conclusions of this thesis are presented in Chapter 11: Conclusions. This concluding chapter will review how the thesis has met the aims objectives outlined above. In addition, the clinical implications of the work will be addressed and potential areas for future research will be proposed. Limitations to the current work will be considered, and final thoughts on the challenges and the benefits of using behaviour change theory in Speech & Language Therapy research and practice will be summarised.

2 Background: Better Conversations with Aphasia

The therapy programme at the centre of this research was originally developed for a Stroke Association funded project - *The evaluation of a novel conversation focused therapy for agrammatism* (TSA 2007/05, Beeke (PI), Best, Maxim & Edwards, 2008-2011), at University College London. The therapy was later developed under the name 'Better Conversations with Aphasia' (BCA) as part of a wider online information and e-learning resource for Speech & Language Therapists (SLTs) and those interested in participating in conversation therapy (see https://extend.ucl.ac.uk, Beeke, Sirman et al 2013). Originally, it targeted speakers with agrammatic aphasia, but it is expected to be useful for a wider population. Its stated aims are "to change the conversational behaviours of the speaker with aphasia as well as the conversation partner" in order to increase "mutual understanding" in everyday conversation (Beeke et al 2011, p225), and furthermore to support PWA to get their message across with the least "interactional effort" (Beeke et al 2011, p230), and be an active participant in conversation "rather than someone who is dependent upon the support of a skilled CP" (Beckley et al 2013, p221). Specifically, therapy intends to train compensatory strategies which will enable "a PWA to produce more complete, and thus successful, turns at talk" and "a CP to modify their turns at talk and, thus, enhance their partner's chance of communicating more effectively" (Beeke, Beckley et al 2014, p3). In addition, therapy aims to increase speakers' understanding about the effects of agrammatism on conversation (Beckley et al 2013; Beeke, Beckley et al 2014; Beeke, Johnson et al 2014, in press).

2.1 Background to the Original BCA Evaluation Project

The original research project was awarded multi-site NHS ethical approval from the Cambridgeshire 1 Research Ethics Committee (Project-ID: 08/H0304/40). Participants in the study were recruited via contact with aphasia support groups and university aphasia clinics and with SLTs working in the NHS and privately.

Nine conversational 'dyads' originally took part in the BCA therapy programme, 18 participants in total. A dyad usually consisted of a speaker with aphasia and their spouse; however, for some the main CP was a family member. Of the nine dyads recruited, only eight completed therapy, with Dyad 9 terminating half way through on the basis that they did not feel it was right for them. In addition, Dyad 8 only gave permission for their data to be used in conjunction with the original Stroke Association project, and therefore will not be included within the research carried out for this thesis.

Details of the participants are presented in Table 1 below.

Table 1 Details of Participants

Dyad No. & PWA pseudonym	*Age at recruitment*	*Months since onset of aphasia (at time of 1st session)*	*Previous employment*	*CP pseudonym and relation to PWA*
Dyad 1: Kate	49	33	Jazz singer	Shelley (twin)
Dyad 2: Simon	39	30	Own business	Cath (wife)
Dyad 3: Giles	55	59	Senior sales manager	Linda (wife)
Dyad 4: Graham	63	60	Hospital manager	Alex (partner)
Dyad 5: Jill	57	39	Cashier at bookmakers	David (son)
Dyad 6: Barry	60	17	Gardener/book illustrator	Louise (wife)
Dyad 7: Maggie	71	40	Deputy head teacher	Christina (daughter)
Dyad 9: Bob	67	48	Graphic designer and musician	Irene (wife)

2.2 The Therapy Programme

BCA is delivered jointly to a PWA and their chosen CP over eight weeks, in therapy sessions lasting 1.5-2 hours.

The design of the therapy programme is adapted from SPPARC – Supporting Partners of People with Aphasia in Relationships and Conversation (Lock, Wilkinson & Bryan, Bruce, Edmondson, Maxim & Moir 2001) - an earlier published conversation partner training programme. BCA and SPPARC's theoretical roots lie with the methodology of Conversation Analysis (CA) (cf. Wilkinson 2010). The influence from CA means that BCA emphasises assessment of a dyad's everyday conversation. In addition, conversational 'barriers' and 'facilitators' are identified with regards to the mechanics and balance of turn-taking sequences, and in particular any behaviour that supports or limits the PWA's successful and natural involvement in conversation. Change to barriers and facilitators in conversation represent the key behavioural outcomes sought by BCA and so warrant some further discussion.

2.2.1 Barriers and Facilitators

BCA is concerned with how speakers manage troubles occurring in a PWA's turn in conversation as a result of aphasia, and how effective the behaviour used is for pursuing the conversation. Trouble sources[1] oriented to by speakers may include linguistic errors, turns

[1] A CA term, see Hutchby & Wooffitt (2008) for further detail

which are incomplete, or turns where the meaning is not clear. Also of interest are any imbalances in participation in conversation between someone with aphasia and someone without, and the behaviours speakers use to manage silence, involvement, and topic initiation and development. Inevitably, speakers manage these interactive issues in a wide and often idiosyncratic variety of ways. BCA evaluates the behaviour used by speakers as being a 'barrier' or a 'facilitator' in terms of its impact on the naturalness and effectiveness of the ensuing conversational exchange between speakers.

Commonly observed barriers include CPs attempting to elicit the 'correct production' of a word (Beeke, Johnson et al 2014; Booth & Perkins 1999; Lock et al 2001; Wilkinson, Bryan, Lock, Bayley, Maxim, Bruce, Edmundson & Moir 1998), where the flow of conversation is disrupted as the CP corrects the PWA and provides cues until the PWA produces the target word accurately; and 'test questions' (Beeke, Beckley, Best, Johnson, Edwards, & Maxim 2013; Beeke, Beckley et al 2014; Booth & Perkins 1999), which involve CPs asking PWA questions they already know the answer to - 'e.g. Where did we go yesterday?'. This is unlike the 'real' questions normally featured in adult conversation, usually designed to elicit information, or open up new topics. In contrast, CP facilitative behaviours include passing turns such as 'mmhm' or 'yeah', paraphrases and comments (Lock et al 2001), which demonstrate the PWA meaning has been understood and that the turn can continue.

Among PWA, facilitators tend to mean verbal and non-verbal compensatory strategies such as writing or gesture which will extend what speakers can convey, or using a keyword to signify the topic of a turn (Beckley et al 2013; Beeke et al 2011; Beeke, Beckley et al 2014, Beeke, Johnson et al 2014). PWA barriers may be associated with the linguistic constraints of aphasia that disrupt conversation, such as saying yes instead of no; these are not targeted directly by therapy. Other barriers are formulated in terms of CA descriptions of the turns produced by PWA, for example 'incomplete turn', or 'turns where the conversational function is unclear' (Beckley et al 2013). These observed conversational problems do not represent PWA *behaviour* per se, as they do not appear to be actions taken or avoided by the speaker (further discussion of this thesis's understanding of 'behaviour' can be found in Section 3.4.2, p51, and, in relation to data analysis, in Section 5.1, p76). However change to how these turns are produced is targeted in therapy via the training of compensatory strategies. A final group of PWA barriers do represent behaviours that are directly targeted for change e.g. miming without sufficient context (Beckley et al 2013) or looking away and giving no outward sign of intending to continue during word finding pauses (Beeke et al 2011).

Examples of the barrier and facilitator behaviours mentioned within the BCA therapy materials and targeted directly for change by therapy are provided for reference in Appendix 1. In

addition, BCA includes handouts which are designed to support participants to identify their own barriers and facilitators. These are outlined below in Section 2.2.2.

2.2.2 Therapy Structure and Content

BCA is intended to create change to the frequency and manner in which barrier and facilitator behaviours are used. SPPARC's treatment focus is primarily on raising speakers' 'awareness' of their conversation patterns through providing information, and viewing video clips of their own conversation in order to identify problem areas and strategies for change. In addition to this focus, BCA incorporates the active practice of strategies within therapy sessions and in homework, as well a range of discussion-based activities. For the purposes of this thesis, a therapy 'activity' can be understood to mean any distinct task or discussion topic included in the BCA programme. Further detail on the activities included in therapy is covered in Study 3 (Chapter 8) which examines therapy content in depth.

The structure of BCA's eight session programme is presented in Figure 1 below.

Figure 1. BCA Therapy Programme

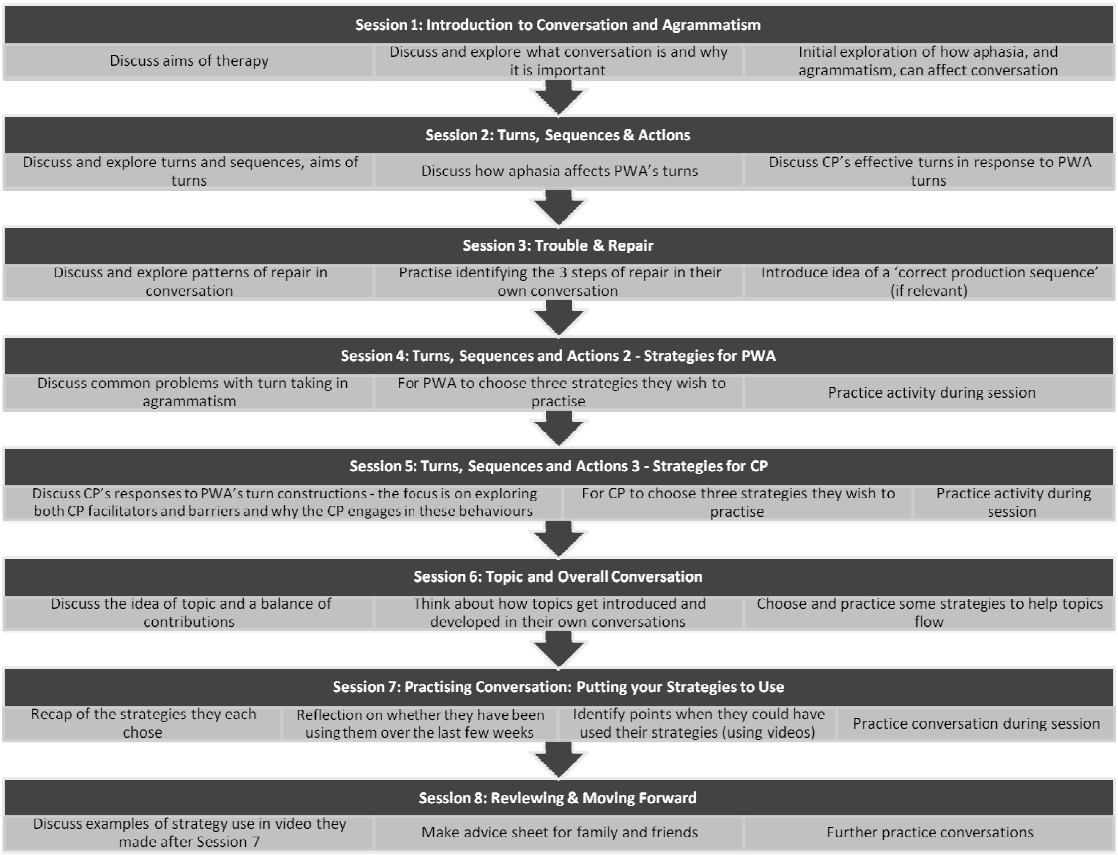


Figure 1 presents the finalised version of the therapy included on the Better Conversations with Aphasia e-learning resource, where all final materials and descriptions of therapy can also be found (https://extend.ucl.ac.uk). These are the materials cleared for use by SLTs.

However, as this thesis is focussed on the therapy delivered to participants during the main project, the pilot versions of BCA's eight session plans are provided in Appendix 2. Examples of any handouts cited during this thesis are also supplied in Appendix 3, in the format that they were shared with participants i.e. the pilot version. This appendix includes the handouts participants used to choose facilitators for practice (Handout 4.3 "Turn-building strategies for the PWA" and Handout 5.4 "Good turn-taking strategies to use with your partner"), and the handouts designed to help them identify barriers in conversation (Handout 4.2 "Common problems with turn-taking in agrammatism" and Handout 5.1 "Partner's turn-taking").

While the format and structure of the pilot version of therapy was essentially the same as presented in Figure 1, some minor revisions to the session plans and therapy materials were made for the purposes of clarity, and also to disambiguate new material developed especially for BCA, from material which had been adapted from the SPPARC resource (Lock et al 2001).

It is acknowledged that the therapy content specified in the session plans may be open to a degree of elaboration and variability during implementation, which could mean that the therapy delivered to participants has the potential to differ from these therapy materials. However a recent study into the fidelity of delivery of Better Conversations with Aphasia to the current participants concluded that therapy activities were delivered with 91.9% adherence to the therapy protocol (Heilemann, Best, Johnson, Beckley, Edwards, Maxim & Beeke 2014). Therefore we can be reasonably confident that the key activities of therapy were delivered to participants as specified by the materials provided in Appendix 2 and 3.

2.2.3 Evaluation and Outcomes of BCA

Evaluation of therapy consisted of an experimentally controlled case series design. A full evaluation of BCA outcomes is currently in preparation for publication. At present, preliminary results for specific dyads are reported in Beckley et al (2013), Beeke et al (2011), Beeke, Beckley et al (2014), Beeke, Johnson et al (2014), and in the final report provided to the Stroke Association on completion of the project.

2.2.4 Research Design

Each participating dyad acted as their own control, and took part in three rounds of pre-therapy baseline assessment lasting for a total of eight weeks, and was followed up after therapy by a two rounds of reassessment on the same measures – this process is illustrated in Figure 2 below. The battery of repeated measures included assessments of language and cognition, as well as interviews designed to capture qualitative information such as in the Conversation Analysis Profile of People with Aphasia (CAPPA) (Whitworth Perkins & Lesser 1997). All assessment and therapy sessions were video recorded and archived on CAVA, UCL's

human Communication Audio Visual Archive (http://www.ucl.ac.uk/ls/cava). Full details on the assessment battery are reported in Beckley et al (2013) and Beeke, Beckley et al (2014).

Figure 2. BCA Intervention Study Design

Phase	Pre-Therapy Baseline Assessments (8 weeks)								Therapy (8 weeks)								Post-therapy Follow-up Assessments (8 weeks)							
Round	Pre 1			Pre 2			Pre 3										Post 1				Post 2			
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24

In addition to the repeated battery of assessments, the dyads were asked to video eight 20 minute conversations at home prior to the start of therapy (starting between weeks 1 and 2 and carried out between sessions thereafter), two during therapy (between weeks 11 and 12, and weeks 14 and 15), and eight further conversations after therapy (ending after the final session on week 24). These video recordings provide the data for evaluating post-therapy change to conversational behaviour.

2.2.5 Measuring Change in Conversation

The analysis of quantitative change to conversational behaviour following BCA is ongoing. Change has been measured by a specially developed tool – the Aphasia Conversation Measure (ACM) - which tracks conversational features before and after therapy. The measure is grounded in CA and has been developed with the guiding hypothesis that successful change will be represented by an increase in facilitators, and a decrease in barriers. The ACM has been used to rate five minute samples from the videoed conversations and counts occurrences of facilitators and barriers as well as measures of turn construction and repair. The rating of conversation has been carried out by trainee SLTs; qualified SLTs undertaking Masters level research; and the current author. Six pre-therapy and six post-therapy samples have been rated for each dyad using the original video data alongside an orthographic transcript. Raters were blinded to sample collection date, and so did not know which conversations occurred pre therapy and which post. Further information about this tool, and how it is being used to evaluate change in conversation is provided in Beeke, Beckley et al (2014) and Beeke, Johnson et al (2014).

2.2.6 Outcomes: Barriers and Facilitators

The group findings of the BCA evaluation project are currently in preparation. Table 2 on p32 below summarises the known outcomes of BCA so far and combines both quantitative and qualitative evidence.

Statistically significant change in the frequency of barrier and facilitator behaviours is being evaluated with the use of a weighted Poisson trend test for frequencies, derived from the Jonckheere Trend Test (David Howard, May 2010, personal communication). The quantitative outcomes presented in Table 2 include a summary of findings from January 2012 (taken from the final project report to the Stroke Association), which was updated by the team in November 2013. Details of any quantitative results that have subsequently been published are also included here.

Evidence relating to self-reported behavioural change is taken from a set of post-therapy interviews designed and carried out by this author six - 24 months after the dyads finished therapy. These interviews were an addition to the original research design outlined above. Further details are provided in Section 5.3.3 (p83) of the Methods Chapter, and a copy of the interview guide is supplied in Appendix 4. The information generated during these interviews provides additional evidence for therapy's outcomes, and can be used to triangulate and expand upon the results of the quantitative evaluation.

2.3 Final Notes

This current chapter has outlined key information relating to the aims, structure and evaluation of BCA. The next chapter positions BCA within the wider literature concerning conversation therapy and intervention research. This review of the literature will include a more detailed consideration of the theoretical basis of BCA and discuss some of the issues in identifying appropriate measures of change for conversation therapy. Key concepts and directions within the field of behaviour change will also be outlined, and considered for what they may offer the study of conversation therapy.

Table 2 Summary of Dyad Outcomes for the BCA Evaluation Project (at July 2014)

Participants (names are pseudonyms)		**Quantitative conversation changes** (source: Stroke Association Final Project Report, January 2012, updated November 2013)	**Published findings**	**Self-reported behavioural change** (source: post-therapy interviews with the author)
Dyad 1	Kate	Talks more – more agrammatic utterances (i.e. more sentence structures attempted, fewer one-word utterances)		None – used writing before therapy anyway
	Shelley	Fewer interruptions (qualitative results only)		Prompts PWA to think of a keyword Leaves more space, tries not to rush Avoids second guessing what PWA is trying to say
Dyad 2	Simon	Talks more – more topics initiated increased use of chosen strategies (writing/ drawing, mime, key words to introduce a topic, show that you are thinking by saying um during pauses)	**Beeke et al (2011)** (qualitative findings): Evidence post-therapy of purposeful activity during pauses in conversation including use of fillers (e.g. 'um' 'er') and hand movements	Uses etch-a-sketch board for writing and drawing Asks others to wait while he's thinking
	Cath	Fewer understanding checks	**Beeke et al (2011)** (qualitative findings): Evidence of checking PWA is still thinking during pauses in conversation (e.g. Are you still thinking?)	Reminds PWA to write Lets PWA know she is still listening - uses passing turns & checks PWA is still thinking Tries not to second guess what PWA is trying to say
Dyad 3	Giles	None reported	**Beckley et al (2013)** (qualitative findings): Uses chosen strategy (writing/drawing) when prompted by wife	None
	Linda	Fewer test questions Fewer comments on PWA ability (e.g. 'well done') More understanding checks	**Beckley et al (2013)** (qualitative findings): Prompts PWA writing strategy	Prompts PWA to use keyword Avoids interrupting Avoids letting PWA struggle for a word if she knows what it is
Dyad 4	Graham	Increased use of chosen strategies (writing/drawing, mime, key words to introduce a topic)	**Beeke, Beckley et al (2014)** (quantitative findings): Poisson trend for frequencies test (1-tailed) *Significant increase:* Writing ($z=2.83$, $p=<0.01$); Mime ($z=1.89$, $p<0.05$); Key word ($z=2.87$, $p<0.01$)	Participates more in conversation

Participants (names are pseudonyms)		**Quantitative conversation changes** (source: Stroke Association Final Project Report, January 2012, updated November 2013)	**Published findings**	**Self-reported behavioural change** (source: post-therapy interviews with the author)
	Alex	Fewer test questions Fewer understanding checks	**Beeke, Beckley et al (2014)** (quantitative findings): Poisson trend for frequencies test (1-tailed) *Significant decrease:* Test questions (z=-4.74, p<0.0001) *Non-Significant:* "Let the conversation continue" (z=-0.22, n.s.); "Carry on if you have understood" (z=-0.43, n.s); "Comment" (z=0.00, n.s.)	Asks for keywords Avoids saying 'I don't understand' Leaves more space Repeats back what he's understood
Dyad 5	Jill	Talks more - more topics initiated Increased use of chosen strategies (writing/ drawing, gesture, key words to introduce a topic)		Uses gesture – but not writing
	David	Fewer test questions (ones where the answer is already known)		Prompts CP to write Avoids test questions Avoids leading the conversation Leaves more space
Dyad 6	Barry	Increased use of writing/drawing	**Beeke, Johnson et al (2014)** (quantitative findings): Poisson trend for frequencies test (1-tailed) *Significant increase:* Writing (z=2.50, 0=0.0063) *Non-Significant* Gesture (z=-0.29, n.s.); Keywords (z=0.91, n.s.)	Increased writing
	Louise	Fewer understanding checks	**Beeke et al (2014b)** (quantitative findings): Poisson trend for frequencies test (1-tailed) *Significant decrease:* Correct production sequences (z=-2.65, p=0.0041) *Non-Significant:* "Let the conversation continue" (z=1.0, n.s.); "Passing turn" (z=-1.0, n.s.); "Paraphrase" (z= 0.0, n.s.)	Gives more time Accepts writing and gesture
Dyad 7	Maggie	Decrease in use of chosen strategies (mime, gesture, key words to introduce a topic)		No change
	Christina	No change		Gives more time Uses comments instead of some questions
Dyad 9	Bob & Irene	N/A withdrew from study		

3 Literature Review Part I: Perspectives on Changing Conversation

This thesis aims to contribute to an evidence base for conversation therapy, by investigating the process of intervention rather than its outcomes. Currently, limited reporting and investigation of the processes underpinning clinical intervention are acknowledged to be a widespread problem for the replication and accumulation of evidence in research, and for implementation and adaptation in clinical practice (Kagan, Simmons-Mackie, Gibson, Conklin & Elman 2010; Kersten, Ellis-Hill, McPherson & Harrington 2010; Metcalfe, Lewin, Wisher, Perry, Bannigan & Moffet 2001; Whyte, Dijkers, Hart, Zanca, Packel, Ferraro, Tsaousides 2014; Zipoli & Kennedy 2005).

Guidance from the MRC (2008) on the design and evaluation of complex interventions seeks to address this gap by recommending a more rigorous investigation of intervention process alongside outcome evaluation. The guidelines recognise that that there are some crucial differences between 'simple' interventions - e.g. the pharmacological treatments on which the gold standard of evaluation research is based (Robey & Schultz 1998) – and 'complex interventions', which will often contain multiple interacting components and may be intended to produce a range of interlinked outcomes. As such these treatments will often be more difficult to standardise than simple interventions, and the production of any intended change is likely to be reached via longer and more complex causal chains (Campbell, Murray, Darbyshire, Emery, Farmer, Griffiths, Guthrie, Lester, Wilson & Kinmoth 2007). Using the test-re-test model of evaluation alone masks the complexity inherent in the aims, content and context of these interventions, and therefore leads to a lack of clarity about what aspects of intervention are directly responsible for successful outcomes (Campbell et al 2007; Sidani & Sechrest 1999). Missing the opportunity to generate clinically useful information from evaluation is not the only problem with this model, as the focus on reporting and evaluating outcomes at the expense of reporting process also means there are issues for researchers looking to replicate or compare interventions, with consequences for accumulating good quality evidence (Michie & Prestwich 2010). This issue is recognised by Wade (2005) who argues that the credibility and evidence base in rehabilitation - the 'archetypal complex intervention' (p811) - is often undermined by poor specification and characterisation of the effective components of intervention.

Some of these issues may be particularly relevant to socially-focused approaches within aphasia rehabilitation, which instead of seeking to change language function and processing, seek to change the long term management of an individual's communication disability and psychosocial wellbeing. Unlike language therapy which is comparatively well served by

theories that are able to generate guidance on treatment tasks, and hypotheses of how change occurs via these tasks (cf. Raymer, Beeson, Holland, Kendall, Maher, Martin, Murray, Rose, Thompson, Turkstra, Altmann, Boyle, Conway, Hula, Kearns, Rapp, Simmons-Mackie, Gonzales 2008; Whitworth, Webster & Howard 2005), the design of social interventions has few options for linking treatment to a systematic understanding of behaviour in context. Consequently judgements about how to activate change for individual clients are more likely to be based on clinical experience and pragmatic assumptions.

Conversation therapy involving partners of speakers with aphasia is an increasingly well-known approach, with a developing evidence base. Before considering in more detail how the recommendations from the MRC guidelines can be applied in practice to help clarify the active processes for this type of treatment, it will be valuable to provide a broad overview of the approach and the evidence for it.

3.1 Overview of Conversation Therapy for Aphasia

BCA, the intervention on which this research is focused, works with both the PWA and their CP. As such it brings together concepts and approaches from previously established CP training programmes, with some aspects of compensatory strategy training for speakers with aphasia. A review of the main aims and procedures in each of these approaches is provided here.

3.1.1 Conversation Partner Training

Interventions that explicitly target the CPs of speakers with aphasia have evolved alongside the social model of aphasia (Chapey, Duchan, Elman, Garcia, Kagan, Lyon & Simmons-Mackie 2001; Jordan & Kaiser 1996; Pound, Parr, Lindsay & Woolf 2000) and the expanded definition of disability provided by the World Health Organisation (2001), which highlights that barriers from within the social environment may exacerbate the overall impact of a person's impairments. Increased research focus on the social consequences of aphasia has been successful in expanding the clinical remit and ambition of aphasia treatment to include not only changed language function, but also a reduction in the barriers that impact on participation in meaningful life situations. The behaviour of conversation partners has regularly been shown to influence participation of speakers with aphasia within interaction (Beeke, Beckley et al 2014; Garrett & Beukelman 1995; Kagan & Gailey 1993; Oelschlaeger 1999; Oelschlaeger & Damico 2000; Simmons-Mackie & Kagan 1999) and as such has become a significant area for intervention (see Simmons-Mackie et al 2010 for a systematic review).

The underlying principle of CP training is that conversation is the product of collaboration (Oelschlaeger & Damico 2000; Simmons-Mackie & Kagan 1999), and therefore that successful management of aphasia in conversation is a shared responsibility (Simmons-Mackie & Kagan

1999). The importance placed on treating conversation as an activity in itself rather than a means to an end (Lock et al 2001; Kagan 1998) comes from viewing conversation as "the main form of spoken language" (Wilkinson & Wielaert 2012, pS70) and the medium within which relationships and identity are enacted (Lock et al 2001; Schiffrin 1988). Conversation has long been understood a key medium for the construction of the social self, and of interpersonal relationships (Schiffrin 1988; Goffman 1964). Successful participation in conversation is therefore expected to be integral to the maintenance psychosocial wellbeing (Kagan & Gailey 1993).

Broadly speaking, treatment aims to enhance both speakers' involvement in "genuine adult conversation" (Kagan 1998, p817) and the achievement of communicative success with the least interactional effort (Booth & Swabey 1999). This may require speakers to shift emphasis from the linguistic problems caused by aphasia towards unlocking the 'communicative competence' behind the speaker's aphasia (Simmons-Mackie & Kagan, 1999; Turner & Whitworth 2006a; Wilkinson & Wielaert 2012).

The specific aims and methods amongst different CP training programmes can vary. Wilkinson (2010) proposes that conversation-directed therapies fall into a number of different groupings. Some therapy approaches are proposed to be 'communication-focused'. This includes the key example of the Conversational Coaching approach (Holland 1991; Hopper, Holland & Rewega 2002), which targets the effectiveness and comprehensiveness of PWA attempts to convey information, by identifying and training facilitative conversational strategies that both the CP and PWA can use within conversation.

Others are proposed to have a 'psychosocial focus', as exemplified by Kagan's Supported Conversation for Aphasia approach (Kagan & Gailey 1993; Kagan 1998; Kagan, Black, Duchan, Simmons-Mackie & Square 2001). These approaches use volunteer CPs and aim to provide PWA with access to good quality conversation, as a means of targeting wellbeing and quality of life. Volunteers are trained to acknowledge the competence of the speakers with aphasia using a natural and adult communicative style, and also to reveal competence within conversation by ensuring comprehension, and using a range of techniques and tools to facilitate responses. This approach has been extended to programs in the UK such as the volunteer-based Conversation Partner scheme (McVicker, Parr, Pound & Duchan 2009). Other interventions that may be said to have a primarily psychosocial focus include those that actively aim to explore the impact of aphasia and any subsequent changes to conversation on emotional wellbeing and marital relationships (Sorin-Peters 2003, 2004).

Finally, Wilkinson (2010) proposes a third grouping: 'interaction-focussed' therapies. This group includes the BCA program, as well as the published UK resource SPPARC (Lock et al 2001) from which it is derived. These approaches are distinctive in that they are shaped by the findings and methodology of CA (cf. Hutchby & Wooffitt 2008), an analytic tool which enables detailed descriptions of the interactive resources speakers draw on to jointly establish meaning. Core concepts in CA include the patterns of turn-taking that speakers orient to, how speakers treat trouble sources and negotiate repair, and the relevance of conversational context to interpreting individual speakers' turns. Aphasia-specific CA research has shown how PWA are able to manipulate and maximise the interactive resources available to them to achieve both communicative and affiliative goals (Beeke 2003; Beeke, Wilkinson & Maxim 2001; Beeke & Wilkinson & Maxim 2007; Beeke, Wilkinson & Maxim 2009; Goodwin 1995; Oelschlaeger & Damico 1998a; Wilkinson 1999; Wilkinson, Beeke & Maxim 2010). However this research has also demonstrated how turns taken by CPs can function to restrict the communicative opportunities for PWA (Beeke, Beckley et al 2013), or facilitate PWA communication (Laakso & Klippi 1999; Oelschlaeger 1999; Oelschlaeger & Damico 1998b). CA is valued by those designing interaction-focussed intervention for its ability to yield detailed and personalised information about the barriers and facilitators occurring within individual conversational partnerships (Booth & Swabey 1999). The emphasis on the interdependence of speaker behaviour within conversation also informs the therapeutic approach.

Although these approaches emphasise slightly different philosophical and practical aspects of dyadic communication, all share the aim of trying to change what the communication partners of people with aphasia do in conversation in response to the problems caused by aphasia. A new review of conversation therapy (Simmons-Mackie, Savage & Worrall 2014 in press) suggests that therapy may choose to target 'problems', i.e. the elimination of barrier behaviours, and/or it may choose to target 'solutions' i.e. the training of facilitative strategies. As outlined in Section 2.2.1 (p26) barrier behaviours are those behaviours that function to limit PWA contributions, disrupt conversational flow, restrict the naturalness of conversation, or emphasise linguistic errors. Examples from the literature include:

- Test questions (Beeke, Beckley et al 2013; Beeke, Beckley et al 2014; Lock et al 2001; Simmons-Mackie, Kearns & Potechin 2005)
- Interruptions (Cunningham & Ward 2003; Fox, Armstrong & Boles 2009; Simmons-Mackie et al 2005)
- Correct production sequences (Beeke, Johnson et al 2014; Booth & Swabey 1999; Lock et al 2001)
- Asking lots of questions (Cunningham & Ward 2003)

- Withholding guesses at what PWA is trying to say despite evidence of frustration, or requests for help (Aaltonen & Laakso 2010; Booth & Swabey 1999)

Facilitative behaviour is that which supports the involvement of PWA, such as:

- Clarification questions (Fox et al 2009; Hopper et al 2002)
- Giving more time for the PWA (Beeke, Johnson et al 2014; Wilkinson, Bryan, Lock & Sage 2010; Wilkinson, Lock, Bryan & Sage 2011)
- Passing turns (Beeke, Johnson et al 2014; Wilkinson et al 2010; Wilkinson et al 2011)
- Statements or comments to support PWA topic development (Beeke, Beckley et al 2014; Wilkinson et al 2010)
- Paraphrasing PWA contributions (Beeke, Beckley et al 2014, Beeke, Johnson et al 2014)
- Open questions (Simmons-Mackie et al 2005; Wilkinson et al 2010)
- Props, gesture and writing to support the comprehension of the PWA and encourage PWA strategies (Kagan et al 2001)
- Carrying on despite PWA errors (Beeke, Beckley et al 2014)
- Checking that PWA is still engaged in interaction during long pauses (Beeke et al 2011)

In addition to targeting behaviour, CP training may have linked aims such as improving psychosocial wellbeing (Cunningham & Ward 2003; Lock 2005; Saldert, Backman & Hartelius 2013; Sorin-Peters 2003, 2004); changing perception and acceptance of aphasia (Booth & Swabey 1999; Kagan 1998; Kagan et al 2001; Sorin-Peters 2003, 2004); reducing frustration (Cunningham & Ward 2003; Fox et al 2009) and increasing satisfaction with conversations (Fox et al 2009). However, while it is commonly assumed that these outcomes will naturally follow on from the changes within conversation, Simmons-Mackie et al's systematic review (2010) highlights this claim has not been fully researched, and current evidence suggests these changes may not occur in a predictable or uniform way. For example, outcomes reported in Lock (2005) show that speakers who improved on measures of psychosocial wellbeing following CP training did not demonstrate qualitative change in conversation, while those demonstrating conversation change did not improve on wellbeing measures. And, in a quantitative evaluation of change in a single case study, Fox et al (2009) established that while the dyad reported some overall benefits for conversation, which were corroborated by global ratings of conversation, there was limited evidence of a specific increase or decrease in the behaviours targeted by therapy.

In terms of intervention content, Simmons-Mackie et al (2010), Simmons-Mackie et al (2014 in press) and Wilkinson & Wielaert (2012) suggest that the most common components within CP training are education about aphasia and conversation, discussion of video recordings of the

couples' own conversations, and practice of strategies (for examples, see Beckley et al 2013; Cunningham & Ward 2003; Saldert et al 2013; Simmons-Mackie et al 2005; Wilkinson et al 2010; Wilkinson et al 2011). In addition, Simmons-Mackie et al (2010) conclude that therapeutic feedback appears to be a key ingredient of this type of programme, but highlight that across the field, there is an overall lack of specificity concerning the nature of this feedback.

Alternatives to this format include programmes which incorporate a counselling component (cf. Sorin-Peters 2003, 2004), programmes which focus solely on provision of education and information (cf. Booth & Swabey 1999) and programmes that include the modelling of effective strategies for observation by CPs (Lyon, Cariski, Keisler, Rosenbek, Levine, Kumpula, Rhyff, Coyne & Blanc 1997).

Delivery of CP training varies from therapy with individuals (Simmons-Mackie et al 2005), in group settings (Booth & Swabey 1999; Lock et al 2001; Lock 2005; Saldert et al 2013) and jointly with the PWA (Beckley et al 2013; Beeke et al 2011; Beeke, Beckley et al 2014; Cunningham & Ward 2003; Fox et al 2009; Sorin-Peters 2003, 2004; Hopper et al 2002; Wilkinson et al 2010; Wilkinson et al 2011).

The endeavour to capture successful outcomes of CP training has been wide ranging, resulting in a great diversity among the measures selected. The need to capture quantitative changes is often addressed by looking at the frequency of targeted behaviours within videoed interactions before and after intervention (Beeke, Beckley et al 2014; Beeke, Johnson et al 2014; Cunningham & Ward 2003; Fox et al 2009; Simmons-Mackie et al 2005; Wilkinson et al 2010). For specific details on how quantitative change is being measured in BCA, please refer back to Section 2.2.5 (p30). Beyond specific analyses of strategy use, broader conversational measures include: quantitative analyses of the length, type and effectiveness of interactive repair sequences (Booth & Swabey 1999, Cunningham & Ward 2003); number of PWA initiations or turns (Cunningham & Ward 2003; Wilkinson et al 2010); global ratings of PWA participation and CP skill (Fox et al 2009; Saldert et al 2013); number of pre-set topics conveyed (Hopper et al 2002); balance of control between speakers and types of conversational 'genres' covered by the couple (Sorin-Peters 2004).

Qualitative changes to conversational patterns have been investigated by analysing samples of conversation using CA (Beeke et al 2011; Beeke, Beckley et al 2014; Beeke, Johnson et al 2014; Cunningham & Ward 2003; Wilkinson et al 2010; Wilkinson et al 2011). Further measures designed to capture socially valid change are also sometimes used, such as:

- Whether or not blinded raters can identify if a conversation extract occurred before or after therapy (Wilkinson et al 2010)
- Speaker-reported change to conversational behaviours and patterns (Wilkinson et al 2010)
- Informal feedback on the impact of the therapy (Wilkinson et al 2010)
- Participants' perceptions of general communicative effectiveness (Lock 2005; Saldert et al 2013)
- Satisfaction with conversations (Fox et al 2009)
- Global measures of psychosocial wellbeing or perceived disability (Cunningham & Ward 2003; Lock 2005).

A recent systematic review concluded that accumulated evidence shows CP training programmes can be expected to produce positive outcomes to communication activity and participation, for both PWA and the trained CP (Simmons-Mackie et al 2010). However an important point is made about the lack of consistency in outcome measurement, suggesting the choice of measures is "scattershot" with studies often appearing to end up adopting "a variety of measures in hopes of capturing relevant outcomes" (Simmons-Mackie et al 2010, p1835).

Individual studies acknowledge this confusion, often reporting that outcomes appear to be highly variable from couple to couple, that they are difficult to capture and interpret, and that they may represent only very subtle or small changes (Cunningham & Ward 2003; Fox et al 2009; Saldert et al 2013; Turner & Whitworth 2006a). In particular, Fox et al (2009) highlight the challenge common to conversational data of only having small numbers to work with, but also suggest that counting the frequency of behaviours within conversation may not always be the most valid measure of change. For example, certain behaviours may only need to occur occasionally to produce a significant positive or negative impact for speakers.

Overall, the conclusions of Simmons-Mackie et al's systematic review (2010) suggest that while CP training is agreed to be of broad benefit, we remain unclear about what specific outcomes best represent this generalised benefit, and where indeed we should be looking for change. A lack of clarity across the board about what exact changes therapy is intended to create inevitably leads to difficulties for systematically selecting appropriate measures to capture the impacts of therapy. Furthermore, a lack of consensus and precision regarding the expected and intended effects of therapy may carry implications for how well-targeted the intervention content can be. So for example, if the trained variable of strategy use is not reflecting change, but other more generalised benefits are being reported, then we either have a problem with

how strategy use is being measured, or we do not yet understand the active processes and impacts of therapy well enough to look for change in the most relevant areas.

This thesis proposes that refining our account of how intervention works will not only support the clinical implementation of CP training, but also future research efforts to interpret outcome data and determine suitable targets for measurement.

3.1.2 Compensatory Strategy Training

Compensatory strategy training for speakers with aphasia has traditionally focussed on developing the strategic use of communicative behaviours as an alternative or an addition to spoken language. Compensatory strategies may typically include:

- Writing (cf. Clausen & Besson 2001; Robson, Marshall, Chiat & Pring 2001)
- Drawing (cf. Lyon 1995; Sacchett, Byng, Marshall & Pound 1999; Sacchett 2002; Ward-Lonergan & Nichols 1995)
- Gesture (cf. Daumüller & Goldenburg 2010; Helm-Estabrooks, Fitzpatrick & Barresi 1982; Marshall, Best, Cocks, Cruice, Pring, Bulcock, Creek, Eales, Mummery, Matthews & Caute 2012)
- Pictorial systems and communication books (cf. Pound, et al 2000; Sacchett & Lindsay 2007)

Compensatory strategy training has traditionally targeted the development of PWA skills for producing accurate and communicatively informative non-speech strategies via repeated practice within structured activities (Daumüller & Goldenburg 2010; Helm-Estabrooks et al 1982; Marshall et al 2012; Morgan & Helm-Estabrooks 1987). While there is good evidence that repeated practice can produce an improvement in skills for performance, concerns have been raised about the lack of generalisation of these skills to interactive contexts (Kraat 1990; Purdy & Koch 2006; Simmons-Mackie & Damico 1997). This has to some degree been addressed by 'strategic therapy' (Caute, Pring, Cocks, Cruice, Best & Marshall 2013), and 'total communication' approaches which promote and encourage the use of compensatory strategies within functional activities and group work, sometimes in combination with impairment level work to develop the underpinning semantic, gestural and orthographic skills on which the effectiveness of the strategy relies (cf. Lawson & Fawcus 1999; Pound et al 2000; Davis 2005). However this approach still mainly represents a focus on strategy use within therapy-led scenarios rather than within a speaker's everyday life, and views the role of compensatory strategies as a medium for enhancing effectiveness in conveying a message.

Research on the interactive use of strategies has shown that compensations in fact have a wider range of functions beyond conveying information, and may for example be used to display feeling, regulate interaction, repair communication breakdowns and facilitate verbalisations (Simmons-Mackie & Damico 1997). In addition, interpreting the meaning of a nonverbal compensatory strategy in context may rely less on its intrinsic communicative quality than on where it occurs within a sequence of turn-taking (Beeke et al 2001; Wilkinson 1999; Sacchett 2002), as many easily interpretable gestures, drawings or single written letters produced within conversation, would be extremely difficult to attribute meaning to when devoid of the context in which they were produced (Sacchett 2002).

Conversation-level strategy training has therefore been recommended by many writers, as "it offers a directly relevant, meaningful context for practice" (Lustig & Tompkins 2002, p508). Simmons-Mackie & Damico (1997, p775) recommend that the aim of compensatory training should be to develop "automatic, efficient behaviour which does not compete with the attentional requirements of maintaining a cooperative social interaction". The shift towards strategy use in context has opened up the potential for training a wider range of strategic behaviours that serve social and interactional goals as well as communicative ones (Simmons-Mackie & Damico 1997). PWA conversation-level training may include a focus on interactive strategies such as:

- Signalling the introduction of a new topic (Wilkinson et al 2011)
- Flagging up misunderstandings (Fox et al 2009)
- Providing context for ensuing turns (Beckley et al 2013)
- Using a keyword to set a topic (Beeke, Beckley et al 2014)
- Using a 'thinking face' or saying 'um' to manage the interactional impact of long pauses caused by word searches (Beeke et al 2011)

Training strategies within interactive contexts has also highlighted that the barriers to effective use are wider than proficient performance, and that intervention must find ways of addressing these. For example, in Lustig & Tompkins' (2002) case study of context-based training of writing, a speaker with verbal dyspraxia had sufficient skill to use writing as a compensatory strategy, but was not doing so. Intervention therefore targeted the speaker's recognition that his articulatory struggles in conversation could be used as a cue to try out writing. The role of the CP is also important in context-based compensatory training. With respect to PWA use of Alternative and Augmentative Communication (AAC) strategies, Lasker & Garrett (2006) identify a major delineation between 'partner-dependent communicators' who require CPs to prompt or scaffold the use of communication strategies, and 'independent communicators'

who are able to initiate and execute the use of strategies without support. Interaction-focussed training programmes such as BCA, which treat the CP and PWA jointly, place a significant emphasis on how the behaviour of the CP influences the behaviour of the PWA. As Beeke et al (2011, p227) point out: "it is unlikely that the person with aphasia will use the strategies they have practiced in therapy if the partner does not leave enough space to do so". Therefore BCA also targets a PWA's successful use of facilitative strategies by addressing any interactive constraints resulting from the behaviour of CPs (Beeke, Beckley et al 2014; Beeke, Johnson et al 2014, in press), or by supporting CPs to request strategies in instances where a PWA does not self-initiate use (Beckley et al 2013).

While training strategy use in interactive contexts is now well established, it is important to note that this approach may not be appropriate in all cases. A recent paper by Beeke, Beckley et al (2014) reports the outcomes of two PWA participating in BCA, one who successfully develops the interactive use of writing and one who does not. The authors highlight the significant difference in the participants' writing skills prior to therapy, and conclude that success in conversation-level strategy use may require a certain level of proficiency for the chosen strategy at baseline. Activities that seek to develop and refine the skills of PWA in producing strategies are therefore likely to continue to be a relevant component of interventions targeting strategy use. This is particularly the case for less 'natural' communicative strategies such as drawing and writing in which the establishment of a certain level of skill and confidence may be a pre-requisite for interactive use (Purdy & Koch 2006; Sacchett et al 1999; Sacchett 2002; Sacchett & Lindsay 2007).

3.2 The Need for a Theory of Change

As this review has so far demonstrated, there is a wealth of literature available to clinicians wishing to design intervention for conversation, and an abundance of tools and techniques to experiment with. Simmons-Mackie et al (2010) suggest that whilst including multiple components within an intervention design may well reflect good clinical practice, from a research perspective existing designs make it difficult to identify the core procedures involved in producing change. As we currently lack an account of how the procedures included within conversation therapies may be operating to influence conversational behaviour – or indeed other possible outcomes - we consequently have little clear guidance on how to preserve the core effectiveness of these approaches when faced with differing contexts and client needs.

In order to address this common issue, the MRC Guidelines for Developing and Evaluating Complex Interventions (2008) make the key recommendation that researchers clarify their 'theory' of intervention. An intervention theory is expected to: define the target of

intervention - i.e. what is to be changed; specify the active ingredients of intervention; and map the relationship between content and outcomes by suggesting the mechanisms by which active ingredients cause change to the target of intervention (Whyte et al 2014, pS25).

Currently, it is acknowledged across the fields of rehabilitation (Wade 2005), social and community intervention (Weiss 1995), and public health intervention (Michie, van Stralen & West 2011), that intervention design is often *pragmatic* rather than theoretical. Typically it will be based on implicit 'common-sense' assumptions about how the intervention will work, which are rarely tested for their validity or their usefulness (Weiss 1995). This risks inefficiency in interventions, as key processes may be overlooked and ineffective processes may continue to be relied on (Johnston 1995; Michie, Johnston, Francis, Hardeman & Eccles 2008; Weiss 1995).

Developing more explicit links between explanatory theory and intervention content should enable researchers to draw up testable hypotheses about how change is expected to be produced by an intervention, and about which intervention components have the greatest potential for activating change. According to the MRC guidelines (2008), developing a theoretical pathway of change for an intervention is a vitally important design task for intervention planners, which offers the following proposed benefits:

- Theory-led intervention is more likely to be effective than a "purely empirical or pragmatic approach" (MRC 2008, p9) (cf. Dombrowski, Sniehotta, Avenell, Johnston, MacLennon & Araujo-Soares 2012; Albarracin, Gillette, Earl, Glasman, Durantini & Ho 2005)
- Theory helps specify mechanisms of change and active ingredients (Campbell, Fitzpatrick, Haines, Kinmoth, Sandercock, Spiegehalter & Tyrer 2000; Michie & Johnston 2012)
- Theory-based evaluations "facilitate the accumulation of effectiveness across different contexts and populations" (Michie & Prestwich 2010, p1)
- Theory offers a key to analysing the complex goals, processes and outcomes encompassed within rehabilitation (Wade 2005)

Approaches to describing theories of intervention include both 'small theories' of treatment, as advocated by Weiss (1995), Lipsey (1993) and Sidani & Sechrest (1999), as well as the modelling of intervention according to formal, empirically tested theories of behaviour (Hardeman, Sutton, Griffin, Johnston, White, Wareham & Kinmoth, 2005; Kok, Schaalma, Ruiter, Van Empelen, & Brug 2004). The Weiss (1995) approach has evolved into the 'Theory of Change' process often used by charities and within international development to plan large

scale community interventions (see www.theoryofchange.org; Taplin & Clark 2012; Kail & Lumley 2012). Here, the design of an intervention is appraised for its implicit theory of change: inbuilt assumptions within the design are identified, and the evidence for them is tracked during intervention. The desired outcomes of intervention are 'mapped backwards' in order to identify the causal steps presumed to be responsible for creating them. The more formal approach is exemplified by the use of psychological theories of behaviour in designing interventions that aim to change health behaviours such as smoking (Michie, Hyder, Walia & West 2011), physical activity and healthy eating (Michie, Ashford, Sniehotta, Dombrowski, Bishop & French 2011), or condom use (Abraham & Kools 2011).

The MRC guidelines recommend a pre-clinical, or theoretical, development phase in which the evidence for the theoretical basis of the intervention is first reviewed. Following this, appropriate theories, which are able to specify a likely process of change, should be identified (Campbell et al 2007; Craig, Dieppe, Macintyre, Michie, Nazareth & Petticrew 2008). This development stage should ultimately support the identification of components to include within intervention, and help to characterise them in terms of their mechanisms of action. Qualitative research is acknowledged to have a particular value for identifying potential mechanisms and barriers for change during this development phase (Campbell et al 2007).

The research carried out for this thesis is intended to contribute to this recommended phase of theoretical development. The remainder of this chapter will therefore be dedicated to a review of our existing understanding of the theoretical basis for conversation therapy, whilst also seeking to identify new theories that may be useful in modelling therapy's effects.

3.3 Theory in Aphasia Therapy: The Story So Far

Aphasia rehabilitation has not so far drawn on the recommendations of the MRC; however, re-appraisals of the theoretical basis for other complex interventions have been attempted in related fields, such as stuttering (Hayhow 2010), stroke rehabilitation (Redfern, McKevitt & Wolfe 2006), and in intervention for carers of people with stroke (Robinson, Francis, James, Tindle, Greenwell & Rogers 2005).

The broader case for developing theory as a crucial part of the evidence base for aphasia rehabilitation is not new, however. In the mid 90s a series of discussion papers called for a 'theory of therapy' in aphasia treatment (Byng 1995; Byng & Black 1995). These papers suggested that much of the contemporary rationale for designing language therapy was implicit and underspecified, and that there needed to be a more rigorous detailing of the aims, interactions and effects of therapy, and a clearer specification of how therapeutic procedures linked into treatment aims and created change.

Since these papers appeared, advances in cognitive neuropsychological theories of language (cf. Whitworth et al 2005; Marshall 1995), and neurobiological research into the underlying mechanisms of neural recovery and learning (cf. Robertson & Murre 1999; Raymer et al 2008) have refined the science and theoretical rationale for the design of language therapy. In addition, the work of Horton (Horton & Byng 2000; Horton 2006, 2008), which examined the interactive practices used to deliver language therapy tasks, brought added detail about the organisation and function of therapeutic communication. Although many of Byng's questions remain only partially explored, clinicians do now have access to a theoretical framework that is sufficiently predictive to generate profile-specific hypotheses about how treatment procedures and tasks address treatment goals. In addition, theories of brain plasticity suggest underlying mechanisms of neural change and principles of learning that hold implications for the recommended intensity of effective language therapy (Cherney, Patterson & Raymer 2011).

What is not clear, however, is how and whether these theoretical developments apply to socially-focussed aphasia interventions, which often target compensatory behavioural changes, not language. It is argued here that qualitatively different processes are at play during social interventions, and that many of Byng's questions from 1995 now apply to this field.

Theory influencing the content of socially-focussed interventions in aphasia has largely been used to suggest the aims and general philosophy of treatment rather than its procedures or mechanisms of action. So for example, the theoretical perspective of CA determines principles of assessment in interaction-focussed therapies – i.e. the need to use data from natural, unstructured conversation – as well as the areas to target – e.g. incomplete turns, or problematic repairs – and also the kinds of concepts discussed with participants during intervention - e.g. turn-taking and repair. However, although CA is the guiding theory to which these approaches refer, it does not offer indications of how intervention should be designed, nor is it built to produce an explanatory account of change. And, although CA may be useful for organising descriptions of conversation, Turner & Whitworth (2006a) point out that little is known about how its use actually impacts on treatment effectiveness.

This said, many conversation therapies also look to adult learning theory to inform the design of intervention programmes (Beckley et al 2013; Lock et al 2001; Sorin-Peters 2003, 2004). Sorin-Peters (2003) cites the principles of adult learning used in her partner training program as: the explicit use of participants' existing knowledge, activities and problems to inform the content of therapy, and the regular use of participant self-evaluation during therapy as a form of feedback. She describes this as "a process of learning through critical self-reflection on experience" (p410) and grounds the approach within the Kolb model of experiential learning and adult development (Kolb 1984; Kolb, Boyatzis & Mainemelis 2001; Kolb & Kolb 2004,

2008). SPPARC-influenced approaches (cf. Lock et al 2001), including BCA, have also cited Kolb's experiential learning model as the key influence on the design of therapy programmes (cf. Beckley et al 2013). This model is widely used in adult education, and overlaps conceptually with a number of components of psychological theories of learning, although it lacks its own experimental evidence base (Bennett-Levy, Butler, Fennell, Hackman, Mueller & Westbrook 2005). In the Kolb model, an individual's existing experiences are taken as the starting point from which new knowledge can be built. Learning is generated via an analysis of and reflection on previous experiences, from which the learner is supported to extract new rules and concepts – or develop new personal theories about how things work. In order to integrate these ideas fully into their personal outlook, learners then need to actively experiment with them and create new experiences on which they are based.

In the Beckley et al (2013) and Lock et al (2001) use of the Kolb model, reflection on previous experience is also presented as a central mechanism for learning. The playback of a dyad's own videotaped conversations during therapy is proposed to be a key tool for scaffolding this process of self-reflection (Beckley et al 2013). The inclusion of different types of learning activity which relate to different parts of the learning cycle is also implied. However there is no clear process for mapping activities onto learning mechanisms, and the relationship between the assumed process and the eventual outcomes is unexplored. Beckley et al (2013) make the most thorough attempt to characterise intervention content according to the Kolb model, and to link it to outcomes. The authors demonstrate the benefits of different types of learning activity for the within-therapy outcome of engaging a PWA to reflect on his conversational behaviour. However this case study concludes that the engagement shown by the PWA within learning activities did not translate into the changes in his behaviour targeted by therapy.

This may suggest that while Kolb's model may be well-positioned to support the design of different types of activities to engage learners with differing learning styles, it is perhaps less of a 'good fit' when it comes to looking for a theoretical account of change to behaviours, such as using conversational strategies. This may be partly because the model is primarily concerned with the creation of and experimentation with new *knowledge*, rather than looking to account for behaviour in context. It positions itself as a model of ongoing 'adaptation', in which an individual's knowledge is continually created and transformed as a result of experience, and explicitly does not position itself as a model for creating specific outcomes (Kolb 1984, p38). As we have seen previously, education and awareness-raising about aphasia and conversation often form an important component of conversation therapies. Kolb's model may well be an appropriate way of exploring how shifts in perception and knowledge in these areas may be supported by therapy, and furthermore may offer an account for how such shifts may

contribute to an individual's ongoing adjustment to life with aphasia. However, when it comes to explaining how the main conversational outcomes intended by therapy are produced, this model does not offer a theory that is sufficiently well matched to be able to link the content of therapy to its measured parameters of change i.e. the use of barrier and facilitator behaviour.

The clearest example of a conversation therapy which attempts to provide an account for its intended changes, and then put its assumptions to the test, is Simmons-Mackie et al's 'Recognition Training' (2005). Their hypothesis is that a decrease in CP barrier behaviour will be achieved via an increase in skills at identifying this behaviour within videos of her own conversations: "the expected result of Recognition Training was that she [the CP] would systematically develop a better appreciation of when the behaviours occurred, learn to monitor herself, and subsequently stop exhibiting the behaviour" (p586). 'Recognition' of the unwanted behaviour is therefore proposed to be the mediating mechanism for behavioural change, and is measured throughout therapy, alongside her use of the barrier behaviours of interrupting, and test questions. In fact, by monitoring the correlation between their hypothesised mechanism and their intended outcome, the authors found their theory of change to be only partially developed. The CP's skills at recognising both barrier behaviours improved; however, this was only associated with a decrease in interrupting. For test questions, it was only when an alternative behaviour was suggested that a decrease was achieved. By identifying and testing out their hypothesised pathway to conversational change, the writers have therefore been able to generate specific yet flexible evidence-based clinical principles that can be adapted in practice, whilst still retaining its core process.

Beyond this very clear example of treatment for barrier behaviours, there has been little attempt to investigate the evidence for the core assumptions underlying conversation therapies. Those interventions associated with the interaction-focussed approach of SPPARC (Lock et al 2001) propose that "an overarching aim of intervention is to make one or more participants more conscious of their conversational behaviours in order that change can occur" (Wilkinson 2010, p58). Like Simmons-Mackie et al (2005), this suggests that changing 'awareness of behaviour' is assumed to be a key mechanism for change in conversational behaviour. However unlike Simmons-Mackie et al (2005), the SPPARC-based approach has so far not examined this assumption in detail. Furthermore the transferability of the Simmons-Mackie et al findings to SPPARC and BCA cannot be taken for granted. This is partly because interaction-focussed therapies incorporate a wider range of therapy activities, so are likely to be activating additional processes, but also because they may additionally target the use of facilitative strategies, and the behaviour of PWA, which may rely on qualitatively different mechanisms of change than for CP barriers.

In summary, while the literature on conversation therapy currently offers some preliminary evidence for core processes and certainly acknowledges the role of theory for understanding change, this remains a largely underexplored area, which throws up as many questions as it answers.

3.4 Looking to the Field of Behaviour Change

In order to address the need for better theoretical explanations for conversation therapy and its active processes, this research turns to the theories and tools from behaviour change research. The importance of understanding behaviour change within the field of rehabilitation is being increasingly recognised (Jones & Riazi 2011; Wade 2005, 2009; Siegert & Taylor 2004), with Wade (2005) proposing that "all rehabilitation, at its heart, concerns changing behaviour" (p812). A focus on behaviour in conversation is further justified on the basis that conversation therapy itself, although encompassing education and relationship support, nonetheless primarily positions itself as aiming for change to "behaviours used by the person with aphasia and/or significant other to deal with the impact of aphasic impairments on conversation" (Wilkinson 2010, p54).

Changing human behaviour is viewed as key for a wide range of public health and social issues (NICE Guidelines 2007; House of Lords Science and Technology Select Committee Report 2011). Consequently there is a concerted research effort to develop the 'science' of behaviour change, and distil accumulated evidence and theoretical knowledge into useable tools for designing, reporting and evaluating intervention (Michie, Atkins & West 2014; Michie & Johnston 2012; Michie, Johnston, Abraham, Lawton, Parker & Walker 2005; Michie & West 2013) . This field of work offers the following five benefits for the study of conversation therapy:

- Conceptual clarity about outcomes
- Conceptual clarity about targets for change in intervention
- A systematic method for mapping the determinants of conversational behaviour
- Theory for identifying potential mechanisms of conversational change
- Improved specification of active therapy procedures

These are now explored in turn.

3.4.1 Conceptual Clarity about Outcomes

Most conversation therapies acknowledge that their central aim is to change behaviour; however, the "scattershot" approach to evaluating outcomes (Simmons-Mackie et al 2010, p1835) nonetheless appears to indicate a lack of focus about where to look for change after

therapy. A number of hoped for outcomes, such as satisfaction with conversation and improved wellbeing are self-evidently not behaviour changes, but rather the expected result of behaviour changes, whilst the outcome of increased knowledge about aphasia may be distinct from or contribute towards behaviour change. Other sought-after outcomes are more ambiguous. Does increased participation in conversation count as behaviour change? Does a more equal balance between speakers count as behaviour change? Do the frequency and lengths of repair sequences count as behaviour change?

Michie and Johnston (2012) make a clear distinction between measuring specific behaviours – such as the use of a compensatory strategy - and measuring variables which represent the *consequences* of behaviour change, which arguably include variables such as the balance between speakers, and the length of repair sequences. They stress the importance of defining and measuring the specific behaviours targeted by intervention, as this enables evaluators to collect evidence relating to the most immediate intended effect produced by an intervention. Omitting such measures means it is harder to attribute or explain changes to more distal outcomes – such as improved satisfaction – as a function of therapy. Furthermore, without a measure of behavioural change, it will be harder to interpret the lack of change at other levels, or interpret unexpected results, because these findings may represent the effects of any number of intervening influences, rather than evidence that the therapy is ineffective.

A relationship between changed conversational behaviour, interactional balance and overall wellbeing is of course hoped for, but as Simmons- Mackie et al (2010) have pointed out, these causal impacts are frequently assumed and rarely evaluated. By viewing the potential outcomes of conversation therapy as a chain of effects, with change to behaviour expected to be the first impact, we can aim for a better understanding of what outcomes are produced and how – including the possibility highlighted by Fox et al (2009) that conversation therapy could - for some - enhance wellbeing without activating behaviour change.

3.4.2 Conceptual Clarity about Targets for Change in Intervention

Barriers and facilitators to conversations with aphasia are often identified and described using observational methods (cf. Booth & Perkins 1999; Simmons-Mackie & Damico 1997; Simmons-Mackie & Kagan 1999). This includes CA, where the focus is on observable, and jointly produced interactive sequences, and references to speaker intention are actively avoided (Beeke, Maxim & Wilkinson 2007; Wilkinson 1999). However, therapy is a process that asks speakers to engage in making deliberate changes to these conversational features, and so we do need to consider whether the conversational barriers and facilitators described by these observational methods are indeed actions that can be actively regulated by speakers and therefore directly altered by individual effort.

Barriers and facilitators targeted by therapy can include features such as incomplete turns, gaps in conversation (Beeke et al 2011), and "taking an active role in conversation" (Wilkinson et al 2010; Wilkinson et al 2011). There is sufficient ambiguity about these features that it may be helpful compare to them against the following definition of behaviour, developed and agreed upon amongst researchers in psychology, anthropology, sociology and economics:

> *[Behaviour is:] "Anything a person does in response to internal or external events. Actions may be overt (motor or verbal) and directly measurable, or covert (activities not viewable e.g. physiological responses) and indirectly measurable; behaviours are physical events that occur in the body and are controlled by the brain"*
>
> ***(Hobbs, Campbell, Hildon & Michie 2011, quoted in Michie & West 2013, p6)***

By placing the locus of relevant behaviour with the individual rather than with the conversation, and by proposing that 'behaviour' represents clearly identifiable responsive actions, the agreed definition in fact rules out all of the features mentioned above. This represents a therapeutically-useful shift of focus from the description of conversational sequences and features, to the consideration of an individual's access to the behaviour that produces these sequences. This is not to undermine the benefits of CA as a tool for guiding the assessment and discussion of conversation, but instead to highlight that when it comes to intervention, success essentially relies on individuals making changes, and therefore therapeutic targets need to be conversational features that are specific and accessible to those individuals. From this perspective, 'behaviour change' in conversation therapy is expected to mean the active inhibition of barrier behaviour and/or the active adoption, or redirection, of facilitative behaviour in order to strategically manage conversational problems caused by aphasia.

3.4.3 A Systematic Method for Mapping the Determinants of Conversational Behaviour

Theories of behaviour provide formal accounts of how behaviour is determined by a range of environmental, physical, social and psychological factors. Different theories place varying value on the importance of different behavioural determinants. The best generally known behavioural theory is perhaps Skinner's Operant Learning Theory (1963) which discounts any influence from unseen cognitive determinants and instead emphasises the role of environmental feedback and associative learning in shaping and changing behaviour. This view has since been overtaken by cognitive accounts of behaviour, which over the years have developed good evidence for the role that psychological determinants play in shaping behaviour. This includes Bandura's Social Cognitive Theory (1977, 1997), which models the influence on behaviour of 'outcome expectancies' – the beliefs individuals hold about the likely

costs and benefits of a behaviour - and 'self efficacy'- individuals' beliefs about their capability to carry out a behaviour under different conditions. Another key theory is the Theory of Planned Behaviour (Ajzen 1991, 2005) which emphasises the role of intention in carrying out a behaviour, as shaped by a person's beliefs about the consequences and the social norms relating to the behaviour. Other theoretical constructs proposed to determine the continuation or termination of behaviour include self-observation and evaluation (Theory of Self Regulation, Kanfer & Karoly 1972), and aspects of identity, social norms and emotions (Theory of Subjective Culture & Interpersonal Relations, Triandis 1989).

Over the years, the development of multiple theories means there is an accumulation of theoretically-specified determinants proposed to influence behaviour. A range of predictive relationships between these theoretical constructs and a variety of behaviours have been demonstrated (see Abraham, Conner, Jones & O'Connor, 2008). This abundance of overlapping theory and empirical evidence is in fact seen by some as problematic for those looking to apply this work, in that it muddies the accessibility of theory, and confuses the process for identifying the most relevant behavioural determinants (Michie et al 2008; Michie et al 2005).

Recent attempts have been made to synthesise and simplify this proliferation of theory. These have lead to the development of two tools that are intended for use in intervention planning. Firstly, the 'COM-B' model of behaviour (Michie, van Stralen & West 2011), see Figure 3 (p54), is intended to provide an overarching, theoretically-linked model of how behaviour is produced. Secondly, the Theoretical Domain Framework (TDF) (Cane, O'Connor & Michie 2012; Cane, Richardson, Johnston, Lahda & Michie 2014) integrates and streamlines overlapping constructs from 33 theories of behaviour into a framework of 14 key theoretical 'domains'. The domains represent clusters of theoretically-specified determinants, and each domain has been mapped to the overarching COM-B model of behaviour (see Figure 4, p54).

The COM-B system (Michie, van Stralen & West 2011) draws on the conclusions of an earlier attempt at theory synthesis (Fishbein , Triandis, Kanfer, Becker, Middlestadt, Eichler, Baum & Revenson 2001) - which agreed that the necessary and sufficient conditions for behaviour were the skills for the behaviour, the intention to carry it out, and a lack of environmental constraints. It also looks to a longstanding principle of US law - which proposes that to be found guilty of a crime, it must be demonstrated that an individual has the means, motive and opportunity to do so. COM-B therefore proposes that all behaviour is produced according to three overarching conditions: CAPABILITY, OPPORTUNITY and MOTIVATION. The arrows in Figure 3 below indicate the direction of causal interactions between the behaviour and the other components of the model.

Figure 3. COM-B Model of Behaviour (Figure reproduced from Michie, van Stralen & West 2011)

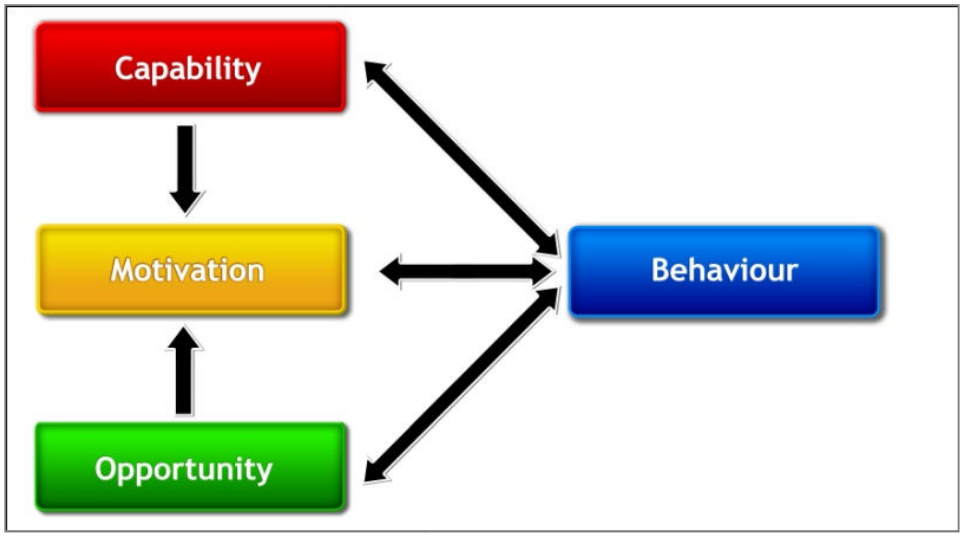


Figure 4. Theoretical Domain Framework mapped to COM-B model (Cane et al 2012)

CAPABILITY	MOTIVATION	OPPORTUNITY
•*SKILLS* •*KNOWLEDGE* •*BEHAVIOURAL REGULATION* •*MEMORY, ATTENTION & DECISION PROCESSES*	•*INTENTIONS* •*GOALS* •*BELIEFS ABOUT CAPABILITIES* • *BELIEFS ABOUT CONSEQUENCES* •*SOCIAL NORMS* •*IDENTITY* •*OPTIMISM* • *REINFORCEMENT* •*EMOTION*	•*SOCIAL INFLUENCES* •*ENVIRONMENTAL CONTEXT & RESOURCES*

OPPORTUNITY encompasses all aspects of the environment "that lie outside the individual that make the behaviour possible" (Michie, van Stralen & West 2011, p4). This includes the theoretical domain of *SOCIAL INFLUENCES*, which encapsulates the influence of interpersonal processes on behaviour, e.g. how CP turns in conversation may restrict or facilitate the contributions of PWA. It also includes the domain of *ENVIRONMENTAL CONTEXT & RESOURCES*, which incorporates behavioural determinants relating to the physical environment (Cane et al 2012). For example, this would include whether or not pen and paper is readily available for writing during conversation.

CAPABILITY represents the determining influences of a person's skills and knowledge on carrying out the behaviour, their "psychological and physical capacity to engage in the activity" (Michie

van Stralen & West, p4). Physical capability is proposed to map onto the theoretical domain *SKILLS* (Cane et al 2012). *SKILLS* for carrying out a behaviour effectively include the ability to perform a behaviour, and to improve performance, and also the social skills that may be involved in negotiating the use of the behaviour (Abraham & Kools 2012; Cane et al 2012), as in the example of a PWA asking for more time to write something down.

Psychological capability includes the effect from *KNOWLEDGE* (Cane et al 2012), which includes both knowledge about how to carry out a behaviour and knowledge about the environment in which the behaviour takes place - in short, knowing what to do when. A particularly influential domain of CAPABILITY for behaviour change is *BEHAVIOURAL REGULATION*. These are the self-regulatory skills that support the monitoring, planning, implementation and evaluation of behaviour, and its change (Abraham & Kools 2012; Cane et al 2012). Finally all behaviour and intentional behaviour change will to some degree be influenced by the domain of *MEMORY, ATTENTION & DECISION PROCESSES;* the skills underlying a person's ability to remember information, choose between alternative courses of action, and focus selectively on the environment (Cane et al 2012; Michie et al 2008).

Finally, MOTIVATION refers to all "brain processes", both those that are conscious, and those that are automatic or emotional, which "energise and direct behaviour" (Michie van Stralen & West 2011, p4). MOTIVATION is seen as the most complex influence acting on behaviour, consisting of a wider range of theoretical domains.

Reflective, conscious influences on behaviour include the four theoretical domains of *INTENTIONS, GOALS, BELIEFS ABOUT CAPABILITIES*, and *BELIEFS ABOUT CONSEQUENCES* (Cane et al 2012). *INTENTIONS* represent the effect on behaviour from making a conscious decision or commitment to act in a certain way. *GOALS* represent the influence on behaviour from a preferred end state that an individual wants to achieve and how different outcomes are prioritised. *BELIEFS ABOUT CAPABILITIES* represent the level of self confidence one has in one's own abilities and talents, specifically in relation to successfully carrying out a task, and being able to overcome obstacles to doing so. This domain is presented in Bandura's Social Cognitive Theory as 'self efficacy' and in Ajzen's Theory of Planned Behaviour as 'perceived behavioural control' – both of which are commonly referred to in the wider literature on behaviour change. The domain *BELIEFS ABOUT CONSEQUENCES* represents a person's assumptions about the relative costs and benefits of carrying out a behaviour and how this will shape what they do. In addition to the Cane et al (2012) domains, Fishbein et al (2001) also highlight the influence of perceived *SOCIAL NORMS* on motivating behaviour, so for example any influence on behaviour from our expectations of what others will think of us.

Less conscious aspects of MOTIVATION are represented by the theoretical domains *IDENTITY*, *OPTIMISM*, *REINFORCEMENT*, and *EMOTION*. *IDENTITY* incorporates determinants of how well a behaviour 'fits' with an individual's social identity (Cane et al 2012; Fishbein et al 2001). *OPTIMISM* reflects personal outlook, and levels of general confidence that goals will be achieved and things will work out for the best (Cane et al 2012). The influence from rewards and penalties relating to performing behaviour are encapsulated in the domain REINFORCEMENT. EMOTION in Fishbein et al's (2001) original attempt at theory synthesis was limited largely to the influence on behaviour from the real or anticipated emotional response to performing the behaviour, for example feeling anxious or embarrassed in relation to the behaviour. However the more recent definition proposed in Cane et al's (2012) TDF is wider, and *EMOTION* is proposed to represent "a complex reaction pattern, involving experiential, behavioural and physiological elements, by which the individual attempts to deal with a personally significant matter or event" (p14). So for example, this is expected to include the more widespread influence on behaviour from stress or depression.

This model expressly synthesises behavioural theory in order to support the design of intervention programmes. Theoretical frameworks of this kind are recommended by some as a starting point for mapping the range of potential determinants influencing the production of a behaviour of interest (Abraham & Kools 2012; Cane et al 2012). This thesis will therefore draw on the COM-B model, and the domains from the TDF as a theory-based tools for systematically organising its analyses and interpreting findings.

3.4.4 Theory for Identifying Potential Mechanisms of Conversational Change

The systematic identification and analysis of behavioural determinants is given central importance in behaviour change research, as determinants are viewed as the key to "predicting and changing behaviour" (McEachen, Lawton & Conner 2010, p348). The route to behavioural change is therefore via finding out what a behaviour's most relevant determinants are, i.e. those influences which have the most powerful effect on what someone does in a target situation, and then where possible seeking to modify the content, strength or direction of these determinants during intervention. This would mean for example that to change a behaviour such as test questions, therapy should seek to uncover the reasons why a CP uses such a behaviour, and seek to make changes by addressing those reasons.

As well as offering a systematic way of analysing a behaviour of interest, the COM-B model and TDF also provide a framework for developing theoretical accounts of the changes targeted by intervention. French, Green, O'Connor, McKenzie, Francis, Michie, Buchbinder, Schattner, Spike & Grimshaw (2012) illustrate how the TDF can be used in conjunction with qualitative

data to map the factors driving unwanted behaviour, and those limiting or enabling wanted behaviours, and how this information can be used to target intervention accordingly.

Changed behaviour is seen as a *response* to the event or events that "interrupt the normal flow of behaviour" (Fishbein et al 2001 p4). The content of these 'events' - i.e. the provision of feedback about one's undesirable behaviour, or the active practice of a new conversational strategy - are not in themselves viewed as the mechanism by which behaviour changes. Accumulated evidence suggests that simply being exposed to intervention techniques will not reliably predict behaviour change (Abraham et al 2008; Fishbein et al 2001; Llewellyn & Hardy 2001). Instead, behaviour change is more reliably predicted by whether or not exposure to a technique has successfully altered the relevant determinant of the behaviour, i.e. the person's *BELIEFS ABOUT THE CONSEQUENCES* of their behaviour, or their *SKILLS* for performing it (Abraham et al 2008; Fishbein et al 2001).

Mechanisms of change in producing behavioural outcomes are therefore the determining influences on behaviour which undergo change as a result of exposure to intervention content. Consequently, the effectiveness of an intervention depends on how well chosen the determinants targeted are. As Michie et al (2008) put it: "it might be appropriate to rehearse practical skills where the determinant is lack of skill, but not where there is a lack of motivation to perform the skill" (p662).

3.4.5 Improved Specification of Active Therapy Procedures

Across disciplines, limited detail about key intervention content has regularly been raised as a problem within evaluation literature (cf. Byng & Black 1995; Kolehmainen & Francis 2012; Oakley, Strange, Stephenson, Forrest & Monteiro 2004; Harachi, Abbott, Catalano, Haggerty & Fleming 1999; Whyte & Hart 2003; Wade 2005). The lack of detail about what an evaluated intervention involves compromises the potential for: accurate replication in research; quality implementation in clinical contexts; and the accumulation of reliable evidence, for example via systematic reviews (Michie, Fixsen, Grimshaw & Eccles 2009; Michie, Abraham et al 2011; Michie, Richardson, Abraham, Francis, Hardeman, Eccles, Cane & Wood 2013).

Michie et al (2013) highlight that even when efforts are made to report intervention content, from study to study there may be different descriptions of the same essential processes, or similar descriptions masking the variety of possible processes contained. This echoes Simons-Mackie et al's (2010) concern that while 'feedback' appears to form a core component of CP training, the different functions of feedback are not fully described. As part of the effort to characterise the content of intervention and model its expected impacts, the MRC guidelines (2008) recommend a full description of the components of intervention.

Previous attempts to describe therapy content and processes in aphasia rehabilitation have tended to focus on the interactive context that forms and shapes the online medium of intervention (Horton & Byng 2000; Horton 2008; Horton, Howell, Humby, & Ross 2010), rather than looking to define and evaluate the core processes intended produce change. As in Beckley et al's (2013) analysis of conversation therapy 'in action', Horton's work on language therapy is able to draw conclusions about how the content of different types of task produce differing displays of engagement from the PWA. However claims as to how this links into therapy's overall aims and outcomes are made guardedly, if at all. This body of work is perhaps best understood as feeding into the development of professional values and skills, rather than the evaluation of therapy content. It can perhaps be usefully distinguished from the research effort recommended by the MRC guidelines, as being research into 'therapeutic' processes, rather than 'intervention' process.

In an effort to address the need for improved consistency, precision and completeness in reporting intervention content, significant efforts are being made to develop a reliable and consensually-validated taxonomy of Behaviour Change Techniques (Abraham & Michie 2008; Michie et al 2009; Michie, Abraham, Eccles, Francis, Hardeman & Johnston 2011; Michie et al 2013; Michie et al 2014). Behaviour Change Techniques (BCTs) are defined as the essential active events within intervention that have the potential to alter the "causal processes that regulate behaviour" (i.e. determinants) (Michie, Abraham et al 2011, p2). BCTs are intended to represent the essential underlying process being activated by an activity, so for example the generic process of feedback is divided into two distinct BCTs, ***2.2 Feedback on behaviour*** and ***2.7 Feedback on outcome of behaviour***. It is recognised that the process represented by a BCT may be delivered via a variety of methods. The 'how' of delivery is not specified in the taxonomy, and left to those designing intervention activities to decide.

In developing the taxonomy, techniques used in health behaviour interventions were extracted from text books, published interventions and systematic reviews. Each possible technique was given a label and a definition which covers the minimum criteria that enables it to be identified within intervention. The validity and conceptual distinctiveness of each technique was then established via a formal consensus process called the Delphi technique (Michie, Abraham et al 2011). Members of an international group of behaviour change experts with clinical and research backgrounds in psychology-related disciplines were asked to decide whether individual BCTs contained a testable and potentially active ingredient of intervention, and whether they were distinct from other BCTs in the taxonomy, or whether they overlapped in or duplicated content (Michie, Abraham et al 2011; Michie et al 2013). Via this process, a list of 93 conceptually distinct and consensually-validated techniques has been established (available

as an open access electronic supplement to Michie et al 2013). So far, of the 26 most frequently occurring techniques, 23 have been shown to have a good level of IRR when used to code interventions for BCT content (Michie et al 2013).

While the original intended aim of the taxonomy is as an interdisciplinary tool for coding and communicating the content of complex behavioural interventions, it is also expected to have benefits for planning intervention. For example, the taxonomy serves as a 'menu' of possible intervention ingredients to choose from. It is expected to be used in conjunction with theory-led approaches to intervention design (Michie et al 2013; Michie & West 2013; Michie et al 2014). BCTs are expected to target change to the determinants of behaviours, so in principle BCTs can be mapped to theoretical domains, thereby aiding a theoretically-based selection of 'active ingredients' when designing intervention (Michie et al 2009; Michie, Abraham et al 2011; Michie & Johnston 2012). For example, if it is identified that someone's *BELIEFS ABOUT CONSEQUENCES* of their current behaviour are likely to be a key mechanism for change, then intervention would likely want to incorporate ***2.7 Feedback on outcome of behaviour***. A number of proposals for how specific BCTs map onto specific theoretical domains have been developed, based on expert consensus among behaviour change researchers (Abraham, Kok, Schaalma & Luszczynska 2011; Abraham & Kools 2012; Cane et al 2014; Michie et al 2008; Michie et al 2014). In an attempt to use the BCT taxonomy and TDF within the field of Occupational Therapy (OT), Kolehmainen & Francis (2012) propose that these mapping exercises currently function as a useful resource for generating *hypotheses* about causal relationships between intervention content and possible mechanisms of change, rather than providing definite answers about how BCTs work. These hypotheses can be further explored and refined with reference to behavioural theory and existing evidence relating to the behaviour in question, and the range of intervention components being considered.

3.5 Conclusions

This chapter has provided an overview of the existing literature on conversation therapy and compensatory strategy training which provide the background to BCA therapy. In addition, it has illustrated the need for a well-specified theory of change for conversation therapy. Reviewing the field has identified both gaps in understanding, as well as under-researched assumptions about how therapy supports speakers to do things differently in conversation. It has also shown that while the theoretical perspectives on which BCA draws may support the assessment of conversation, and the structure of learning activities, existing theory is not able to adequately account for how conversation change is produced.

Key theoretical concepts and tools from behaviour change research have been introduced here, and a case has been made for their potential contribution to the field of conversation therapy. In order to further explore the notion of conversational behaviour change, the next chapter reframes the conversation therapy literature in relation to the theoretical frameworks presented here. Reframing existing knowledge in this way provides a starting point for the rest of the thesis, by identifying what is currently known and unknown about the determinants of the conversational behaviour targeted by BCA, and by identifying the evidence for possible mechanisms of change and active ingredients within therapy.

4 Literature Review Part II: Exploring Conversational Behaviour Change

This chapter returns to the literature on conversation therapy, and also looks to findings within the literature on training communication skills in non-clinical populations. A preliminary attempt is made to organise and interpret existing information according to the concepts and tools suggested by behaviour change research. Section 4.1 aims to reframe evidence and opinion within the conversation therapy literature about what affects conversational behaviour according to the necessary conditions of OPPORTUNITY, CAPABILITY and MOTIVATION suggested by the COM-B model. It will also review evidence for which of these determinants may undergo change during therapy in order to produce conversational behaviour change. Section 4.2 looks to expand on this existing knowledge about conversational behaviour change, by considering evidence from related fields about determinants and mechanisms of change in communication. Finally, Section 4.3 considers the reported active ingredients of interaction-focussed therapies, and reviews the evidence for them in relation to behaviour change.

4.1 What Determines Conversational Behaviour?

Taken as a whole, the literature on conversation therapy offers limited systematic analysis or description regarding the factors that determine the interactive behaviours speakers use in response to aphasia in conversation. Nonetheless, many papers make informal suggestions about the kinds of influences they believe may have a bearing on speakers' behaviour, and represent factors that mediate or determine the effects of therapy.

This section reviews this information and organises it according to the COM-B model, noting similarities and differences in the way the behaviour of PWA and CPs is accounted for, and also in how barriers and facilitators are accounted for.

4.1.1 Determinants Relating to OPPORTUNITY

OPPORTUNITY encompasses all external influences that limit or enable an individual's behaviour. This is an important theoretical concept for conversation therapy's treatment of PWA behaviour, as it is clear that the core rationale for CP training is the qualitative finding that CP behaviour can constrain or facilitate PWA participation and strategy use in conversation (cf. Beeke et al 2011; Beeke, Beckley et al 2014; Simmons-Mackie & Kagan 1999). The hypothesised mechanism underpinning many CP training programmes is therefore that change to PWA conversational behaviour will follow on as a result of changes to their interactive environment.

There is little other dedicated research into the environmental variables affecting PWA behaviour; however, transferable insights can be gleaned from the field of high tech AAC. Lasker & Bedroisian's AAC Acceptance Model (2001) for adults with acquired communication difficulties maps out the core determinants of AAC use, including a range of factors relating to the 'Milieu'. The concept of Milieu is similar to OPPORTUNITY and incorporates physical factors such as the location of use (e.g. work vs. home), as well as social factors such as nature and function of the conversation, and the behaviour and attitudes of communication partners in relation to the use of AAC.

In terms of CPs, little has been reported regarding the environmental variables that may affect their own behaviour in conversation. However Turner & Whitworth (2006a, 2006b) suggest that therapy outcomes for both partners may be influenced by external social factors such as the status of their relationship. Meanwhile, evidence from Lock (2005) suggests that CP attempts to use new strategies can also be constrained by the behaviour of the PWA, e.g. when their partner is not willing to engage in conversation. This highlights the self-evident, but still important point for trained strategies to be used after an intervention, speakers must have the social opportunities to do so.

4.1.2 Determinants Relating to CAPABILITY

CAPABILITY refers to the psychological and physical skills involved in producing behaviour. Underlying ability has long been known to be a key determinant of PWA behaviour in conversation. In the aphasia literature, PWA use of strategies is primarily accounted for in terms of skills and impairments, rather than social or attitudinal factors. In particular, strategy use in context has been shown to be more strongly predicted by executive functioning skills than by language function (Frankel, Penn & Ormond-Brown 2007; Penn, Frankel, Watermeyer & Russell 2010; Purdy & Koch, 2006; Ramsberger & Rende 2002). This finding suggests effective and timely strategy use may be especially linked to determinants within the domains of *BEHAVIOURAL REGULATION* - which represent the cognitive skills that support self-monitoring, planning and initiating strategy use in context - and *MEMORY, ATTENTION & DECISION PROCESSES* - which represents focussing attention towards a problem, and selecting between different courses of action.

Other aspects of CAPABILITY affecting strategy use have been proposed to include the 'effort' required to use a strategy, the knowledge about when to use it (Blom-Johanssen, Carlsson, Östberg & Sonnander 2012), and the psychological awareness of the need to use a compensatory strategy (Lasker & Garrett 2006). These comments again suggest that aspects of attention, monitoring and self regulation are expected to be engaged when PWA are

producing strategies in context, but also indicate a role for supporting speaker *KNOWLEDGE* about what to do when.

In terms of the underlying mechanisms of change within compensatory strategy training, the discussion in Section 3.1.2 (p42) has already highlighted that many typical programmes aim to change PWA *SKILLS* at conveying communicative information with a gesture, or drawing. The assumed hypothesis here is that improved proficiency will lead to use in context. However it has also been highlighted that this is not always the case, and that the generalisation of improved skills to use in context is variable. An additional mechanism is implied in Lustig & Tompkins (2002, see p43). Here, change in strategy use is proposed to result from the speaker's increasing recognition of situational cues about when to use writing. This approach appears to be targeting enhanced *BEHAVIOURAL REGULATION* in order to bring about change in context. The likely contribution that executive function skills such as attention, self-monitoring and planning make to communicative success have led Ramsberger (2005) to hypothesise that conversational skills in aphasia may be improved by working directly on cognition. The author presents some preliminary evidence to suggest that subsequent improved performance on attention and executive function tasks correlates with improved transactional success during conversation. So, while developing PWA *SKILLS* to carry out strategies effectively may be an important foundation for conversational success, accumulated evidence suggests that changing the use of strategies in context may also rely on enhancing aspects of *BEHAVIOURAL REGULATION* and *MEMORY, ATTENTION AND DECISION PROCESSES*.

Compared to the PWA literature, aspects of CAPABILITY influencing CP conversational behaviour and its change are rarely discussed. Nonetheless Simmons-Mackie et al's Recognition Training (2005) (see Section 3.3, p49) does indicate that enhancing a CP's recognition of barrier behaviour, and in some cases providing a replacement behaviour, can successfully lead to behavioural change. This evidence again indicates that heightening speakers' attention and self-regulatory focus on target behaviour may be an important mechanism for change, particularly when combined with increasing knowledge about what specific changes to make. Mechanisms relating to *BEHAVIOURAL REGULATION, MEMORY, ATTENTION & DECISION PROCESSES,* and *KNOWLEDGE* therefore appear to be relevant for both CPs and PWA, and across barriers and facilitators.

SPPARC and BCA propose that behavioural change is linked to the mechanism of raising awareness of behaviour (Beeke et al 2011; Lock et al 2001; Wilkinson et al 2010). However it is not clear to what extent the concept of awareness in this context is shared with the mechanism reported in Simmons-Mackie et al's Recognition Training (2005), or to what extent it may instead refer to a process of re-evaluating the function of conversational behaviour,

therefore representing some form of change to MOTIVATION for behaviour, rather than to CAPABILITY for behaviour.

4.1.3 Determinants Relating to MOTIVATION

MOTIVATION is a complex influence encapsulating a person's conscious expectations about their own ability, about what is important and what is socially appropriate, and about what will work in a given situation. It also incorporates the less conscious effects of personal outlook, identity, emotions and associations.

For PWA, there is little evidence relating to how these factors may influence strategy use. However, Lustig & Tompkins (2002) and Simmons-Mackie & Damico (1997) suggest that PWA perceptions about whether a strategy will be appropriate in a specific social context may influence usage. Whilst Gillespie, Murphy & Place (2010) find that many PWA anticipate negative reactions from others in response to their aphasia. These papers indicate that *SOCIAL NORMS* and *BELIEFS ABOUT CONSEQUENCES* could play a role in PWA strategy use. Lasker & Bedroisian (2001) highlight how beliefs about AAC may motivate or constrain the acceptance and use of a high tech device, for example a person's attitude towards communicating without speech, or their perceptions of the effectiveness of a device or strategy. While this literature certainly suggests aspects of MOTIVATION may have a role in whether or not compensatory strategies are used, there are no known reports of PWA beliefs in these areas being systematically targeted in intervention as a pathway to behavioural change.

For CPs, the influence of 'attitudes', 'motivation' and 'personality' are often referred to in the literature as being relevant both to the interactive behaviour they use in conversations, and to their ability to benefit from intervention (Simmons-Mackie & Kagan 1998; Sorin-Peters 2004; Turner & Whitworth 2006a, 2006b). In particular, CP beliefs about aphasia and communication are presumed to have an important determining role in how these speakers manage aphasia in conversation (Sorin-Peters 2003, 2004; Blom-Johnassen et al 2012; Turner & Whitworth 2006a, 2006b). Simmons-Mackie & Kagan (1998) suggest that CPs "who believe people with aphasia are competent...are more likely to structure their talk to reflect this belief" (p818). Generic research on attitudes of spouses towards their partner with aphasia has indicated that spouses are more likely to have negative perceptions of their partner than matched controls (Croteau & Le Dorze 2001; Zraick & Boone 1991). How such perceptions might influence CP behaviour in conversation is not entirely clear, but the assumed significance of CP attitudes towards aphasia has lead to the regular inclusion of education about aphasia in many CP training programmes (see Simmons-Mackie et al 2010; Wilkinson & Wielaert 2012). The implied mechanism for conversation therapy is that changed attitudes and understanding of aphasia will lead to changed behaviour during conversation. Evidence for this assumption is rarely collected, and in

one instance where data have been collected for both change in conversation, and change in understanding about aphasia (Lock 2005) there is no indication that the two outcomes are related.

Turner & Whitworth (2006b) collected data from a focus group of SLTs about their perception of what key CP attitudes were associated with good candidacy in CP training. The findings indicated that clinicians felt the CPs most likely to have good outcomes from therapy were those who already viewed conversation as a collaborative act, who valued the social function of conversation, and who accepted the PWA's current communication. What is noteworthy about this list – as the authors point out – is that in identifying these attitudes as pre-requisites for successful therapy, clinicians are assuming that such beliefs are *not* in fact something that can be changed by therapy. The implication here is that therapy will not act to change CP beliefs about conversation and aphasia, but instead that it works by enabling appropriately motivated CPs to access new information and knowledge that will fit with their pre-existing beliefs and values. This finding may reflect more about how SLTs perceive the content of conversation therapy, and their professional remit, than it does about the actual mechanisms operating within therapy to create change.

Moving from broad CP beliefs and attitudes towards aphasia and conversation, to the specific MOTIVATIONS that underpin the conversational behaviour, evidence from Rautakoski's (2011) questionnaire study has generated insights into CPs' own perceptions of the strategies they use to manage aphasia. The primary reason indicated by CPs for using strategies was to help repair a communicative breakdown, followed by a wish to support PWA understanding and expression of language. Meanwhile, Gillespie et al (2010) also found evidence that CPs often employed behaviour they felt would help or protect the speaker with aphasia. This suggests that *BELIEFS ABOUT THE CONSEQUENCES* of specific behaviour, and in particular how the behaviour is expected be helpful for some preferred outcome, may be a core influence for CPs acting to manage aphasia in conversation. These studies also provide evidence of the conversational outcomes or *GOALS* oriented to by CPs, e.g. resolving breakdowns, protecting or helping their partner, and supporting their expression.

There is evidence from Lock (2005) about the limiting effect from negative *BELIEFS ABOUT CONSEQUENCES* on the use of facilitative strategies. For example, CPs report avoiding the use of trained facilitators on the basis they do not expect the strategy to be effective, or even that that they believe it to be actively inappropriate (Lock 2005, p150). Furthermore, it is important to note that CP beliefs about what strategies might 'help' may well include barriers as well as facilitators. Booth & Swabey (1999) suggest that some CPs employ correcting or testing behaviours during conversations in the belief that they are supporting PWA language

production, whilst Aaltonen & Laakso (2010) hypothesise that these behaviours may be attempts to involve and stimulate PWA participation in conversation, or to protect PWA from the threat to face of making linguistic errors.

The SPPARC mechanism of raising awareness of behaviour to enable change is linked by Lock et al (2001) to facilitating CPs to evaluate and choose existing behaviour that is useful and they wish to keep, as well as identifying behaviour that they wish to change. This suggests that raised awareness in the context of interaction-focussed therapies may primarily be a mechanism for addressing speakers' *BELIEFS ABOUT THE CONSEQUENCES* of their behaviour, as a way to create the motivation for change. While this appears to be most relevant to challenging the use of barriers, some CPs have reported finding the reassurance and validation provided during therapy relating to existing facilitative behaviour to be valuable (Booth & Swabey 1999; Lock 2005). This indicates the potential of therapy to create positive subjective change in how CPs perceive and value their own skills for managing aphasia in conversation, which can be conceptualised as a strengthening of self efficacy, or *BELIEFS ABOUT CAPABILITIES*.

4.1.4 Conclusions: Determinants of Conversational Behaviour and its Change

The conversational behaviour of PWA, and in particular their use of compensatory strategies, is largely accounted for in the literature in terms of underlying ability, and the interactive opportunities afforded to them by their CPs. Little is known about how the complex aspects of MOTIVATION may influence PWA use of strategies. In the therapy literature, it is commonly hypothesised that change to PWA strategy use will be achieved via change to the *SOCIAL INFLUENCES* limiting strategy use (i.e. the behaviour of CPs), or change to the PWA *SKILLS* for performing the required strategy. However evidence suggests that strategy use in context may often be determined by the speaker's executive functioning skills, suggesting that the domains of *BEHAVIOURAL REGULATION* and *MEMORY, ATTENTION AND DECISION PROCESSES* may also be important areas to direct intervention towards. Although there are some exceptions, at present the reporting of intervention for compensatory strategies does not typically focus on how therapy supports PWA to attend to and recognise opportunities to use trained strategies, suggesting that this is currently an under-utilised mechanism for changing use in context.

In contrast, CP behaviour is usually accounted for in terms of speaker attitudes towards aphasia, and change is often addressed by aiming to increase CP understanding about aphasia and conversation. Change to the use of specific behaviour is hypothesised to be linked to increasing speakers' awareness of their own behaviour. In some contexts raising awareness may mean targeting 'recognition' of barrier behaviour, in order to support speakers CAPABILITY to monitor and inhibit their use of barriers (cf. Simmons-Mackie et al 2005). It others, raising awareness may mean supporting speakers to re-evaluate the impact of their behaviour,

change their opinion about what is useful conversational behaviour, and thereby create the MOTIVATION to make changes.

Little distinction is made in the literature between the influences that shape barriers versus facilitators, or the mechanisms for changing them. It appears that currently, the same treatment processes are expected to work in an equivalent way for both types of behaviour, and certainly the evidence discussed here suggests that aspects of *BEHAVIOURAL REGULATION* and *MEMORY, ATTENTION & DECISION PROCESSES* are relevant across both behaviours. However there is some evidence to suggest that the process of re-evaluating existing behaviour may engage different change mechanisms depending on whether the behaviour is a barrier or facilitator. So for example, amongst barriers, re-evaluating a behaviour may bring about a change in *BELIEFS ABOUT CONSEQUENCES*, whereas re-evaluating a facilitator may act to strengthen *BELIEFS ABOUT CAPABILITIES* for managing aphasia in conversation.

As the fields of conversation therapy and compensatory strategy training do not have a tradition of drawing on theoretical concepts from behaviour change research, the information within the literature about the determinants of conversational behaviour and its mechanisms of change is unlikely to be comprehensive. Furthermore the information reported here varies greatly as to the level of evidence it is based on. For this reason, the next section turns to the wider literature on training communication skills.

4.2 Changing Communicative Behaviour in Other Fields

While Speech & Language Therapy has yet to draw on psychological theories of behaviour to analyse and describe communication in context, related fields such as communication skills training for medics and AHPs, and English as a Foreign Language (EFL) learning have a more established tradition of evaluating the evidence for determinants of communicative behaviour, and their role as potential mechanisms of change.

For example, in a study of EFL learners' use of social and compensatory strategies and their preferences for learning tasks, Yang (1999) demonstrates a positive significant correlation between learners' self efficacy as communicators and their use of social strategies, such as asking others to slow down, or repeat themselves. This finding provides evidence of an association between a speaker's confidence about their ability to communicate in English, and their use of compensatory strategies when encountering communication breakdowns. At the very least this suggests that the concept of self efficacy may be relevant to consider further in terms of PWA strategy use.

This concept of self efficacy is well known in the broader literature on stroke rehabilitation (see www.bridges-stroke.org.uk; Jones, Mandy & Partridge 2009; Jones & Riazi 2011; Scobbie, Dixon & Wyke 2011) as well as that of communication skills training for medics (Ammentorp, Sabroe, Kofoed & Mainz 2007; Gulbrandsen, Jensen, Finset & Blanch-Hartigan 2013). Its role as a mechanism for communication change is explored in the Gulbrandsen et al (2013) study into the effects and mechanisms of communication skills training for medics. Prior to training, no correlation was found between medics' communicative self efficacy and their objectively measured use of facilitative behaviours in consultations. This meant that the *accuracy* of the medics' perceptions about their communicative skills was poor. Intervention therefore not only targeted all round improvement to self efficacy for communicating with patients, but also their skills at accurately evaluating the usefulness of their own behaviour. Post-intervention evaluation found that the strength of clinicians' communicative self efficacy increased after training, and was now positively correlated with their objective use of facilitative communicative behaviours. This finding lends support to the idea that self efficacy plays a role in developing new communicative behaviours, and holds potential value as a mechanism of change in training. This study also illustrates that speakers may hold positive *BELIEFS ABOUT THE CONSEQUENCES* of existing communicative behaviour which may not be justified. This lends support to the role of awareness-raising during communication training as a mechanism for enhancing speakers' knowledge about their existing behaviour, and for changing their beliefs about the usefulness of that behaviour.

Returning to the Yang (1999) study of EFL learning behaviour, a second key finding was that there was a significant correlation between learners' preferred learning activities and their beliefs about what aspects of spoken English had the most value. The learners who held strong beliefs about the value of accurate pronunciation regularly engaged in formal repetitive practice such as spoken drills, in preference to activities that drew on the functional and communicative uses of English. The finding that learners' priorities for communication shape their learning preferences has transferable implications for conversation therapy, and aphasia therapy more generally. Turner & Whitworth (2006b) have already suggested that CPs who value accurate spoken production over interactive efficiency would be unlikely to be considered good candidates for conversation therapy. Therefore it seems plausible that, like the EFL learners in Yang's study, CPs and PWA whose communication priorities, or *GOALS,* lie with the production of accurate speech may find it hard to see the value of social approaches like BCA.

Finally, one recent study into communications skills training for Allied Health Professionals (AHPs) sheds some light on the determinants of ongoing strategy use following intervention

(Tinati, Lawrence, Ntani, Black, Cradock, Jarman, Pease, Begum, Inskip, Cooper, Baird & Barker 2012). This paper follows up AHPs working in Sure Start Children's Centres who had received training three months previously on communication strategies to facilitate problem solving with families. Using interview and rating scale data, the authors explore the factors enabling or limiting the use of trained strategies. AHPs using the strategies reported that they found them easy to implement, and relevant and beneficial for the clients they worked with. Those not using the new strategies reported the key barriers were environmental, for example down to a lack of time, or that the type of conversations staff were having did not lend themselves easily to the techniques. This suggests that the determinants supporting change related to speaker MOTIVATION for new strategies, i.e. the speakers believed the strategies to be relevant to their professional GOALS, and they had positive *BELIEFS ABOUT CAPABILITIES* to implement them, and positive *BELIEFS ABOUT CONSEQUENCES* of doing so. Meanwhile, aspects of OPPORTUNITY could operate to prevent the use of trained strategies. However, the authors interpret these findings with reference to psychological theory, highlighting the known tendency in self report to attribute success to factors relating to the self, whilst attributing failures to external circumstances (Weiner 1986). And in addition, that barriers to action are unlikely to be solely environmental, and instead incorporate aspects of cognition and skill as well (Bandura 1997). Drawing on these principles, the authors re-examined the data and hypothesised that differences in use among staff could be accounted for in terms of differing perceptions about professional role, differing beliefs about the benefits of the strategies, and differing levels of self efficacy for using the techniques.

4.2.1 Conclusions: Changing Communicative Behaviour in Other Fields

Research on communication training in non-clinical populations adds to the understanding of psychological factors which may determine communicative behaviour in context, and provides evidence for which of these may play a role in triggering or limiting any behavioural changes targeted by intervention. This research also expands current knowledge in conversation therapy, as its focus is primarily on evidence associated with the development of new facilitative behaviours, rather than the termination of barrier behaviours.

The evidence discussed here confirms a role for *BELIEFS ABOUT CONSEQUENCES* in determining the behaviour that speakers use, and for supporting the adoption of new behaviours. In addition these studies provide more concrete evidence for the role of communicative self efficacy, or *BELIEFS ABOUT CAPABILITIES*. Self efficacy appears to be important for initiating strategies to solve a problem, and also for supporting the implementation of newly-trained behaviours. There is some indication it may operate as a mechanism for change within training. Finally, the role of

GOALS and priorities for communication has been highlighted as a potential determinant of behaviour in conversation, and of candidacy in therapy targeting functional communication.

4.3 Looking for Active Ingredients in Conversation Therapy

This section will focus on the literature most relevant to BCA and its therapeutic content. Three key ingredients are frequently reported in the literature on interaction-focussed therapies: education, practice, and feedback, typically via video (Simmons-Mackie et al 2014 in press; Wilkinson & Wielaert 2012). These are considered in turn and where available, evidence for the effectiveness of these components is discussed. A final section highlights any other ingredients expected to play an active role in change via conversation therapy. All ingredients of conversation therapy will be considered in light of previous discussions about likely mechanisms of change.

4.3.1 Education

Wilkinson & Wielaert's (2012) summary of the content of interaction-focussed therapies shows that many contain information-giving activities focussed on providing general information about aphasia (see Beckley et al 2013; Booth & Perkins 1999; Lesser & Algar 1995; Lock 2005). Such activities are not clearly directed at behaviour and its change, and instead appear to target change to speakers' understanding of aphasia. It is not known whether change at this level is a mechanism leading to behavioural change, or if it represents an additional, distinct outcome of therapy in and of itself.

Education about conversation also plays a significant role in interaction-focussed therapies. Intervention may include provision of information about conversational repair (Booth & Perkins 1999; Lesser & Algar 1995; Lock et al 2001; Lock 2005), provision of advice on conversational strategies (Booth & Perkins 1999; Lesser & Algar 1995), and challenging unusual barrier behaviours - e.g. test questions - by providing information on normative behaviour in conversation (Wilkinson et al 2010).

The effectiveness of providing information within intervention has been considered within the research on communication skills training among healthcare professionals. On its own, giving information has not been shown to be effective for changing communicative behaviour (Barnes, Dunning & Rehfeldt 2011; Berkhof, van Rijssen, Schellart, Anema & Van der Beek 2011), nor has giving explicit instruction on how to carry out a desired communicative behaviour (Barnes et al 2011). The gap between 'knowing' what to do and 'doing' it is well-documented in the experimental literature (cf. Kennedy, Regehr, Rosenfield, Roberts & Lingard 2004), as is the gap between people's 'intentions' and their actions (cf. Sheeran 2002; Webb &

Sheeran 2006). This suggests that focussing on people's knowledge about conversational behaviour will not be an effective approach on its own. A systematic review of communication skills training for medics (Reinders, Blankenstein & Stewart 2011) has shown that the most effective training programs include multiple components, so in addition to providing information, training may need to incorporate the active practice of skills, feedback, and small group discussions about the use of skills.

4.3.2 Practice

SPPARC and BCA both include active practice of strategies within natural conversation and more structured activities. Suggested methods include practicing strategies within written exercises and group discussions (Lock et al 2001), role plays (Beckley et al 2013; Lock et al 2001; Wilkinson et al 2011), and in conversations between sessions (Beeke, Sirman et al 2013; Wilkinson et al 2011). Practices are often followed by some form of discussion (Beeke, Sirman et al 2013; Beckley et al 2013; Wilkinson et al 2011).

It is clear that experimenting with the use of facilitators in a purposeful, semi-structured context is expected to support speaker skills and confidence at implementing their chosen strategies. It seems possible that the activity of practice may incur a number of active ingredients designed to scaffold and cue target behaviour, though the precise nature and role of these are not clear from the information available.

However, the intended active content of the discussions that follow practices is hard to pinpoint. We know self-reflection is a key component of therapy, and is therefore likely to form a part of such discussions. However the specific focus of self-reflection and how it is expected to support speaker change is not clear. Beckley et al (2013) do suggest discussions should focus on the consequences of attempting strategy use. Nonetheless these discussions could plausibly extend to other important processes, for example positive reinforcement, feedback, self-evaluation, or identification of barriers to use, all of which would represent distinct behaviour changing techniques.

4.3.3 Video Feedback

Video feedback is frequently used as a tool in therapy and is viewed as particularly useful method for enabling speakers to identify their own barrier behaviours (Beckley et al 2013; Beeke et al 2011; Beeke, Sirman et al 2013; Lock et al 2001; Simmons-Mackie et al 2005; Wilkinson et al 2010). The role of feedback in language therapy for aphasia has already been shown to be multifunctional (Horton & Byng 2000; Horton 2008; Simmons-Mackie, Damico & Damico 1999) and it can be expected that the function and mode of feedback will vary in conversation therapy too. The BCT taxonomy itself contains a variety of different types of

feedback, for example making a distinction between feedback on behaviour, and feedback on the outcome of behaviour (Michie et al 2013). At present the exact nature of feedback within conversation therapy is not clear (Simmons-Mackie et al 2010).

In terms of effectiveness, we have so far seen that video feedback used in isolation from other methods can be successful for improving a CP's recognition of barrier behaviour. In the case of interrupting, it can in itself lead to a measurable change (Simmons-Mackie et al 2005), although this was not the case for the arguably more complex behaviour of test questioning. There is no equivalent evidence for the impact of video feedback on facilitators.

The impacts of other methods of feedback on communication behaviour change have been explored in a systematic review of the impact of patient feedback on doctors' communication. After patients had provided feedback to doctors about their communicative behaviour during consultations, there was evidence that the doctors' knowledge about their behaviour changed, and so did their intention to change their behaviour. However there was only very limited evidence of behavioural change in context (Reinders et al 2011). This again highlights the difference in knowing you need to change, and actually changing. It also gives weight to the ideas from behaviour change theories that in order to bridge this gap, intervention may need to better understand and engage the full range of determinants involved in performing the target behaviour.

4.3.4 Other Ingredients

The use of education, practice and feedback in conversation therapy appears to be primarily concerned with identifying different types of behaviour, and evaluating their impact on conversation. However there are a range of less frequently-reported therapy components which may be concerned with supporting speakers to make changes in context. For example, Beckley et al (2013) suggest that showing videos of barrier behaviours can also be used as a focal point for 'problem solving' and generating alternative actions to the ones seen on video (p224). Simmons-Mackie et al (2005) have demonstrated that advising a CP to use open ended questions in place of test questions led to an immediate decrease in this barrier, suggesting that identifying replacement behaviours can be an effective technique.

One further therapy ingredient directed towards strategy use in context is participants' selection of strategies that they want to actively practice (Beeke et al 2011; Beeke, Beckley et al 2014). This represents a form of goal setting, which is a process commonly associated with strengthening intention to change, and consistently found to enhance outcomes (Ajzen 2005; Locke & Latham 2002; Sheeran 2002; Siegert & Taylor 2004).

4.3.5 Conclusions: Active Ingredients in Conversation Therapy

Information on therapy content often appears to be brief, generalised and is likely to be selectively rather than systematically chosen for reporting. Reports tend also to emphasise the methods and tools used in activities over the underlying functions of the activities, for example, 'video' or 'discussion'. This review of active content has highlighted that these descriptive terms may in fact be concealing a number of active processes. It is also not clear that 'video', 'discussion' 'feedback' or 'education' can be taken to refer to the same process from study to study.

While a precise and comprehensive list of active ingredients in conversation therapy is not currently possible from the published literature, some key conclusions can be drawn from this review. Firstly, although not directly highlighted within the literature, it does appear that barriers and facilitators are being targeted with at least some different techniques. For instance, the use of goal setting and practice only apply to facilitators. Meanwhile video feedback and the identification of replacement behaviour appear to be more commonly used with barriers. This potentially indicates that different mechanisms of change are being addressed for the different types of behaviour.

Secondly, it appears possible that some aspects of the education components of therapy may not directly target specific behavioural change, but instead a broader process of adjustment to life with aphasia. Although clearly a beneficial component of any intervention in aphasia, discussions in this chapter and the last have highlighted that it is not at all clear that change in this area should be assumed to have a direct relationship to the change of conversational behaviour in context.

The final key conclusion is that most active ingredients are unlikely to operate successfully in isolation. Interventions that combine multiple techniques are more likely to be effective for changing communicative behaviour, and this may possibly reflect the need to target change to a number of different interlinked determinants, including for example committing to make a change, knowing what to do, knowing when to do it, and then doing so skilfully.

4.4 Conclusions

Reframing existing knowledge about conversational behaviour and its change according to concepts from behaviour change research has shown that these frameworks can be coherently applied in order to organise and interpret existing evidence, and furthermore that concepts from theories of behaviour can be relevant to conversation therapy.

This chapter has shown that aspects of CAPABILITY, OPPORTUNITY, and MOTIVATION may be expected to be relevant to the behaviour of both PWA and CPs in conversation. However it has also highlighted that we currently have more information about the impact of CAPABILITY and OPPORTUNITY for PWA behaviour than about MOTIVATION, while the reverse is true for CPs.

Although little explicit distinction is made in the literature between how barriers and facilitators are treated in therapy, this review suggests that different intervention procedures are currently emphasised for different types of behaviour. It is also suggested that the relevance of the theoretical domains *BELIEFS ABOUT CAPABILITIES, SKILLS*, and *BELIEFS ABOUT CONSEQUENCES* will vary depending on whether change is sought to barriers or facilitators.

This chapter has also highlighted the need to better understand the role of *BEHAVIOURAL REGULATION* and *MEMORY, ATTENTION & DECISION PROCESSES* in conversation change, and furthermore how therapy can seek to harness and support these potentially important aspects of CAPABILITY.

This thesis aims to flesh out the evidence for the specific determinants that may influence the use of barriers and facilitators among both CPs and PWA, and furthermore identify which of these are most active in changing behaviour via therapy. The MRC guidelines (2008) have recommended that new research be carried out when an intervention's theory of change is underdeveloped. Furthermore, qualitative methodologies are viewed as particularly useful for mapping the range of determinants associated with a target behaviour, and for fleshing out the key details of the most relevant determinants for enabling change (Abraham & Kools 2012; Campbell et al 2007; Fishbein et al 2001; French et al 2012; Islam, Tinmouth, Francis, Brehaut, Born, Stockton, Stanworth, Eccles, Cuthbertson, Hyde & Grimshaw 2012). The next chapter provides information on the qualitative methods and the data used in the investigations that follow.

5 Methods

This thesis seeks to identify and describe the range of potential determinants which underpin and shape the conversational behaviour used to manage aphasia, and to generate exploratory hypotheses about BCA's change mechanisms and active ingredients. This investigation is novel in that it represents the first attempt to systematically explore these questions in relation to psychological theories of human behaviour and its change.

Table 3 below offers an overview of the four studies included in this thesis, and indicates the method and data type used.

Table 3. Overview of Methods Used in Each Study

	Focus of Investigation	Method	Data
Study 1	Conversational Behaviour	Qualitative - Framework Analysis	Assessment, therapy and interview data
Study 2	Changing Conversational Behaviour	Qualitative - Framework Analysis	Therapy and interview data
Study 3	Therapy Content	Therapy Coding Quantitative Evaluation of Coding Reliability	BCA therapy materials
Study 4	Therapy Content	Qualitative - Framework Analysis	Interview data

A qualitative approach has been chosen for three of the studies, on the basis that qualitative methods are acknowledged to have a unique value for research that aims to open up a new field of study (Fitzpatrick & Boulton 1994). Furthermore, the use of qualitative methods are recommended when developing intervention theory and when exploring why people behave the way they do (Abraham & Kools 2012; Campbell et al 2007; Fishbein et al 2001; French et al 2012; Islam et al 2012; Pope, Van Royen & Baker 2002).

The aims and the specific research objectives that guide the qualitative investigations of Study 1 (Chapter 6), Study 2 (Chapter 7) and Study 4 (Chapter 9) are presented in Table 4 for reference. The data and analytic procedures used in these studies are detailed in this chapter. Study 3 evaluates the content of the BCA intervention by coding therapy according to the BCT taxonomy (Michie et al 2013). The research objectives, data and procedures for coding, and for establishing the IRR of coding are described within Chapter 8.

Table 4. Qualitative Research Objectives Guiding Studies 1, 2 and 4

Thesis Aim	Study (Chapter)	Qualitative Research Objective
Identify and characterise the factors that determine and shape the conversational behaviours used by speakers to manage aphasia	**Study 1 (Chapter 6)**	To identify the range of factors reported by participants as promoting or constraining their use of conversational behaviour
Identify possible mechanisms by which BCA creates change	**Study 2 (Chapter 7)**	To identify the personal factors that participants report during and after therapy as having supported or limited their conversational behaviour change
Identify a core group of 'active ingredients' within the BCA programme and explore how they may be delivered Identify aspects of the BCA programme which have potential to be further optimised	**Study 4 (Chapter 9)**	To identify the ingredients of the BCA therapy programme perceived to support or hinder change, as reported by participants

The concept of 'conversational behaviour' is core to all four studies carried out for this thesis. This chapter therefore starts by briefly outlining what this term should be taken to mean. The chapter then goes on to describe the participants, and the nature of the data used in this research, including how it was collected, and how it was screened and transcribed for analysis. Then, the process of data analysis is described, first by providing background information on the Framework Analysis method that is used throughout the thesis, and then secondly by providing detail on how the method has been applied to code, organise and interpret the data.

5.1 Defining Conversational Behaviour

The term 'conversational behaviour' is used here as shorthand for any behaviour or strategy used by CPs and PWA in response to the interactive problems caused by aphasia. This includes the barrier and facilitator behaviours specifically targeted for change by BCA, and also any other idiosyncratic behaviours used.

This definition, and its emphasis on how people respond to problematic events in conversation, has been developed with reference to the interdisciplinary definition of behaviour first discussed in Section 3.4.2 (p52) of the Literature Review and reproduced here for reference:

> *[Behaviour is:] "Anything a person does in response to internal or external events. Actions may be overt (motor or verbal) and directly measurable, or covert (activities not viewable e.g. physiological responses) and indirectly measurable; behaviours are physical events that occur in the body and are controlled by the brain"*
>
> ***(Hobbs, Campbell, Hildon & Michie 2011, quoted in Michie & West 2013, p6)***

The definition of conversational behaviour used in this thesis does not include the way in which aphasia itself surfaces in conversation, e.g. in the form of linguistic errors, incomplete turns, perseverations, or where the aim of a turn is unclear. This means that many of the problems with turn-taking associated with PWA (see Handout 4.2 "Common problems with turn-taking in aphasia" in Appendix 3) are not considered to be barrier *behaviours* even though they may function as barriers to successful conversation. Conversational behaviour in this thesis also does not include generalised social behaviour, e.g. making jokes, making requests etc, *unless* these are occurring as a response to a conversational event caused by aphasia. Sequences of conversation that are jointly produced are also excluded from this study's definition of conversational behaviour, on the basis that they do not represent the actions of a single individual. This encompasses conversational features typically of interest within CA, such as repair sequences and topic development.

Evaluating behaviour as being either a barrier or a facilitator to conversation is an important organising concept with BCA, and this thesis will continue to categorise individual behaviours according to these behaviour types. For a fuller discussion of barrier and facilitator behaviour please refer to Section 2.2.1 (p26) and Sections 3.1.1 (p36) and 3.1.2 (p42). A list of behaviours frequently targeted by BCA is provided for reference in Appendix 1, whilst Appendix 3 includes the Handouts 4.3 "Turn-building strategies for the person with aphasia" and 5.4 "Good turn-taking strategies to use with your partner" from which participants select facilitative strategies to practice, as well as 4.2 "Common problems with turn-taking in aphasia" and 5.1 "Partner's turn-taking", designed to help them identify barriers in conversation (though again, please note many of the barriers included in Handout 4.2 are not considered to be 'conversational behaviour' according to the definition discussed above).

5.2 Participants

This research focuses on 16 of the 18 participants originally recruited to the BCA evaluation project (Dyads 1, 2, 3, 4, 5, 6, 7 and 9). As part of the original BCA project, written consent was sought from all 18 participants for the videotaping of their conversations and all assessment and therapy sessions, and for using these data in future research and teaching. One couple (Dyad 8) did not consent to the use of their videos beyond the timescales of the original project, and did not respond to requests regarding a follow-up interview by the current author. They were therefore excluded from the research for this thesis. It should also be highlighted that Dyad 9, who terminated therapy half-way through the programme, and therefore are not included in the evaluation of BCA, were happy to take part in a follow-up interview and for their videos to be used in future research, and so *have* been included in this analysis. Theirs is

a reduced dataset. Further details on missing data are provided in Section 5.4.2 (p86) of this chapter.

Table 1 on the next page is reproduced from Chapter 2 and provides biographical details about the participants to the current research project. Known outcome data for these participants appears in Chapter 2 - see Table 2 (p32).

Table 1. Details of Participants

Dyad No. & PWA pseudonym	*Age at recruitment*	*Months since onset of aphasia (at time of 1st session)*	*Previous employment*	*CP pseudonym and relation to PWA*
Dyad 1: Kate	49	33	Jazz singer	Shelley (twin)
Dyad 2: Simon	39	30	Own business	Cath (wife)
Dyad 3: Giles	55	59	Senior sales manager	Linda (wife)
Dyad 4: Graham	63	60	Hospital manager	Alex (partner)
Dyad 5: Jill	57	39	Cashier at bookmakers	David (son)
Dyad 6: Barry	60	17	Gardener/book illustrator	Louise (wife)
Dyad 7: Maggie	71	40	Deputy head teacher	Christina (daughter)
Dyad 9: Bob	67	48	Graphic designer and musician	Irene (wife)

5.3 Description of Data

The data used for this thesis are selected from the archive of data originally collected for the main BCA evaluation project. The re-use of existing data according to new research questions is sometimes called 'secondary analysis', and is recommended by the Economic and Social Research Council (ESRC) as a means of maximising the impact and use of collected data. However using previously-collected data does raise some issues which are now addressed.

One concern when using existing data for a new line of enquiry is the potential 'lack of fit' between the data and the research questions, especially as data were unlikely to have been collected with the research aims of the secondary investigation in mind. However, in a review of the methodological issues associated with secondary analysis, Hammersley (2010) points out that this issue is not especially unique to secondary analysis, given that it is common for the focus of any research project to evolve from the areas of interest which originally guided data collection. Ensuring the relevance and suitability of the data to the new questions

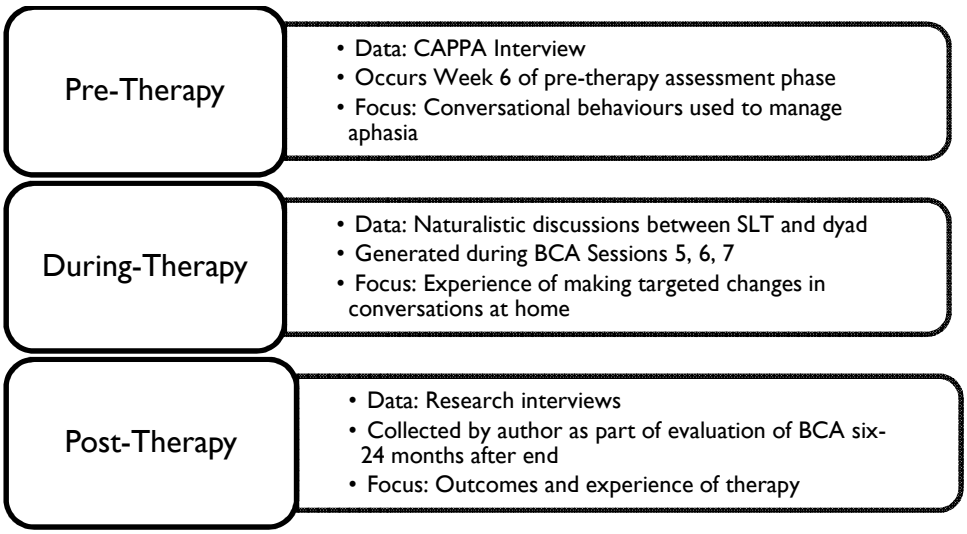
therefore relies on an appropriate procedure for filtering and selecting existing data for the best fit (Hammersley 2010; Irwin & Winterton 2011).

Among some qualitative researchers, a further concern has been raised about the analysis of data by researchers who were not present during collection. This especially may be an issue when the context in which the data were produced is expected to be integral to its interpretation. The severity of this problem will depend on the procedures and aims of the qualitative enquiry (Hammersley 2010; Irwin & Winterton 2011; Moore 2006). So while it may be inappropriate for secondary researcher to analyse ethnographic field notes, for which the relationships and knowledge of the original researcher are central to interpretation, this may be less of an issue when handling data collected during interviews, which stand as an independent body of evidence (Irwin & Winterton 2011). Furthermore, when the goal of enquiry is theoretical development, Irwin & Winterton (2011) suggest that distance from the production of data is not a significant issue, and in fact may even enable new insights. As the aims of this thesis lie with drawing general conclusions about conversational behaviour change, rather than specific interpretations about the social context within which data were produced, analysing data where the current researcher was not present is not expected to be problematic.

The selection of data from the BCA project archive was guided by the aim of generating the broadest account of conversational behaviour change available. The availability of video recordings of assessment and therapy sessions meant it was possible to use data sources from across the time span of the project - before, after and during therapy - thereby enabling a unique perspective on the process of change. The chosen data sources represent three different types of interaction with participants - assessment, therapy, and research interview - and are taken from three different time points - pre- during- and post-therapy, respectively. The use of different types of data in the analysis helps counter any potential imbalance or overemphasis that may be created by the context of one particular type of interaction (Mays & Pope 1995).

A summary of the nature of data, when they were collected and what their focus is, is provided on the next page in Figure 5. Sections 5.3.1, 5.3.2 and 5.3.3 provide detailed information about the nature of the data and how they were collected. Section 5.4 describes how data were screened for relevance to the research objectives, and adequacy for qualitative analysis. A summary of the amount of data transcribed for analysis is provided in Table 8 in Section 5.4.4 on p87.

Figure 5. Summary of Data Type and Collection Point



5.3.1 Pre-Therapy Data

Pre-therapy data consist of an assessment interview carried out jointly with the PWA and CPs, which focuses on problems and behaviour in the dyad's conversation. The interview is taken from Part A of the CAPPA assessment (Whitworth et al 1997). It was carried out by the research SLT who went on to deliver BCA, as part of the assessment battery used with participants (see Chapter 2, Figure 2, p30 for details). The assessment was carried out twice pre therapy and twice post therapy. Only the first interview, occurring in Week 6 of the eight week pre-assessment phase, was considered for qualitative analysis on the basis that participants would be 'new' to the interview questions at this point, whereas in later repetitions speakers' responses would be more likely to be influenced by their knowledge of the interview format.

The CAPPA assessment usually lasted for about an hour and a half. It was video recorded, and these data were subsequently stored in CAVA, UCL's human Communication Audio Visual Archive (http://www.ucl.ac.uk/ls/cava) as PA6 (Pre-therapy Assessment 6).

The participant reports generated in Part A of the CAPPA were judged to be of potential interest as this section of the interview aims to identify what difficulties regularly arise in a dyad's conversations, what speakers do in response to these difficulties, and how this behaviour then affects the conversation. The interview carried out for the BCA project had a fixed format of 21 questions. This represented a streamlined version of the full CAPPA interview, which originally contained 26 questions. Questions felt to be less relevant to the main project were eliminated for the purposes of economy. The remaining 21 questions covered four topic areas: Linguistic Abilities, Repair, Initiation and Turn-taking, and Topic Management. An example question is provided in Figure 6 below, where F stands for

'frequently', O stands for 'occasionally' and N stands for 'never', and the severity rating used in part (c) runs from 0, representing no problem, to 2 representing a significant problem.

Figure 6. Example CAPPA Question

Linguistic Abilities: Question 5			
Do you sometimes have to struggle to get the sounds out in a word?	F 2	O 1	N 0
(a) How does your partner deal with this?			
(b) What happens when s/he does this?			
(c) How much of a problem for you is that you sometimes struggle to get the sounds out?	0	1	2

The first question and part (c) are intended to establish ratings of how often a particular issue occurs, and how much of a problem it is perceived to be. Parts (a) and (b) are intended to generate qualitative information about how speakers respond to problems. Clinicians carrying out the interview are encouraged to be flexible, and are expected to omit or adapt questions both according to their relevance to speakers, and in order to support the involvement of speakers with aphasia.

5.3.2 During-Therapy Data

During the main BCA project, video recordings were made of each of the eight therapy sessions by the research SLT delivering BCA (see Figure 1, p28 for structure of therapy). This offers the current research the unique possibility of analysing feedback from participants about the experience of changing their behaviour at a time point where this is still an ongoing process.

During-therapy data has previously been used to explore the enactment of therapy practices by SLTs, and the displays of 'engagement' by PWA within the process of therapy (Beckley et al 2013; Horton 2008; Horton & Byng 2000; Horton et al 2010). However the use of therapy data as a direct source of information about the thoughts, feelings and experiences of participants whilst they are engaged in a process of change is new. It is acknowledged that therapy interactions are qualitatively different to research interviews, and that not all therapeutic activity is appropriate for generating unbiased accounts of participants' own experiences of conversational behaviour change. BCA session plans were therefore screened in order to identify therapy activities with the best potential to generate participant-led accounts of conversational behaviour change which would be suitable for qualitative analysis. Four discussion-based activities were subsequently identified. The description of these activities is provided in Table 5, and can be found in context within the session plans in Appendix 2. For

further details of the home activity, refer to homework handout "Turn-taking in conversation: A chance to practice some strategies" (Appendix 3).

Table 5. Discussion-Based Therapy Activities Used in During-Therapy Dataset

Session	Description of Therapy Activity in Session Plan
Session 5	Review home activity
Session 6	Review home activity
Session 7	Review home activity
	What do you remember about strategies? • For PWA to build a turn • For CP to respond to PWA's turn Do you think you have been using these over the last few weeks in your daily conversations? If not, why not?

Three of the activities identified represent discussion-based reviews of homework agreed in the previous session (See Table 5 "Review home activity" in Session 5, 6, and 7). This homework consists of speakers attempting to make changes in practice conversations at home and then reflecting on the experience using a handout ("Turn-taking in conversation: A chance to practice some strategies", see Appendix 3). In Session 5, the review discussion is focussed on the PWA's experience of attempting change. In Session 6, the review is focussed on the CP, and in Session 7 it is directed at both speakers. In addition to these three discussions, Session 7 contains a broader review of participants' use of strategies over the course of therapy (See Table 5 "What do you remember about strategies?"). This was identified as a further activity with the potential to generate participant-led accounts of conversational behaviour change.

As Dyad 9 terminated therapy during Session 6, only two video samples containing relevant activities were available for analysis (Sessions 5 and 6). Their data do not include the two review activities occurring in Session 7. Data from Session 7 are also missing for Dyad 4, due to corruption of the digital file containing the video recording. All of the six remaining dyads had three video samples available for analysis, resulting in a total of 22 during-therapy video samples out of a possible total of 24. As Session 7 contains two of the four selected discussion-based activities, this meant that 24 activities were available for analysis out of a possible 28.

The length of these discussion-based activities varied greatly from session to session and from dyad to dyad. They typically lasted six to eight minutes, but could range from two minutes to 22 minutes. Issues concerning the quality and consistency of these data are discussed in Section 5.4.2.

5.3.3 Post-Therapy Data

Post-therapy data consist of research interviews designed and carried out by the current author. The interviews were carried out as part of the BCA evaluation project, primarily to gather feedback about participants' experience of therapy and self-reported outcomes. However additional questions were included to reflect this author's own interests in the experience of change and the aspects of therapy that had supported this process.

Interview questions were developed by the current author and refined following discussion with the BCA project team. The finalised interview guide is presented for reference in Appendix 4. Interviews took place six to 24 months after participants had finished the final post-therapy assessment phase of the project. Interviews were initially intended to be carried out separately with the PWA and CP, with some final questions for joint discussion (see Appendix 4). However not all PWA wanted to be interviewed alone. Table 6 below details which participants were interviewed jointly and which were interviewed alone. Interviews typically lasted for about an hour, with the shortest lasting 47 minutes and the longest one hour and 15 minutes. All were audio recorded.

Table 6. Post-therapy Interview Procedure

Dyad 1	Together
Dyad 2	Separately, then together
Dyad 3	Together
Dyad 4	Together
Dyad 5	Separately, then together
Dyad 6	Together
Dyad 7	Separately, then together
Dyad 9	Together

The interview was directed at uncovering participants' genuinely held perspectives on BCA, and was therefore largely carried out in accordance with the questioning style recommended for typical research interviews. In these interactions, the interviewer's questioning style must be open-ended and neutral; question design that risks influencing the content of participants' responses should be avoided, as should interpretive comments about what participants have said (Britten 1995). Closed questions should also be avoided as the aim is to probe areas of interest for the maximum range of detail (Britten 1995). However, strict adherence to this style has been shown to generate very little information when used with PWA (Luck & Rose 2007). Consequently specific modifications to these techniques were used during post-therapy interviews, as recommended by Luck & Rose (2007). These include offering a closed choice of possible responses to PWA where needed, and interpretively paraphrasing PWA contributions in order to confirm the interviewer's understanding of what has been said (Luck & Rose, 2007). In joint interviews, every effort was made to corroborate and elicit views from the PWA

directly, and to counter the impact on data quality from CPs speaking 'for' PWA and providing their own accounts of their partner's views (Croteau, Vychytil, Larfeuil & Le Dorze 2004; Croteau & Le Dorze 2006).

5.4 Screening and Transcribing Data

It was expected that not all the data identified for analysis would be relevant to the research aims and objectives of this thesis. Furthermore, it was unknown whether the pre-therapy and during-therapy datasets would be adequate for qualitative analysis, given that neither represented a typical research interview. There was therefore a risk that participant reports would lack sufficient detail, or could be influenced by the interactive style of the research SLT.

Prior to transcription, these datasets were therefore screened for relevance and for quality. This process is described below, as is the resulting strategy for transcription.

5.4.1 Pre-Therapy Data

In order to screen the CAPPA data, the author viewed two of eight video recordings of the interviews (25% of full sample), choosing two dyads selected at random. In accordance with the research objective for Study 1 (see Table 4 on p76 in this chapter), notes were made on which of the interview questions generated relevant information about factors promoting or constraining conversational behaviour.

This screening exercise confirmed that the CAPPA interview did generate relevant information about factors influencing conversational behaviour. Furthermore it demonstrated that the interview techniques used to elicit the views of participants during the CAPPA were consistent with the conventions of a qualitative research interview.

Screening also highlighted that not all the topics covered by the interview were of interest to the current research objectives. For example, the sections of the CAPPA focussed on broad conversational issues such as Topic Management, and Initiation and Turn Taking did not consistently generate information relating to the specific barrier and facilitator behaviours used by participants. Furthermore individual questions in the Linguistic Abilities section (e.g. Question 6 about PWA use of referents), and the Repair section (e.g. Question 12 about PWA comprehension problems) also did not appear to generate information about these behaviours.

Analysis was therefore focussed on a subset of CAPPA questions that consistently generated qualitative information about the factors promoting and constraining conversational behaviour. Five questions from the Linguistic Abilities section (out of a total of seven used by

BCA), and three questions from the Repair section (out of a possible four) were selected for analysis, these are detailed in Table 7 below.

The author then made an orthographic transcription of the qualitative responses generated in parts (a) and (b) of these questions for all dyads (see Figure 6, p81, for question structure). The process of rating the frequency and severity of the conversational problem was not transcribed, or analysed. Furthermore, responses were omitted from transcription when participants reported that the conversational feature under discussion was not relevant to them. Details of which dyads reported back on which conversational features are also contained in Table 7.

Table 7. CAPPA Questions Transcribed for Data Analysis

Question Number	Question Focus	Dyads identifying problem area as relevant to their conversations
Linguistic Abilities		
Question 1	Do you struggle to find the right word when you are talking and have to give up?	All (D1, D2, D3, D4, D5, D6, D7, D9)
Question 2	If you can't find the right word, do you describe what you are talking about or use a longer way to get your message across?	All (D1, D2, D3, D4, D5, D6, D7, D9)
Question 5	Do you sometimes have to struggle to the sounds out in a word?	D1, D3, D5, D6, D7, D9
Question 8	Do you miss out words in sentences so that your speech can sounds like a telegram?	All (D1, D2, D3, D4, D5, D6, D7, D9)
Question 10	Do you sometimes produce long speech which doesn't make sense as a whole, even though each word is clear?	D2, D3, D4, D7
Repair		
Question 13	When you make mistakes in your speech do you pick up on them and try to correct them?	All (D1, D2, D3, D4, D5, D6, D7, D9)
Question 14	When you try to correct mistakes in your speech, do you manage to correct them without help?	D1, D2, D3, D5, D6, D7, D9
Question 15	Can you make your speech more specific if your partner can't understand you?	All (D1, D2, D3, D4, D5, D6, D7, D9)

The resulting transcripts are three to five pages long (see Table 8 in Section 5.4.4, p87 for a complete breakdown of transcript length per dyad per dataset). The research therapist carrying out the interview appears in transcripts as SLT, speakers with aphasia appear as PWA and their partners as CP.

5.4.2 During-Therapy Data

In order to establish the relevance of the within-therapy discussions to the aims of this thesis, and identify any issues compromising the research quality of the data generated, the author viewed six of the 22 video samples (27% of the total). Two samples were viewed for each relevant Session (5, 6 and 7); dyads were selected at random. During viewing, notes were made on the qualitative research objectives for Study 1 and 2 (see Table 4, p76), relating to the factors affecting the use of conversational behaviour, and the factors affecting its change. Notes were also made on the interaction between the SLT, the CP and the PWA and on how this affected participant responses.

This screening exercise demonstrated that the discussions had potential to generate detailed and unique insights into speakers' perspectives on their behaviour and their experience of behaviour change. However it also demonstrated that the nature of this therapy interaction had some substantial differences to that of a research interview. Firstly, although the review discussions were informally directed towards uncovering participants' perspectives, the same range of views were not systematically probed or asked for. This means the depth of information generated during these discussions is inconsistent across the dataset. Secondly, CPs had a tendency to report back on their partner's strategy use for them. Direct confirmation or elaboration from the PWA was sometimes sought out, but again this was not part of a systematic approach. Consequently, the quality of PWA data is variable. Finally, although much of the SLT questioning style was appropriate for eliciting participant-led perspectives, SLT contributions were also inevitably driven by the therapeutic agenda to provide advice, support and make suggestions in line with therapy aims. This means that leading questions and interpretive comments do occur, and at times these appear to influence and shape subsequent responses from participants, rendering them unsuitable for analysis.

In order to ensure the quality of analysis and minimise the impact of these interactional issues on the during-therapy data, an explicit strategy for data analysis was developed. This is outlined in Section 5.7 (p95).

All activities were transcribed verbatim by the author using the naming conventions mentioned above in Section 5.4.1 (p84). For the sake of efficiency, transcription omitted any long asides occurring during discussion that were not directly relevant to conversational behaviour, as well as any therapeutic advice or clarification sequences initiated by the SLT that lasted more than one to two turns. Summaries of omitted asides were noted in the transcript for reference. The resulting transcripts are between three to eight pages in length; see Table 8 in Section 5.4.4 (p87) for a breakdown per dyad.

5.4.3 Post-Therapy Data

Post-therapy interviews were transcribed verbatim, and in full, by the author, in preparation for inclusion in the main BCA project archive. The author carried out these interviews, rather than the research SLT, and so is referenced in the transcripts as R (researcher). Other naming conventions remain the same.

The eight resulting transcripts ranged from nine to 15 pages long, see Table 8 below for a breakdown per dyad. Much of this interview data was not relevant to the aims and objectives of the current thesis. However as the interviews had already been transcribed in full, filtering of the content took place during analysis, rather than during a prior phase of screening and transcription. The procedures for coding and analysing these data are described within Section 5.6 (p90).

5.4.4 Summary of Data for Analysis

Table 8 below summarises the quantity of transcribed data prepared for analysis. The pre-therapy dataset is the smallest, and the unfiltered post-therapy dataset is the largest. The average number of pages of transcribed data per dyad is 21 (median), with a range from 15 to 26 pages.

Table 8. Transcribed Data for Analysis per Dyad and Data Source

	Pages of Transcribed Data			
	Pre-therapy	**During-therapy**	**Post-therapy**	**Total Pages**
Dyad 1	4	8	10	22
Dyad 2	4	5	12	21
Dyad 3	4	7	15	26
Dyad 4	3	8	8	19
Dyad 5	4	6	12	22
Dyad 6	3	3	9	15
Dyad 7	5	7	8	20
Dyad 9	4	4	13	21
Total Pages	**31**	**48**	**87**	**166**

5.5 Procedure: Framework Analysis

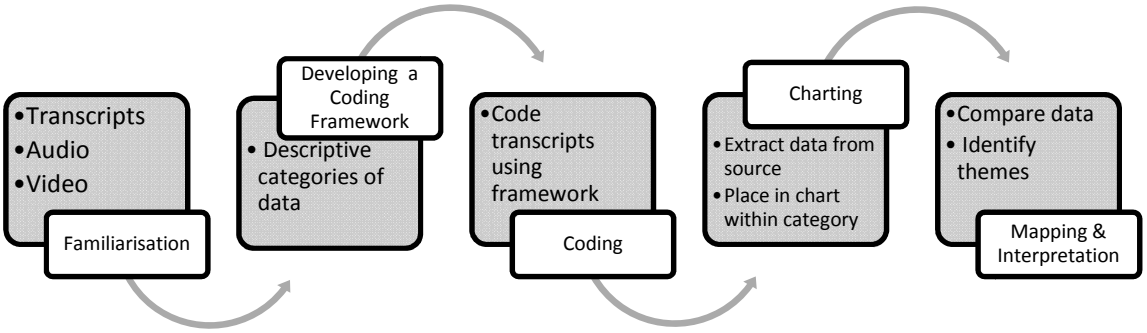
The specific methodological approach used by this thesis is Framework Analysis (Ritchie & Spencer 1994; Srivastava & Thomson 2009). The Framework methodology was developed by the National Centre of Social Research (www.natcen.ac.uk), specifically to support the needs of applied research. This means that, unlike the open-ended or immersive approaches to qualitative research which actively avoid setting a priori areas of interest (ethnographic research or grounded theory, for example), Framework is designed for research with pre-set aims and objectives (Pope, Ziebland & May 2000). It is therefore particularly suited for the

evaluation of intervention – see Wade, Mortley & Enderby (2003) for an example in aphasia therapy - or where research aims to explore key aspect of a phenomenon, e.g. the factors involved in maintaining behaviour changes following intervention (Penn, Moffatt & White 2008). Relevantly, the method also has a precedent in socially-motivated aphasia research (Parr, Byng, Gilpin & Ireland, 1997) and, in particular, in evaluating the participant experience of conversation therapy for aphasia (Lock, 2005).

Framework provides a clear and systematic approach to managing and analysing data. This is valuable as the quality and rigour of qualitative research relies on the transparency of the research process. The procedures for analysis should be sufficiently clear to enable readers to judge the validity of the link between the original data and its analytic interpretation, and to provide an 'audit trail' which in principle could be followed by another researcher to generate essentially the same conclusions (Mays & Pope 1995, 2000; Fitzpatrick & Boulton 1994).

The five step process of analysis is outlined in Figure 7 below. A description of each step follows in the subsections below.

Figure 7. Five Step Process in Framework Analysis, based on Ritchie & Spencer (1994)



5.5.1 Familiarisation

In the initial stages, the researcher repeatedly examines the original data sources, and makes note of any recurring themes related to the research aims and objectives, e.g. here 'reasons not to use compensatory strategies'.

5.5.2 Developing a Coding Framework

Coding frameworks are used by the researcher to identify, extract and organise salient aspects of the data. Drawing on the aims and objectives of the research, and any new themes

emerging from the data, a descriptive framework is drawn up and piloted with a subsection of transcripts. The categories within the framework should be a pragmatic reflection of the key issues in the data, e.g. 'reason for behaviour' rather than an interpretive or evaluative category e.g. 'preference for speech'.

5.5.3 Coding

Next, transcripts are coded using the descriptive framework. This is to identify similar 'units of meaning' within the text. It should be noted that conceptual units of meaning are not confined by word length. For example, a person's reason for behaviour may be encapsulated in just a few words, or it may stretch over a long portion of text.

5.5.4 Charting

Charts are developed to enable the researcher to collate similar types of data in one place, whilst still keeping track of the participant from whom the data comes. Rows of data represent individual participants, whilst columns represent the category that data has been coded under e.g. reason for behaviour.

Coded data is extracted from its original source, and placed in a chart. For ease of data management, quotes from the transcripts may be summarised. Although quotes are no longer verbatim, care is taken that summarised quotes remain as close to the original words and meaning as possible.

Software packages such as NViVo (www.qsrinternational.com) are commonly used to develop charts. These enable a direct link to be maintained between the original transcripts and the summarised data in the charts.

5.5.5 Mapping and Interpretation

Framework Analysis is directed at describing the *range* of phenomena within a dataset. The aim therefore is to identify and define analytic 'themes' which are able to comprehensively represent the nature and the types of relevant meanings found within a coding category, e.g. the range of reasons people behave as they do. Framework is not a numerically oriented method, and it is not designed to provide meaningful information on the frequency or strength of identified phenomena. The numbers of speakers associated with an analytic theme are less important than the conceptual distinctiveness of each theme from others, and how accountable the theme is to the data it represents.

Interpreting the meanings within the data relies on the process of 'constant comparison' (Mays & Pope 1995). All data collected under a coding category are compared against each other for similarity and difference. The researcher is looking for data items that share

fundamental features and which may represent a similar phenomenon, e.g. the same sort of reason for behaviour. The shared feature identified across a group of similar data items forms the basis of an analytic theme. For example, within the data collected under 'reasons', a researcher may notice that some participants report avoiding or abandoning behaviour they think will be judged negatively by others. A theme, or 'reason for behaviour', representing this type of data may therefore be 'concern about perceptions of others'. Data are constantly being re-evaluated for their 'fit' within an interpretive theme and items of data which do not fit are used as challenges to the researcher's emerging accounts of the data. Attention to these so-called 'deviant cases' is crucial to ensuring the quality of the analysis and its accountability to the data (Mays & Pope 1995). It is expected that themes will be reconfigured and refined throughout the analysis in order to generate the most representative account of the data.

As well as aiming to represent the range of meaning in a dataset, the process of analysis should also seek to identify and define its major features in relation to the main aims of the research. Themes themselves are compared against other themes, in order to identify and distil the most analytically important shared features across a wider range of data. Overarching themes, and the subthemes from which they are derived, are represented in hierarchical frameworks, which are the key output of analysis.

5.6 Applying Framework Analysis to the Current Data

Data analysis followed the steps set out by the Framework method, as described in Section 5.5 (p87). The coding and analysis of data was guided by the qualitative research objectives of Studies 1, 2 and 4. These research objectives are reproduced for reference in Table 9 below. The full aims of the thesis can be found in Section 1.1 (p20), and Table 4 on p76 in this chapter. The latter also details how the thesis aims link to the qualitative research objectives of each study.

Table 9: Objectives of Qualitative Analysis for Each Study

Study 1	To identify the range of factors reported by participants as promoting or constraining their use of conversational behaviour
Study 2	To identify the personal factors that participants report during and after therapy as having supported or limited their conversational behaviour change
Study 4	To identify the ingredients of the BCA therapy programme perceived to support or hinder change, as reported by participants

A coding framework was developed in order to capture information relevant to these research objectives. Detail on the development of this framework is provided in Section 5.6.1. This

includes coding criteria and examples of how the framework was applied to the data. Section 5.6.2 outlines how different coding categories were used to extract qualitative data for the analyses of Study 1, 2 and 4.

5.6.1 Developing and Applying a Coding Framework

The coding framework developed to identify and extract relevant data from the transcripts is provided in Figure 8 below.

Figure 8. Qualitative Coding Framework Applied to Pre- During- and Post-Therapy Datasets

1. **Pre-Therapy Data**
    - Contexts for Using/ Not Using Conversational Behaviour
    - Reasons for Using/ Not Using Conversational Behaviour
2. **During-Therapy Data**
    - Contexts for Using/ Not Using Conversational Behaviour
    - Reasons for Using/ Not Using Conversational Behaviour
    - Personal Factors Hindering/ Supporting Conversational Behaviour Change
3. **Post-Therapy Data**
    - Contexts for Using/ Not Using Conversational Behaviour
    - Reasons for Using/ Not Using Conversational Behaviour
    - Personal Factors Hindering/ Supporting Conversational Behaviour Change
    - Therapy Ingredients Supporting Change
    - Therapeutic Barriers to Change

The coding category Contexts for Using/ Not Using Conversational Behaviour refers to any influence on conversational behaviour external to the speaker e.g. what other people do, or how the environment influences behaviour. Reasons for Using/ Not Using Conversational Behaviour refers to any influence on conversational behaviour internal to the speaker e.g. thoughts, feelings and priorities. Both of these categories were applied to data from all three time points.

Personal Factors Hindering/ Supporting Conversational Behaviour Change refers to all internal factors relating to the experience of attempting change to conversational behaviour, e.g. aspects of personal outlook, attitudes, cognition or skill affecting the process of changing behaviour. This coding category is very broad. Initial attempts to subdivide it into smaller groupings were abandoned as it became clear that pre-defining subtypes of personal factors in the data led to overly interpretative decisions about the meaning of the data before the true analysis had started. This category was only applied to the during- and post-therapy data as experiences of change were not expected to be relevant to the pre-therapy data.

Therapy Ingredients Supporting Change and Therapeutic Barriers to Change apply to speakers' perceptions of the content of therapy. 'Ingredients' is intended to capture components of the therapy programme perceived to be beneficial, with the potential to activate change to conversational

behaviour, whereas 'Barriers' refers to any factors inherent within the therapy programme that participants perceived as limiting their potential to benefit. These categories were only applied to the post-therapy dataset as this was the only data source where participants actively reflected on therapy content.

The categories in this framework were developed through repeated viewing and listening to the data sources and re-reading of the transcripts. The usefulness, and the validity, of the framework for capturing all relevant data from the transcripts was established through piloting its use among researchers from the wider BCA project team during a 1 hour workshop. Five researchers were introduced to the aims and methods of the analysis, and each were asked to apply the coding framework to a portion of a transcript. Each participating researcher was given a different transcript to code, in order to road test the use of the framework with data from different time points. The researchers then compared their coding decisions and queries in pairs, before feeding back to the author.

Whilst this exercise showed that the framework was able to consistently identify relevant data from transcripts, it also highlighted some difficulties in selecting which coding category best described relevant stretches of data, and in knowing how narrow or broad the focus of coding should be. This showed the need for a greater level of specification to guide the coding process. Based on this feedback, and in response to some of the issues compromising the quality of data within the during-therapy dataset, the following explicit criteria for coding transcripts were developed:

- Coding must pertain to a specific conversational behaviour or behaviours. Data relating to wider aspects of conversation or aphasia should not be coded.
- Data must represent a speaker's own account of their behaviour. Any comments or speculations about a speaker's behaviour made by another speaker, e.g. their partner or the therapist, will be excluded.
- PWA minimal responses to leading questions or comments by the SLT or CP will not be coded on the basis that it is not clear these represent the PWA perspective.
- PWA accounts can sometimes be difficult to interpret outside of the interactive context in which they are produced. So: where another speaker provides a paraphrase of a PWA's previous turn, and the PWA confirms this, this paraphrase will be taken to be an accurate representation of the PWA's own account.

The following sections provide examples to illustrate how these criteria are applied during coding in order to ensure a focus on conversational behaviour (Section 5.6.1.1), and to ensure the quality of the data, especially in relation to PWA contributions (Section 5.6.1.2).

5.6.1.1 Coding Examples I: Ensuring a Focus on Conversational Behaviour

The exchange below is an example of data that could be included for coding, as they relate to a specific conversational behaviour (here: saying 'I don't understand').

R: What's the main thing you remember about the therapy?

PWA: Um. um. (long pause) no

R: What about you Alex?

CP: Um. The things I was doing wrong. I used to say 'I don't understand what you're saying' and then I saw the video back and realised the impact of what that actually means when you say to someone I don't understand.

Excerpt from Post-therapy Data: Dyad 4

Here, "realising the impact" was coded as a Personal Factor Hindering/ Supporting Conversational Behaviour Change, whilst "watching the video back" was coded as a Therapeutic Ingredient Supporting Change.

However, the next example, representing another possible Personal Factor Hindering/ Supporting Change could not be included in analysis as it was not sufficiently focused on conversational behaviour, and instead related to managing aspects of stroke more broadly:

CP: I think `cos we understood more about the impact of the stroke, which actually knocked both our moods down didn't it? Insight. Or whatever word. Yeh. And we weren't prepared for that.

Excerpt from Post-therapy Data: Dyad 4

5.6.1.2 Coding Examples II: Ensuring Quality of Data

The next examples highlight some of the interactive issues that are particularly apparent in the during-therapy data, and which risk compromising the analysis if included. The below example from Dyad 5 shows a potential PWA Reason for Using/ Not Using Conversational Behaviour (i.e. feeling calm) that was not coded as it represented a CP's perspective on PWA behaviour, rather than the PWA's own account.

SLT: So, how have you been getting on? With your strategies.

PWA: yeah, tomorrow

CP: As long as mum's calm enough, it's fine

Excerpt from During-therapy Data: Dyad 5

Similarly, the next extract illustrates a potential PWA Context for Using/ Not Using a Conversational Behaviour (i.e. having space in conversation) which also cannot be coded, this time on the grounds that it is heavily led by the SLT. Here, there is insufficient confirmation coming from the PWA to be able to confidently code the SLT's comment as being in line with the PWA's view.

SLT: That's it, the keywords.

PWA: The words, yeah.

SLT: Cause then if David's [the CP] *doing a bit less, then you've got space to do a bit more.*

PWA: Oh. Yeah.

Excerpt from During-Therapy Data: Dyad 5

In contrast, the next example shows a codable exchange involving a PWA with similarly limited language. Here a PWA is talking about the experience of therapy, while the researcher and the CP use paraphrases and open questions to help build and check his meaning. The resulting extract has been coded as an accurate representation of a PWA's opinion, and the reported difficulty understanding therapy has been analysed as a Therapeutic Barrier to Change.

PWA: Mm. Hard. And what??

CP: Yeah, what's it all about.

R: You found it quite hard to get your head round

PWA: Yeah yeah

CP: Why d'you find it hard?

PWA: Hard. And woo. And bang bang bang (gesturing to temples)

R: It gave you headaches?

PWA: (nods)

CP: It did.

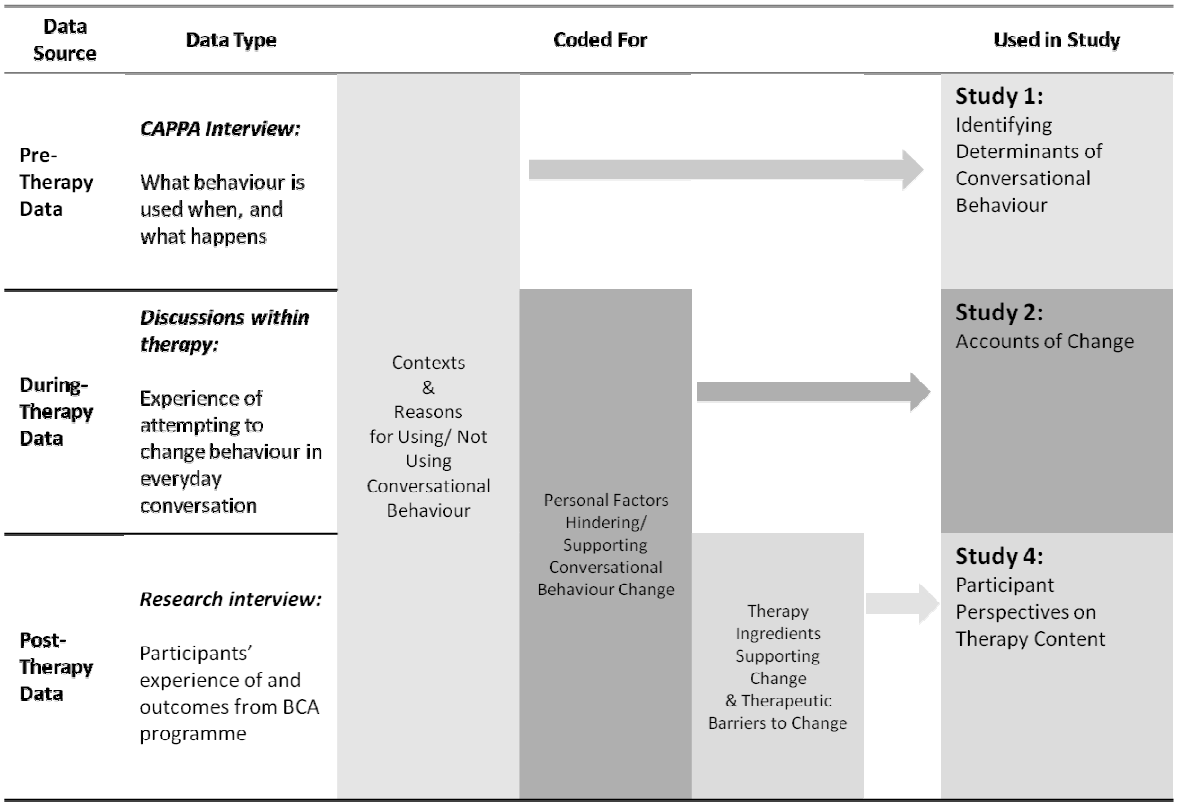
Excerpt taken from Post-therapy Data: Dyad 4

5.6.2 Linking the Coding Framework to the Analysis Chapters

The coding categories Contexts for Using/ Not Using Conversational Behaviour and Reasons for Using/ Not Using Conversational Behaviour were applied to data from all three time points: before, during and

after therapy. This formed the basis for the analysis in Study 1: Identifying Determinants of Conversational Behaviour (Chapter 6). The category Personal Factors Hindering/ Supporting Conversational Behaviour Change was applied to the during- and post-therapy data only. Analysis of these data is covered in Study 2: Accounts of Change (Chapter 7). The categories Therapy Ingredients Supporting Change and Therapeutic Barriers to Change were applied to the post-therapy interviews. Findings from this analysis are discussed in Study 4: Participant Perspectives on Therapy Content (Chapter 9). In summary, Figure 9 below provides an illustration of how the coding categories were applied to the three data sources, and how these contribute to the three chapters of qualitative analysis.

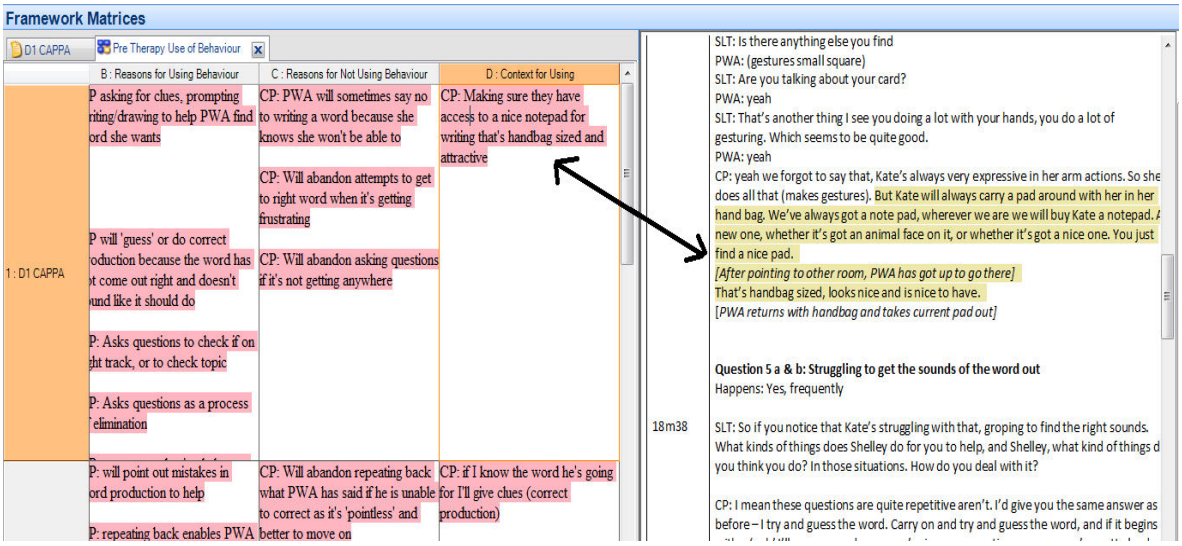
Figure 9. Mapping Data Sources to Qualitative Coding Categories and Analysis Chapters



5.7 Data Management and Analysis

Charts to manage and analyse the items of data extracted from the transcripts were developed using NViVo 10 – one for each time point within the data. To illustrate, Figure 10 shows the framework chart developed to manage the pre-therapy data, and shows how the data summaries within the chart are linked back to their original location in the transcripts.

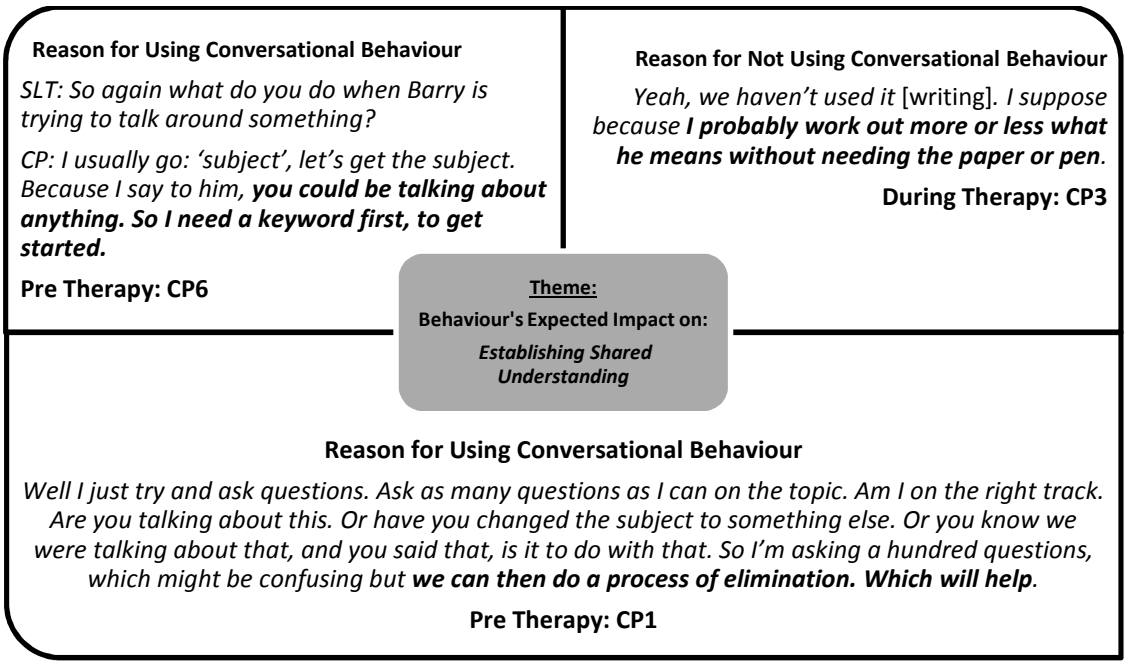
Figure 10. Pre-therapy Framework Chart



Data were analysed within each coding category according to the process of mapping and interpretation outlined in Section 5.5.5 (p89) and themes were developed to describe the full range of relevant phenomena occurring within the data. The process of developing thematic descriptions of the data was iterative. Emerging themes were continually compared against the items of data they were intended to represent, and also in reference to the original transcripts. At times this caused emerging interpretative groupings to collapse and be reconfigured.

To illustrate the process of analytic interpretation, Figure 11 below offers an example of how quotes extracted from the transcripts were deemed to have similar features, and grouped together under an analytic theme. The data here were all captured under Reasons for Using/ Not Using Conversational Behaviour. To aid navigation, the core Reasons coded within the data have been emphasised in bold. Comparison of these items of data and others suggested many behaviours were employed or abandoned on the basis of how speakers expected them to ***Impact on Establishing Shared Understanding*** in conversation. This not only provided a reason for speakers to use strategies that they believed would be effective (see CP1, CP6), but also be a reason not to use behaviour, when the behaviour which was not expected to make a useful contribution to shared understanding (see CP3).

Figure 11: Developing an Analytic Theme from the Data using Framework Analysis



This example can also be used to illustrate the development of thematic hierarchies. Expected ***Impact on Establishing Shared Understanding*** represents a mid-level theme, and a common feature shared across a wide range of data. These data are also usefully represented within smaller, more specific subthemes that offer further detail about the types of reasons guiding behaviour, for example that the behaviour is expected to *Help PWA get message across.* However, comparison across themes suggested that a behaviour's expected ***Impact on Establishing Shared Understanding*** was just one of several expected impacts on communication that guided a speaker's choice of behaviour. The overarching theme **Behaviour's Expected Impact on Communication** was therefore introduced to summarise and represent this major feature occurring within speakers' accounts of why they behaved the way they did in conversation.

5.8 Presentation of the Findings

The findings of the qualitative analysis described here will be presented in the form of thematic hierarchies that represent the data under discussion. These thematic hierarchies are also reproduced for reference in Appendices 5-8 and 11-12, alongside data grouped by theme. For the sake of space, and ease of reference, the data presented in the Appendices do not include the full quotes as they appear the data transcripts, but instead the shorter quote summaries that were placed in the charts during the data management stage. However the reports of findings during the following chapters will make use of full illustrative quotes that represent the analytic themes being discussed.

5.9 Chapter Summary

This chapter has provided details on the participants, and on the complex, retrospective dataset that is being used for this thesis. A full description of how each dataset has been prepared and coded for analysis has been provided. The method of Framework Analysis (Ritchie & Spencer 1994) has been outlined here, and detailed illustrations have been given about how this method has been applied to the current data. Details of how the datasets and coding categories link to the qualitative investigations of Study 1, 2 and 4 are provided in Figure 9, p91, and key methodological considerations when using a secondary dataset have been highlighted and addressed. Quality issues pertaining to these data have been identified, and explicit strategies for ensuring the quality, transparency and validity of the research process have been developed and presented here. The methods for Study 3, which are distinct from the qualitative process described in this chapter, are described in Chapter 8.

6 Study 1: Identifying Determinants of Conversational Behaviour

Theories of human behaviour propose that it is determined by the physical and social environment the behaviour is performed in, the attitudes, expectations and goals of the individual performing the behaviour, and the individual's cognitive and physical skills. Understanding the nature and relevance of these influences to a behaviour or behaviours of interest is a crucial first step in understanding how the behaviour may be changed via intervention (McEachen, Lawton & Conner 2010; Michie & West 2013). This study therefore seeks to identify key determinants of conversational behaviour. A definition of how the term conversational behaviour is to be understood is provided in Section 5.1 (p76).

Data from across the three time points will be analysed and themes will be developed to describe the range of factors participants report to be either driving or limiting their conversational behaviour, which therefore represent possible determinants. These qualitative findings will then be considered according to the organising concepts of OPPORTUNITY, CAPABILITY and MOTIVATION; the three overarching conditions that determine behaviour, as proposed by the COM-B model (Michie et al 2011, see Section 3.4.3, p52). Themes identified in the data will be compared against the theoretical domains presented in the TDF (Cane et al 2012, see Section 3.4.3, p52), a framework which streamlines theoretically-specified determinants from multiple behaviour theories. Mapping the findings of this study's analysis to theory will verify to what extent the concepts of behavioural theory are relevant to conversational behaviour. Identifying links with wider theory will also extend the credibility and explanatory power of the conclusions drawn in this study.

The research objectives for this chapter are:

- To identify the range of factors reported by participants as promoting or constraining their use of conversational behaviour
- To compare and map findings to theory

One of the overall aims of the thesis is to consider differences and similarities between barriers and facilitators, and between CPs and PWA. The discussion of findings will therefore also consider a comparison between the two behaviour types, and the two speaker groups.

Section 6.1 below provides brief information on specific issues relating to the methods and presentation of the analysis for this Study. Findings are presented in Sections 6.2 and 6.3, while Section 6.4 considers how these findings can be mapped to theory. Final conclusions of the study are addressed in Section 6.5.

6.1 Methods & Structure of Chapter

This study reports on the findings from analysing data captured by the coding categories Contexts for Using/ Not Using Conversational Behaviour and Reasons for Using/ Not Using Conversational Behaviour (see Section 5.6.1, p91). Data are taken from across all time points, i.e. before, during and after therapy. This is to enable the broadest and most comprehensive account of conversational behaviour available.

Transcripts were coded as representing a Context for Using/ Not Using Conversational Behaviour when participants referred to any environmental factors external to them that affected what they did, both positively and negatively. A Reason for Using/ Not Using Conversational Behaviour was coded when speakers provided an explanation for using or withholding a behaviour, e.g. in terms of attitudes, priorities, emotions or skill. See Section 5.6.1 (p91), for details of coding criteria. Coded portions of text within the transcripts were grouped together and analysed according to the procedures of Framework Analysis, as described in Sections 5.5 (p87) and 5.6 (p90) of the Methods Chapter.

The analytic themes developed to describe the range of Contexts for Using/ Not Using Conversational Behaviour reported in the data will be presented in Section 6.2, followed by Reasons for Using/ Not Using Conversational Behaviour in Section 6.3.

The hierarchy of themes and subthemes developed to describe the range of data captured by each coding category will be presented at the start of each section. The presentation of findings will refer to source data by summarising it in the text, but also by providing partial quotes and full illustrative quotes. Where this occurs, the speaker(s) from whom the data come will be referenced in brackets afterwards. Full quotes will be given a separate paragraph, whereas partial quotes will be presented in quote marks within the text. As discussed in Section 5.5.5 (p89), it should be remembered that analytic themes derived from just one speaker have equivalent value to a theme associated with many accounts. This is because the aim of this research is to identify the *range* of conceptually distinct determinants for conversational behaviour, not to measure the relative frequency or the strength of these determinants.

6.2 Contexts Determining Conversational Behaviour

This section presents the findings from the analysis of data captured under the coding category Contexts for Using/ Not Using Conversational Behaviour. The analytic themes developed to describe the data are listed in Figure 12 below, and represent the aspects of context identified in the data

as influencing speakers' behaviour. These are therefore proposed to represent determinants of conversational behaviour.

There are three main themes, which represent the overarching features of the data. Each theme contains a second level of subthemes, representing specific factors that promote or constrain conversational behaviour. References to the speaker from whom the coded data originate are provided in brackets after the subthemes.

For reference, Appendix 5 presents the source data for each theme. Data in the Appendices appear in the form of the summarised quotes, as used in the Framework charts. For more detail on this process, see Section 5.5.4 (p89).

Figure 12. Analytic Themes Representing Contexts for Using/ Not Using Conversational Behaviour

Contexts Determining Conversational Behaviour:

A Hierarchy of Analytic Themes to Represent the Data Captured by

Contexts for Using/ Not Using Conversational Behaviour

Physical Environment

- *Location* [PWA 1; CPs 2, 9]
- *Availability of resources* [CPs 1, 5, 9]

Social Situation

- *Opportunity for conversation* [PWA 2; CPs 2, 5]
- *Availability of time* [CPs 1, 3, 9]
- *Nature of the conversation* [CP 3]
- *The conversation partner* [PWA 2; CP 6]
- *Presence of other people* [CPs 3, 4, 6]
- *Humour* [CP 2]

Cues from Conversation

- *CP requests* [PWA 4, 5, 6]
- *PWA signals* [CPs 1, 2, 3, 5, 7, 9]
- *Absence of cues* [CPs 7, 9]

Section 6.2.1 below presents findings relating to the theme **Physical Environment**, Section 6.2.2 does the same for the theme **Social Situation**, and finally, **Cues from Conversation** is presented in section 6.2.3. A summary of contexts determining conversational behaviour is provided in Section 6.2.4. The similarities and differences for barriers and facilitators, and for CPs and PWA are discussed in this summary.

6.2.1 Physical Environment

Both CPs and PWA reported that the *Location* of conversations had a bearing on their use of facilitative strategies, both pre-existing and trained. Speakers perceived it to be more difficult to use paper and pen strategies in locations outside the home, for example shopping (PWA1), or on the bus (CP9). The level of noise in the environment was also cited as an influence on how much effort a couple put into resolving difficulties (CP2). This quote illustrates how aspects of the environment – in this case carrying bags - may make it more difficult to use strategies:

PWA: Saturday. You. Um. Bags. Um

SLT: Is this the shopping?

PWA: Yes yeah. NO.

SLT: You didn't want to have a go

PWA: No no no – yes yes. Writing – no.

SLT: What it didn't work? What none of it worked?

CP: You mean when we were out on Saturday?

PWA: We didn't try it

During Therapy: PWA1

[Appendix 5,* Physical Environment*: Location]

In addition, the *Availability of resources* in the environment was reported by CPs to be a factor influencing their support for PWA and the use of non-verbal strategies. Access to pen and paper had to be planned in advance (CP1, CP5), whilst a lack of relevant resources was a barrier to providing PWA with extra support (CP9).

6.2.2 Social Situation

As well as physical aspects of the environment, aspects of the social environment also emerged as influencing conversational behaviour. Self-evidently, dyads needed to have a regular *Opportunity for conversation* with each other for conversational behaviour to be used. Life circumstances such as a new baby (CP5) or the need for one partner to work (PWA2) were reported to constrain the use of trained behaviours after therapy.

Within conversations, the *Availability of time* for dealing with problems affected CPs' support for PWA. Having time enabled CPs to use extra supports, but being in a rush limited facilitative

behaviour (CP1, CP9). Likewise the *Nature of the conversation* influenced whether facilitative behaviours were used, as this quote shows:

> *If it's something I think is urgent or serious then I spend more time, do you know what I mean? But if it's just general conversation about something day to day, then we don't worry about it too much and get on with, go to something different.*
>
> ***Pre Therapy: CP3***
>
> ***[Appendix 5,* Social Situation*:* *Nature of the conversation*]**

PWA and CPs both observed that PWA use of compensatory communicative behaviours depended on *The conversation partner*. PWA2 remarked that it was easier with family members than with others, whilst CP6 observed the behaviour of untrained conversation partners would have an effect on PWA6's strategy use (CP6).

Similarly, the *Presence of other people* affected the amount and type of support CPs were able and willing to offer PWA. For CP3 and CP6, being in a group appeared to introduce a perceived element of 'pressure' which caused them to abandon facilitative behaviour they would otherwise use, as illustrated here:

> *I'll tell you when I do tend to give up and it's probably not good, is when we're with other people. And I get anxious. And Barry's looking at me and I'll say 'oh we'll leave it'.*
>
> ***Pre Therapy: CP6***
>
> ***[Appendix 5,* Social Situation*:* *Presence of other people*]**

CP4, however, reported deliberately using the barrier behaviour of cueing correct productions when in a group, in order to circumvent the perceived threat to his partner's time and autonomy from the presence of others:

> *CP: If it's within a group of people, and I know what it is, where it's important he has control – I might start the word off. Like 'Aus'-*
>
> *PWA: -Tralia*
>
> *CP: Yep. That sort of thing*
>
> ***Pre Therapy: CP4***
>
> ***[Appendix 5,* Social Situation*:* *Presence of other people*]**

Finally, during therapy, there was one instance of the role of *Humour* being cited as enabling strategy use:

But because we can laugh about it [i.e. trained strategy], *we're using it more. And it does work quite well.*

During Therapy: CP2

[Appendix 5,* Social Situation*: Humour]

6.2.3 Cues from Conversation

The third main theme describing data captured by Context for Using/ Not Using Conversational Behaviour relates to specific events in conversation that may cue the use of facilitative behaviour. PWA reported using strategies in response to *CP requests* to use a specific method of communication, as in this example:

CP: I'd say – write it. And then hand the paper

SLT: So what do you then do?

PWA: (mimes writing) Words

SLT: So you'd have a go at writing the words?

PWA: Yep yeah

Pre Therapy: D4

[Appendix 5,* Cues from Conversation*: CP requests]

Conversational events also determine CP behaviour. CPs report hanging back or employing supportive strategies in response to *PWA signals* in conversation, e.g. signs of trouble or effort, as this quote illustrates:

And if you are getting stuck, I know I'm going say – the first thing I'm gonna say, is you know, what's the point of labouring over a word you can't get out, and I might not understand what you're saying. Probably say, relax, think of another word. And that will be my automatic reaction to it.

During Therapy: CP1

[Appendix 5,* Cues from Conversation*: PWA signals]

Conversely, CPs report difficulties knowing that support is needed when these signals are absent. An *Absence of cues* from the PWA indicating difficulty may mean that CPs will not attempt the use of facilitators at appropriate moments, as the below quote illustrates:

All it needed was a yes or a no, because that's all I was really asking. But you didn't stop me at any point. If at that point you'd have gone 'um!' [...] I'd have gone into a bit more explanation.

During Therapy: CP9

[Appendix 5,* Cues from Conversation*: Absence of cues]

6.2.4 Summary of Contexts Determining Conversational Behaviour

Three main themes describe the range of contextual factors shaping participants' conversational behaviour: the **Physical Environment** of the conversation, the **Social Situation**, and the **Cues from Conversation**. Each of these themes includes subthemes detailing specific aspects of context.

These aspects of context appear particularly important for when and whether facilitators are used. To invest in the use of facilitators, speakers appear to have a preference for being at home, being alone with each other, and having adequate time and sufficient opportunities for conversation. The presence of other people appears to have a complex effect on behaviour, changing the perception of time available to get a message across, the inclination towards doing something extra, and the rationale for using certain behaviours. Intriguingly, the only report concerning barrier behaviour in these data relates to the use of correct production cues as a strategic counter to the impact of other people in conversation.

In terms of a comparison between PWA and CPs, Table 10 below shows how data from both speaker groups has contributed to each key theme.

Table 10. Comparison of CP and PWA Contexts Determining use of Conversational Behaviours

Context	PWA	CP
Physical Environment	✓	✓
Social Situation	✓	✓
Cues from Conversation	✓	✓

Although - perhaps inevitably - a broader range of subthemes were identified in the CP data, the main themes identified across each group's data are the same, suggesting that broadly the same aspects of context are relevant to both CP and PWA behaviour.

The validity of the analytic themes generated to describe these data is given support by their similarity to the variables of 'Milieu' identified within Lasker & Bedroisian's (2001) AAC Acceptance Model, which are shown to affect the uptake of compensatory communication aids. These include the physical location of AAC use, the social nature of the conversation AAC

is to be used in; and how the behaviour of communication partners can support or constrain the use of AAC.

6.3 Reasons Determining Conversational Behaviour

This section presents the findings of the analysis of data captured under the category Reasons for Using/ Not Using Conversational Behaviour. The analytic themes developed to describe the data are listed in Figure 13 on the next page, and as previously these are proposed to represent determinants of conversational behaviour.

The reasons participants gave for using or withholding conversational behaviour were complex and wide ranging. The resulting hierarchy of analytic themes reflects this complexity (see Figure 13). Six key themes represent the main features of the data. Most of these, but not all, contain further subthemes representing more specific features within the core theme. Data relating to one of the key themes, **Behaviour's Expected Impact on Communication**, is particularly wide-ranging. Four mid-level themes are used to represent and organise the subthemes in a meaningful way, thereby highlighting their common features. Unlike the previous data in Section 6.2 which were represented by a two-level hierarchy of themes, these data are represented by a three-level hierarchy.

Data associated with each theme can be found in Appendix 6. Conventions for presenting data remain the same (see Section 6.2, p100).

Figure 13. Analytic Themes Representing Reasons for Using/ Not Using Conversational Behaviour

Reasons Determining Conversational Behaviour:

A Hierarchy of Analytic Themes to Represent the Data Captured by

Reasons for Using/ Not Using Conversational Behaviour

Behaviour's Expected Impact on Communication

- ***Impact on Establishing Shared Understanding***
  - *Helps PWA get the message across* [PWA 1, 2, 4, 5, 6, 9; CPs 1, 4, 5, 6, 7, 9]
  - *Helps PWA understand CP* [CPs 4, 7]
  - *Helps CP work out what PWA is saying* [CPs 1, 2, 3, 4, 5, 6, 7, 9]
  - *Does not contribute to shared understanding* [PWA 3; CPs 1, 3, 4, 5, 9]
  - *Aligns understanding* [PWA 9; CPs 1, 2, 4, 7, 9]
- ***Impact on PWA Participation in Conversation***
  - *Helps PWA express more* [CPs 1, 2, 3, 5, 7]
  - *Enables PWA to contribute to conversation* [PWA 2; CPs 1, 2, 3, 5, 6, 7]
- ***Impact on Conversational Flow*** [PWA 4; CPs 1, 2, 3, 6, 7]
- ***Impact on Improving PWA Communication***
  - *Helps PWA produce words accurately* [CPs 1, 3, 5, 6, 9]
  - *Elicits more speech* [CP 9]
  - *Places responsibility on PWA to make an effort* [CPs 4, 9]
  - *Provides PWA with feedback about communication* [CPs 1, 2, 3, 5,7, 9]
  - *Prompts PWA to do something they wouldn't otherwise do* [CPs 1, 3, 5, 6, 9]

Social Reasons

- *Concern about perceptions of others* [CPs 2, 3]
- *Expected impact on protecting PWA competence* [CPs 1, 2, 4, 9]

Emotional Reasons

- *Expected impact on levels of frustration* [CPs 1, 2, 7, 9]
- *Expected negative reaction of PWA* [CPs 1, 2, 4]
- *Own negative emotions* [CPs 5, 6, 9]

Fit with Identity [CP 9]

Internal Fluctuations

- *Own Fluctuations* [CP 6]
- *Partner's Fluctuations* [CPs 3, 6]

Skills [PWA 4, 9]

The theme **Behaviour's Expected Impact on Communication** is presented in Section 6.3.1, with each mid-level theme presented in a further subsection. **Social Reasons** are discussed in 6.3.2, **Emotional Reasons** in Section 6.3.3, data relating to **Fit with Identity** is presented in Section 6.3.4, and the effect from **Internal Fluctuations** and **Skills** on behaviour are covered in Sections 6.3.5 and 6.3.6 respectively. A summary of findings is provided in Section 6.3.7, which again summarises the comparative findings between the behaviour types and speaker groups.

6.3.1 Behaviour's Expected Impact on Communication

A key Reason to Use/ Not Use a Conversational Behaviour was the impact speakers expected the behaviour to have on some aspect of communication. This overarching influence on behaviour was relevant to both CPs and PWA, and across the use of both barriers and facilitators. Speakers reported using behaviours that they expected would have a beneficial impact for communication, and avoiding behaviour they expected would compromise a valued communicative goal. The following expected impacts on communication were identified as a guiding influence on speaker behaviour:

- ***Impact on Establishing Shared Understanding***
- ***Impact on PWA Participation in Conversation***
- ***Impact on Conversational Flow***
- ***Impact on Improving PWA Communication***

These are discussed in turn in the sections below.

6.3.1.1 Impact on Establishing Shared Understanding

This mid-level theme captures a range of data. Further subthemes represent the specific end point to which conversational behaviours are directed:

- *Helps PWA get the message across* [PWA 1, 2, 4, 5, 6, 9; CPs 1, 4, 5, 6, 7, 9]
- *Helps PWA understand CP* [CPs 4, 7]
- *Helps CP work out what PWA is saying* [CPs 1, 2, 3, 4, 5, 6, 7, 9]
- *Does not contribute to shared understanding* [PWA 3; CPs 1, 3, 4, 5, 9]
- *Aligns understanding* [PWA 9; CPs 1, 2, 4, 7, 9]

Both PWA and CPs reported using behaviour that was designed to *Help PWA get the message across*. This behaviour was used as a response to a communication problem. CPs talked about doing things that would help when PWA were 'stuck' or 'struggling', such as writing (CP1, CP2, CP5, CP6), or starting to make guesses about the meaning of the PWA's turn (CP4, CP7, CP9). Meanwhile PWA reported behaviour that was designed to overcome a language difficulty in conversation, for example compensatory strategies such as writing (PWA1, PWA2, PWA4),

pointing (PWA9) or using objects (PWA5). The following quote provides an illustration of how both CPs and PWA use behaviours expected to help PWA get their message across:

SLT: So again what do you do when Barry is trying to talk around something?

CP: I usually go: 'subject', let's get the subject. Because I say to him, you could be talking about anything. So I need a keyword first, to get started.

SLT: So when Louise says that to you – what do you then do?

PWA: It's uh (points at notepad)

SLT: Have a go at writing

PWA: yes yeah, I think so

Pre Therapy: D6

[Appendix 6,* Behaviour's Expected Impact on Communication*: Impact on Establishing Shared Understanding;* Helps PWA get the message across*]

There is also evidence that CPs may adapt their behaviour in order to *Help PWA understand CP*, for example simplifying their language (CP4) or giving more space (CP7). They use behaviour that they expect will *Help CP work out what PWA is saying,* including facilitative behaviours such as establishing a topic (CP5, CP6, CP7) - as is evident in the above quote from CP6 - or asking for a written word (CP4, CP6). This subtheme also included strategies whose effects were not always straightforwardly helpful as hinted at here:

Well I just try and ask questions. Ask as many questions as I can on the topic. Am I on the right track. Are you talking about this. Or have you changed the subject to something else. Or you know we were talking about that, and you said that, is it to do with that. So I'm asking a hundred questions, which might be confusing but we can then do a process of elimination. Which will help.

Pre Therapy: CP1

[Appendix 6,* Behaviour's Expected Impact on Communication: *Impact on Establishing Shared Understanding;* Helps CP work out what PWA is saying*]

Following therapy, this behaviour was judged by CP1 to operate as a barrier to conversation, illustrating that speakers' initial expectations about the helpfulness of a behaviour were not always accurate, and could be subject to change.

Among both PWA and CPs, any behaviours which were not expected to be effective, i.e. the behaviour *Does not contribute to shared understanding*, were either abandoned or avoided. This included CPs giving up the use of questions and prompts in situations where they were not

working or contributing to understanding (CP 1, CP3, CP5, CP9), as well as abandoning nominally facilitative behaviours when they were not perceived to offer added benefits (CP3, CP4, CP9), as this quote illustrates:

> *Yeah, we haven't used it* [writing]. *I suppose because I probably work out more or less what he means without needing the paper or pen.*
>
> ***During Therapy: CP3***
>
> ***[Appendix 6* Behaviour's Expected Impact on Communication: *Impact on Establishing Shared Understanding;* *Does not contribute to shared understanding*]**

Within this theme, there was also evidence that speakers may avoid behaviour that they felt would actively detract from shared understanding, for example CP1 reflected that lots of "guessing" would take things off on the wrong tangent.

Finally, as well choosing behaviour according to how well it is expected to help convey information, there is also evidence that CPs and PWA choose behaviours they expect to help *Align understanding,* and ensure that both partners are talking about the same thing as the conversation progresses. CPs report actively checking they are on the right track (CP1, CP7) or paraphrasing (CP4, CP7), as the following quote illustrates:

> *It's just really good noticing myself doing it, or preparing myself to do a paraphrase. To help mum, consolidate her opinion on it and make sure we're on the right wavelength.*
>
> ***During Therapy: CP7***
>
> ***[Appendix 6* Behaviour's Expected Impact on Communication: *Impact on Establishing Shared Understanding;* *Aligns understanding*]**

To a similar end, PWA9 reports providing ongoing feedback to his partner about whether her guesses about his meaning are right.

6.3.1.2 Impact on PWA Participation in Conversation

Among the Reasons for Using/ Not Using Conversational Behaviour the broad goal of wanting to support PWA participation in conversation emerged, and is represented by two further subthemes:

- *Helps PWA express more* [CPs 1, 2, 3, 5, 7]
- *Enables PWA to contribute to conversation* [PWA 2; CPs 1, 2, 3, 5, 6, 7]

CPs used behaviours such as giving time (CP1, CP2, CP3, CP5) or prompting PWA strategies (CP1, CP5) that they believed would *Help PWA express more*, for example to finish what they wanted to say, or to develop a meaning or opinion.

Choosing behaviour that was expected to *Enable PWA to contribute to conversation* in the first instance was also a concern. CPs reported actively avoiding behaviours they felt would limit

their partner's participation in conversation, such as interrupting (CP2) or guessing too much (CP1). Both CPs and PWA reported behaviours used to support PWA involvement and contributions in conversation. These included creating space to talk by asking people to wait, or showing a stop signal (PWA2), trying out techniques to see if they help the PWA initiate conversations (CP3) or giving more space to allow the PWA to comment on information (CP7). The below quote illustrates how and why CPs may adapt their behaviour for this goal:

> *Rather than pushing it, I'd ask a question and leave it open, and let my mum try to lead where it went.*
>
> ***Post Therapy: CP5***
>
> ***[Appendix 6,* Behaviour's Expected Impact on Communication: *Impact on PWA Participation in Conversation;* *Enables PWA to contribute to conversation*]**

6.3.1.3 Impact on Conversational Flow

A concern for keeping the conversation going in a natural way was indicated within both the CP and PWA data. CPs cited this as a reason to use specific behaviours, such as commenting and expanding on what their partner had said (CP7). Behaviours perceived to "close down the conversation" (CP1), or negatively impact on the naturalness of conversation (CP6) were avoided. This quote illustrates the value placed on using behaviour to support conversational flow:

> *And we had been using different ideas, and I think the most important thing was to get the conversation better, maybe flowing easier.*
>
> ***Post Therapy: CP2***
>
> ***[Appendix 6,* Behaviour's Expected Impact on Communication: *Impact on Conversational Flow]***

In the PWA data, PWA4 reported avoiding the use of writing because it took too long, highlighting that sometimes the priority for maintaining conversational flow may take precedence over getting a message across effectively.

6.3.1.4 Impact on Improving PWA communication

A final reason to use or not use a communicative behaviour among CPs was the expected contribution of the behaviour towards improving the communication of their partner. The subthemes - reproduced below - show that CPs used behaviour that they believed would help the PWA's recovery and use of speech, and also help them learn to be more effective communicators.

- *Helps PWA produce words accurately* [CPs 1, 3, 5, 6, 9]
- *Elicits more speech* [CP 9]

- *Places responsibility on PWA to make an effort* [CPs 4, 9]
- *Provides PWA with feedback about communication* [CPs 1, 2, 3, 5,7, 9]
- *Prompts PWA to do something they wouldn't otherwise do* [CPs 1, 3, 5, 6, 9]

An emphasis on using accurate speech was apparent among a number of CPs. Many reported using a range of cueing behaviours to *Help PWA produce words accurately* (CPs 1, 3, 5, 6, 9). In addition, CP9 reported asking questions to *Elicit more speech* from the PWA. In these instances, the need to support PWA use of accurate speech appeared to be felt as something of a responsibility:

> *I try and guess the word. Carry on and try and guess the word, and if it begins with a 'guh' I'll carry on and – cos you're in a conversation anyway, you've gotta lead the conversation, so you just try and guess the word. And you carry on like that. Kate's usually – if I'm giving her a prompt and it's the right letter – then we get there. But I'll help, with the sound.*
>
> ***Pre Therapy: CP1***
>
> ***[Appendix 6,* Behaviour's Expected Impact on Communication: *Impact on Improving PWA Communication;* *Helps PWA produce words accurately*]**

For these speakers, conversation appeared to be perceived as an activity within which PWA learning and improvement should be addressed. For some, behaviour was underpinned by a wish to *Place responsibility on PWA to make an effort.* This meant that at times, some CPs would deliberately withhold communicative supports so that their partner would work a little harder. This was believed to be "part of the learning process" (CP4) or because the PWA needed to "push and concentrate and get it out" (CP9). This finding reflects the suggestion made by Booth & Swabey (1999) that CP conversational behaviour may be driven by the wish to support language production.

Even when accurate speech was not necessarily the end goal, CPs reported behaviour underpinned by a perceived responsibility to support learning within conversation. This included behaviours that acted to *Provide PWA with feedback about communication*, such as pointing out errors (CP1, CP3, CP5) and successful attempts at communication (CP7). However some uncertainty about the merits of providing this feedback was also expressed:

> *I'll try and point out if he's got it the wrong way round. Whether that's helpful – it probably isn't (laughs).*
>
> ***Pre Therapy: CP3***
>
> ***[Appendix 6,* Behaviour's Expected Impact on Communication: *Impact on Improving PWA Communication;* *Provides PWA with feedback about communication*]**

CPs also reported that they regularly *Prompt PWA to do something they wouldn't otherwise do.* This included reports of reminding or 'nagging' PWA to use trained strategies (CP1, CP2, CP3 & CP7) or prompting them to do something differently before problems occur (CP1, CP3, CP5, CP6). Although these behaviours were directed toward improvement in conversation rather than improvement to speech, they still illustrate how CP behaviour may be guided by a general goal of progress for their partner.

6.3.2 Social Reasons

The second key theme in the data relates to CPs' social reasons for using or not using specific behaviours. The following two subthemes represent these reasons:

- *Concern about perceptions of others* [CPs 2, 3]
- *Expected impact on protecting PWA competence* [CPs 1, 2, 4, 9]

Some CPs expressed *Concern about perceptions of others*, specifically relating to their (CPs') behaviour towards the PWA, i.e. worrying that others may wonder why they weren't helping (CP3) or that they would be seen to be patronising (CP2). The full quote from CP3 illustrates the potential conflict between knowing a behaviour to be useful whilst not having sufficient confidence to use it among those without that knowledge:

> *I think between us, that's easier. I think sometimes more difficult is when he's trying to get something across to another person. Like when you first came in, it's a case of – how long do I wait? It depends I suppose obviously on who the person is – you* [the SLT] *obviously understand the strategy. Other people, if I wasn't saying anything, and he was getting frustrated, might think oh - why isn't she asking him.*
>
> ***During Therapy: CP3***
>
> ***[Appendix 6,* Social Reasons:** *Concern about perceptions of others]*

CPs also reported selecting behaviour according to its *Expected impact on protecting PWA competence*. This led to the use of behaviour perceived to support and normalise aphasia in conversation (CP2, CP4), and also meant some behaviours were avoided – such as correcting mistakes or using modified language and prompts – on the basis that they were felt to undermine the PWA (CP2, CP4, CP9). However, these same behaviours of correcting or cueing speech were actively employed by other CPs as a way of helping protect PWA competence. For example, CP4 reported cueing correct productions in order to help his partner stay in 'control' in front of other people. This quote from CP1 illustrates how making mistakes could be seen as undermining PWA competence in some way:

I wouldn't want her to be saying something wrong. It's not fair. That's what I'd make sure wouldn't happen.

Pre Therapy: CP1

[Appendix 6,* Social Reasons:** *Expected impact on protecting PWA competence**]

For these CPs, the linguistic errors that characterise aphasia were in themselves a threat to competence from which they wanted to protect PWA. This finding reflects the suggestion made by Aaltonen & Laakso (2009) that CPs may view aphasia as a threat to PWA face, and seek to counter this by using behaviours such as correct production cues.

6.3.3 Emotional Reasons

CPs reported that negative emotions and reactions within conversations were a Reason for Using/ Not Using Conversational Behaviour. This included both the perceived and anticipated emotional responses of their partner, as well as their own emotional responses. Data relating to how emotional considerations shape particular behaviours are summarised by the following subthemes:

- *Expected impact on levels of frustration* [CPs 1, 2, 7, 9]
- *Expected negative reaction of PWA* [CPs 1, 2, 4]
- *Own negative emotions* [CPs 5, 6, 9]

The *Expected impact on levels of frustration* influenced the behaviour used by CPs. Signs of PWA frustration in conversations acted as a cue for CPs to help (CP2, CP9), whilst feelings of frustration in either speaker were a reason to abandon a strategy (CP1, CP7).

Trying to pre-empt the *Expected negative reaction of PWA* influenced CP choice of behaviour. Behaviours expected to panic (CP1) or anger (CP2) PWA were avoided, as illustrated here:

SLT: So when that's happening to you, what kind of stuff do you do Cath to help out?

CP: Do nothing

SLT: You do nothing

CP. No. Because, Simon got so fed up with people jumping in

PWA: Yep

CP: And I learned – some people still jump in, Simon gets very cross if people try and guess what he's trying to say. So I don't say anything at all. And I just wait.

Pre Therapy: CP2

[Appendix7,* Emotional Reasons:** *Expected negative reaction of PWA**]

CPs also discussed how their *Own negative emotions* influenced conversational behaviour. For example, CP5 reported that feelings of "impatience" would make him lead the conversation, and "vocalise words" to cue PWA speech, whilst the below quote from CP6 illustrates that feelings of anxiety would prevent her from helping her husband in a group:

> *I'll tell you when I do tend to give up and it's probably not good, is when we're with other people. And I get anxious. And Barry's looking at me and I'll say 'oh we'll leave it'.*
>
> ***Pre Therapy: CP6***

[Appendix 6,* Emotional Reasons*: Own negative emotions]

6.3.4 Fit with Identity

While 'identity' as a concept was only associated with the behaviour of one speaker (who eventually dropped out of therapy), this is an example of a finding that is sufficiently distinct from other explanations of behaviour to warrant its own theme. CP9's experience of attempting to use and support nonverbal strategies in conversation provides insight into a possible influence on conversational behaviour that is rarely considered in the literature:

> *CP: I can't I can't – I won't. It's not me. Every time I say something, get a piece of paper, write it down – it's just, it's just, I dunno*
>
> *SLT: Not something you want to do?*
>
> *CP: It's not that - It's just not me. It's not my personality. It isn't that I don't want to write anything down, I will move as much as I can, but I'm not going to stop being me.*
>
> ***During Therapy: CP9***

[Appendix 6,* Fit with Identity*]

6.3.5 Internal Fluctuations

There was evidence in the data that the behaviour used in conversations could be affected by both speakers' fluctuations in mood and energy. These data are represented by the following subthemes:

- *Own Fluctuations* [PWA 3, 4; CP 6]
- *Partner's Fluctuations* [CPs 3, 6]

The concept of good days and bad days featured in these data. CP6 reported that her O*wn fluctuations* in terms of emotion and energy determined the level of effort she would put into solving problems in conversation.

PWA also experienced fluctuations in fatigue (PWA3) or frustration (PWA4) that would limit the effort they directed towards compensatory behaviours.

Partner fluctuations would also have an effect on CP behaviour (CP3, CP6). A bad day for the PWA was perceived to impact on the effectiveness of any support offered. This quote from CP6 shows how a "bad day" for either speaker influenced her conversational behaviour:

> *CP: I think it's something we've come to terms with, we know now that if we're having a bad day, we'll say: let's forget any conversations today.*
>
> *Cos if it's your bad day you'll get frustrated, and if it's mine I'll – "oh I can't be bothered with this, for goodness sake forget it". In normal speech you'd be like that with each other sometimes. So. We don't really try on those sorts of days, do we.*
>
> *PWA: No, no.*
>
> ***Post Therapy: CP6***
>
> ***[Appendix 6,* Internal Fluctuations*]***

6.3.6 Skills

This theme only featured in the PWA data. Data from PWA4 and PWA9 suggest that the speaker's skill level for carrying out a strategy would determine whether or not the behaviour was called upon in conversation. PWA9 reported that his difficulties in enacting nonverbal facilitators meant he would give up trying, whereas PWA4 reported that not having sufficient skills to carry out a strategy successfully meant he would not initiate its use. This quote illustrates how PWA9 feels his skills do not support him to get his message across:

> *SLT: So what do you do then Bob? If you say something to Irene and she's not understanding you?*
>
> *PWA: Oh (mimes attempting and giving up)*
>
> *SLT: Can you make yourself more specific?*
>
> *PWA: No*
>
> *SLT: No*
>
> *SLT: No. So then you get stuck*
>
> ***Pre Therapy: PWA9***
>
> ***[Appendix 6,* Skills*]***

6.3.7 Summary of Reasons Determining Conversational Behaviour

Six core Reasons for Using/ Not Using Conversational Behaviour were reported within this dataset: the **Behaviour's Expected Impact on Communication**, **Social Reasons, Emotional Reasons**, **Fit with Identity**, **Internal fluctuations**, and the **Skills** of the speaker. These themes are proposed

to represent likely determinants of conversational behaviour, with more specific detail about how these influences interact with the use or avoidance of particular behaviours in particular situations encapsulated in the subthemes.

Many of the speakers' reasons for using or avoiding conversational behaviours can be understood in terms of how they consciously expect the behaviour to impact on a range of preferred communicative, social and emotional outcomes. The conversational behaviours reported were often strategically directed towards some end, such as solving communication breakdowns, maintaining PWA participation and conversational flow, improving PWA communication, reducing perceived threats to PWA competence, or minimising signs of frustration. This finding echoes the conclusions of previous ethnographic research carried out by Simmons-Mackie and Damico (1997) which suggested that compensatory behaviour in aphasia is goal-oriented, and directed towards outcomes such as 'conveying information', 'regulating interaction' and 'repairing breakdown'.

However a smaller range of less reflective, less goal-directed influences were also reported to be reasons why behaviour was used or abandoned by speakers. For example CP behaviour could be determined by underlying feelings of impatience, a gut feeling that strategies did not fit with their personality, or simply by having a bad day. PWA behaviour was also determined by fluctuations in mood and energy levels. Unlike CPs, however, their behaviour was also determined by their underlying impairments and what they were practically able to do.

In terms of how these reasons influenced the two behaviour types, the use of facilitators appear to be guided by their expected beneficial impact for establishing meaning in conversation, or maintaining the interactive equilibrium and flow of conversation. However, use may be constrained by less conscious influences such as rising frustration, bad moods, anxiety in front of others or a sense that a specific facilitator didn't fit with the speaker. In contrast, the use of barrier behaviour tended to be directed towards the goal of improved speech. CP barriers were often designed to pursue accurate verbal forms of communication, even where CPs already understood their partner's intended meaning, and included cueing, questioning and sometimes withholding support.

However, there are some examples of CP barrier behaviour being driven by feelings of impatience, or by the belief that the behaviour was useful way of establishing understanding. The accuracy of speakers' beliefs about 'useful' behaviour has previously been shown to be an effective area to target in intervention for communication skills (Gulbrandsen et al 2013).

The findings reported in Section 6.2.2 (p102) relating to contexts, suggested that the presence of other people had a complex effect on conversational behaviour. In the current discussion of

the reasons that determine conversational behaviour, concerns about the behaviour and perceptions of others also influenced behaviour in a variety of complex ways. CP concern about how facilitative behaviour would be perceived, could limit its use in social situations. In addition, the wish to protect PWA competence in front of others triggered both facilitators and barriers. It is notable that barriers may be used when CPs want to protect their partners from making linguistic mistakes. While the idea of 'linguistic incompetence' may sit uneasily with the professional concept of communicative competence (Kagan 1995), it may be important to acknowledge that the CP wish to protect PWA from making mistakes appears to drive the use of correcting or cueing behaviours in conversation.

In terms of similarities and differences between PWA and CPs, Table 11 below summarises which themes are associated with which groups of speaker.

Table 11. Comparison of CP and PWA Reasons Determining use of Conversational Behaviours

Reason	PWA	CP
Expected Impact on Communication: Shared Understanding	✓	✓
Expected Impact on Communication: PWA Participation	✓	✓
Expected Impact on Communication: Conversational Flow	✓	✓
Expected Impact on Communication: Improvement to PWA Communication	x	✓
Social Reasons	x	✓
Emotional Reasons	x	✓
Fit with Identity	x	✓
Internal Fluctuations	✓	✓
Skills	✓	x

Choosing behaviour believed to benefit shared understanding, balance and flow of conversation has universal relevance to both PWA and CPs. There is also evidence that the behaviour of both speakers is affected by fluctuations in mood and energy.

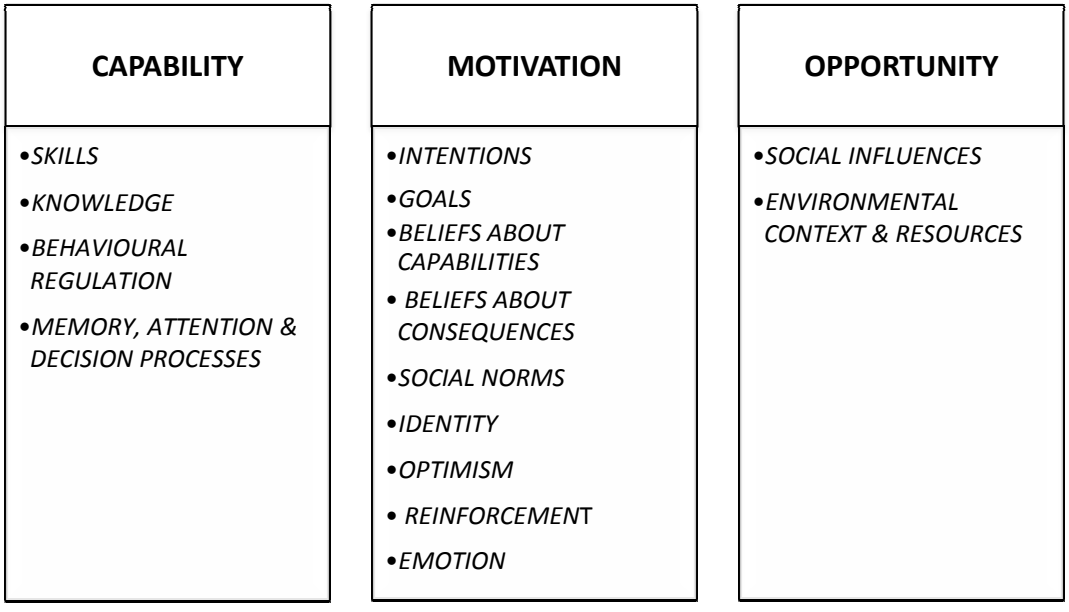
However, behaviour directed towards the improvement of PWA communication was only associated with CPs in this dataset. Similarly, it is only CPs who account for their behaviour in terms of the social and emotional considerations that shape it, and, for one CP, in terms of identity. It is not clear whether this is because only CP conversational behaviour is likely to be guided by these concerns, or whether PWA accounts of these concerns were simply not elicited within the discussions that make up this dataset. Given the difficulties in eliciting a full range of opinions from PWA, due to the constraints of aphasia, and the tendency of CPs to speak for their partners, we should be wary of concluding that these areas are not relevant for PWA behaviour in conversation.

Only PWA reported that their underlying skills determined their conversational behaviour. Any influence from the skills of CPs on their own behaviour was not captured by this study, and was not systematically probed during the discussions under analysis.

6.4 Linking Findings to Theory

The themes developed in Sections 6.2 and 6.3 are proposed to represent determinants of conversational behaviour. In order to further the credibility of this claim, and consider how well the findings cohere with established theory, these themes will now be compared against the theoretical domains presented in the TDF (Cane et al 2012), and re-organised according to the COM-B model of behaviour (Michie, van Stralen & West 2011), both previously discussed in Section 3.4.3, p52. To recap, the COM-B model and the TDF act as summaries of multiple evidence-based theories of behaviour. COM-B presents behaviour as a function of an individual's physical and psychological CAPABILITY, the OPPORTUNITY to carry out a behaviour afforded by their environment, and their MOTIVATION for the behaviour. The TDF streamlines the range of behavioural determinants proposed by 33 theories of behaviour, into 14 key theoretical domains, which have then been mapped to COM-B. The below summary figure, taken from the Literature Review (Figure 4, p54) shows the theoretical domains as mapped to COM-B:

Figure 4. Theoretical Domain Framework mapped to COM-B model (Cane et al 2012)



This study's themes will be considered in relation to each component of the COM-B system. Section 6.4.1 considers the analytic themes that may be understood as determinants of OPPORTUNITY. Section 6.4.2 explores themes relating to CAPABILITY, and Section 6.4.3 looks at MOTIVATION. Themes will be compared against specific theoretical domains from the TDF for

similarity, and where appropriate mapped to these domains. A summary of this mapping process and its findings will be presented in Section 6.4.4.

Comparing findings to concepts from behaviour theory enables a consideration of the extent to which this theoretical approach can be usefully applied to conversational behaviour. Where the current findings are shown to have conceptual similarities to domains specified in behaviour theory, this adds a further level of both credibility and explanatory power to the conclusions of this study. Furthermore, it supports the generalisation of these findings to the theoretically-linked investigations of change that follow in subsequent chapters.

6.4.1 Determinants Relating to OPPORTUNITY

OPPORTUNITY in COM-B encompasses the domains *SOCIAL INFLUENCES,* and *ENVIRONMENTAL CONTEXT & RESOURCES.* OPPORTUNITY represents all factors external to the individual that shape behaviour (Michie, van Stralen & West 2011).

This concept guided the coding of data according to the category of Contexts for Using/ Not Using Behaviour and it was expected that findings here would reflect aspects of OPPORTUNITY. The theme **Social Situation** (Section 6.2.2, p102), derived from the analysis of Contexts for Using/ Not Using Behaviour, is therefore compared against the domain of *SOCIAL INFLUENCES* from the TDF (Cane et al 2012). *SOCIAL INFLUENCES* is intended to encompass the influences on behaviour from interpersonal processes. The subthemes of *Opportunity for conversation* and *Availability of time*, as well as the *Nature of the conversation*, *The conversation partner*, and the *Presence of other people* may all be said to represent interpersonal processes external to the speaker, which influence what they do in conversation. They are therefore a good 'fit' within the domain *SOCIAL INFLUENCES*. The use of *Humour*, given that it may be something speakers themselves may do to aid strategy use, and therefore not external to them, is not included here as a *SOCIAL INFLUENCE*, and will instead be discussed in Section 6.4.2 (p121) (Determinants related to CAPABILITY).

The theme **Cues from Conversation** (Section 6.2.3, p104) is also proposed to sit within *SOCIAL INFLUENCES,* as it too represents social activity external to the speaker that may influence behaviour in conversation.

A review of the themes representing data captured under Reasons for Using/ Not Using Conversational Behaviour suggests that the subtheme *Prompts PWA to do something they wouldn't otherwise do* from the theme **Behaviour's Expected Impact for Communication: *Impact on Improving PWA Communication*** (Section 6.3.1.4, p111) can also be mapped to the domain of *SOCIAL INFLUENCES*. This is on the basis that, similarly to the subtheme *CP requests* from **Cues from Conversation**, it represents the potential influence of external prompts on PWA strategy

use. In addition, the subtheme *Partner's fluctuations* from the theme **Internal Fluctuations** (Section 6.3.5, p115) is also mapped to the domain *SOCIAL INFLUENCES*, as this shows how the mood or behaviour of the PWA can influence CP behaviour.

Finally, the analytic theme **Physical Environment** (Section 6.2.1, p102) is compared to the second domain of OPPORTUNITY, that is *ENVIRONMENTAL CONTEXT & RESOURCES.* The two subthemes *Location* and *Availability of resources,* which represent how external aspects of the environment may constrain or enable a variety of conversational behaviours, are straightforwardly mapped onto this domain.

A summary of the themes proposed to map onto the domains of OPPORTUNITY, are provided in Table 12 below.

Table 12. Analytic Themes Mapped to the Theoretical Domains of OPPORTUNITY

COM-B *(Michie, van Stralen & West 2011)*	Theoretical Domain *(Cane et al 2012, see Figure 4, p54))*	Analytic Themes
OPPORTUNITY	*SOCIAL INFLUENCES*	***Contexts Determining Conversational Behaviour***
		Social Situation *(Section 6.2.2)* • *Opportunity for conversation* • *Availability of time* • *Nature of the conversation* • *The conversation partner* • *Presence of other people*
		Cues from Conversation *(Section 6.2.3)* • *CP requests* • *PWA signals* • *Absence of cues*
		Reasons Determining Conversational Behaviour
		Behaviour's Expected Impact on Communication ➢ ***Impact on Improving PWA Communication*** *(Section 6.3.1.4)* • *Prompts PWA to do something they wouldn't otherwise do*
		Internal Fluctuations *(Section 6.3.5)* • *Partner's Fluctuations*
	ENVIRONMENTAL CONTEXT & RESOURCES	***Contexts Determining Conversational Behaviour***
		Physical Environment *(Section 6.2.1)* • *Location* • *Availability of Resources*

6.4.2 Determinants Relating to CAPABILITY

CAPABILITY refers to the range of physical and psychological skills involved in carrying out behaviour (Michie, van Stralen & West 2011). According to the TDF (Cane et al 2012), the theoretical domains of CAPABILITY include the physical and social *SKILLS* required to implement a

behaviour of interest, sufficient *KNOWLEDGE* about the behaviour, sufficient ability for *BEHAVIOURAL REGULATION*, including self-monitoring and initiation of behaviour in context, and finally *MEMORY, ATTENTION & DECISION PROCESSES,* the cognitive skills involved in remembering and attending to the use of the behaviour.

Although the coding categories Contexts for Using/ Not Using Conversational Behaviour and Reasons for Using/ Not Using Conversational Behaviour were not expected to generate findings relating to CAPABILITY, a review of the findings across these categories suggests that some of the themes identified may be relevant to this concept. For example the theme **Skills** (Section 6.3.6, p116), which shows how a PWA's underlying ability for carrying out strategy can determine its use, can be mapped to the theoretical domain of *SKILLS.* In addition, the subtheme *Humour,* from the theme **Social Situation** (Section 6.2.2, p102), which suggests that joking about new strategies can facilitate use among some speakers, can also be mapped to *SKILLS.* This is on the basis that the use of *Humour* represents an aspect of speakers' social skills when negotiating the introduction of unfamiliar behaviour.

No themes appear to reflect any influence on behaviour from the theoretical domains of *KNOWLEDGE*, or *BEHAVIOURAL REGULATION*. However, influence from *MEMORY, ATTENTION & DECISION PROCESSES* is arguably reflected by the subtheme *Own fluctuations* from **Internal Fluctuations** (Section 6.3.5, p115). Although not explicit within the data from participants, it is plausible that if a speaker is having 'a bad day' (as reported in the data), they may be less likely to direct cognitive effort and attention towards solving conversational problems using facilitative strategies. *Own Fluctuations* are therefore tentatively mapped to this theoretical domain. A summary of how analytic themes have been mapped to the domains of CAPABILITY are provided in Table 13 below.

***Table 13. Analytic Themes Mapped to the Theoretical Domains of* CAPABILITY**

COM-B *(Michie, van Stralen & West 2011)*	Theoretical Domain *(Cane et al 2012, see Figure 4, p54)*	Analytic Themes
CAPABILITY	*SKILLS*	***Contexts Determining Conversational Behaviour***
		Social Situation *(Section 6.2.2)* • *Humour*
		Reasons Determining Conversational Behaviour
		Skills *(Section 6.3.6)*
	KNOWLEDGE	
	BEHAVIOURAL REGULATION	
	MEMORY, ATTENTION & DECISION PROCESSES	***Reasons Determining Conversational Behaviour***
		Internal Fluctuations *(Section 6.3.5)* • *Own fluctuations*

Given that the data analysed for this study relate to contexts and reasons for behaviour, and not the physical, social or cognitive abilities involved, it is perhaps not surprising that there are few themes that straightforwardly map onto the concept of CAPABILITY. It is also possible that the cognitive components of CAPABILITY such as *KNOWLEDGE* and *BEHAVIOURAL REGULATION* may be hard to access via self report, or were not mined for detail during the assessment, therapy and research interactions that make up this dataset.

6.4.3 Determinants Relating to MOTIVATION

MOTIVATION in COM-B represents a complex range of psychological determinants influencing behaviour. It encompasses how a person's behaviour is influenced by the strength of their *INTENTIONS* to carry it out, and their overarching *GOALS,* i.e. the end state to which they direct their behaviour. It also includes consciously held outlooks and concerns such as the *BELIEFS ABOUT CAPABILITIES* i.e. how well someone expects to be able to carry out a behaviour, *BELIEFS ABOUT CONSEQUENCES* i.e. the expected impact of a behaviour, and any *SOCIAL NORMS* held around the behaviour. Less conscious, and more 'automatic' factors are also anticipated to motivate behaviour including how the behaviour sits with an individual's *IDENTITY,* the person's level of *OPTIMISM*, the influence exerted by *REINFORCEMENT* i.e. positive and negative associations for a behaviour, and a person's *EMOTION*.

Reviewing the themes developed to represent Reasons for Using/ Not Using Conversational Behaviour in relation to the domains of MOTIVATION, it is clear that many of the reasons speakers provide for using or avoiding conversational behaviours have to do with the impact the behaviour is

anticipated to have, i.e. representing their *BELIEFS ABOUT CONSEQUENCES*. This includes the key theme of **Behaviour's Expected Impact for Communication** (Section 6.3.1, p108) and its four mid-level themes***: Impact on Establishing Shared Understanding***, ***Impact on PWA Participation***, ***Impact on Conversational Flow***, ***Impact on Improving PWA Communication***. It also includes the subtheme *Expected impact on PWA competence* from the theme **Social Reasons** (Section 6.3.2, p113), and subthemes *Impact on levels of frustration* and *Expected negative reaction of PWA* from **Emotional Reasons** (Section 6.3.3, p114). All of these themes demonstrate a common influence on speakers' choice of conversational behaviour arising from their *BELIEFS ABOUT CONSEQUENCES,* i.e. how speakers expect their behaviour to contribute or detract from some communicative, social or emotional outcome that they view as important.

The specific communicative, social and emotional concerns represented within these themes and subthemes represent the *GOALS* that speakers value and that also guide and influence their behaviour. The evidence discussed in this study shows how speakers actively use behaviour that they expect to contribute to a favoured *GOAL*, such as (Impact on) ***PWA Participation*** or (Impact on) ***Improving PWA Communication***. Furthermore, they may actively avoid behaviour that detracts from a preferred goal, as in the example of avoiding correcting behaviour because of its *Expected impact on PWA competence*. Behaviour expected to produce an impact that speakers do not wish for, e.g. *Expected negative reaction of PWA* is also avoided. Notably, these *BELIEFS ABOUT CONSEQUENCES* in relation to how a specific behaviour contributes to a specific *GOAL* may be inaccurate or subject to change. This is reflected in the example of CP1 who, pre therapy, reports using quick-fire guessing questions to *Help CP work out what PWA is saying,* but who later comes to view this behaviour as disruptive and taking the conversation off on a tangent.

The remaining social and emotional influences on behaviour, as represented by the subthemes *Concern about the perceptions of others*, from theme **Social Reasons** (Section 6.3.2, p113), and *Own negative emotions* from the theme **Emotional Reasons**, (Section 6.3.3, p114) do not have the same goal-directed qualities. *Concern about the perceptions of others,* representing the finding that speaker behaviour may be constrained by how they think other people will see their actions, is best reflected in the domain *SOCIAL NORMS*. Meanwhile the influence on behaviour from one's *Own negative emotions,* such as anxiety, or impatience can be mapped to the domain of *EMOTION*.

Finally, the finding that an individual may potentially reject behaviour that does not fit with their personality, as represented by the theme **Fit with Identity** (Section 6.3.4, p115) is reflected by the theoretical domain *IDENTITY*.

A number of theoretical domains associated with MOTIVATION are not reflected in the findings of this study. This includes the subconscious influences of *OPTIMISM* or *REINFORCEMENT*. Given that the current findings are based on speakers' explicit and reflective accounts of their behaviour, it is unsurprising that this analysis has not generated insights into these determinants.

Finally, the findings of this analysis do not provide any evidence that *BELIEFS ABOUT CAPABILITIES* - i.e. speaker's expectations or self-confidence that they will be able to carry out a behaviour despite obstacles - have a role for these speakers and their conversational behaviour.

Table 14 below summarises how the analytic themes developed in this study have been mapped to the domains of MOTIVATION.

***Table 14. Analytic Themes Mapped to the Theoretical Domains of* MOTIVATION**

COM-B *(Michie, van Stralen & West 2011)*	Theoretical Domain *(Cane et al 2012)*	Analytic Themes
MOTIVATION	*INTENTIONS*	
	GOALS	***Reasons Determining Conversational Behaviour***
		Behaviour is chosen according to following goals: **Communicative** *(Section 6.3.1)* ➢ ***Establishing Shared Understanding*** ➢ ***PWA Participation*** ➢ ***Conversational Flow*** ➢ ***Improving PWA Communication*** **Social** *(Section 6.3.2)* • *(Protect) PWA competence* **Emotional** *(Section 6.3.3)* • *(Minimise) Levels of frustration* • *(Pre-empt) Expected negative reaction of PWA*
	BELIEFS ABOUT CAPABILITIES	
	BELIEFS ABOUT CONSEQUENCES	***Reasons Determining Conversational Behaviour***
		Using or not using conversational behaviour depends on: **Behaviour's Expected Impact on Communication for:** *(Section 6.3.1)* ➢ ***Establishing Shared Understanding*** ➢ ***PWA Participation*** ➢ ***Conversational Flow*** ➢ ***Improving PWA Communication*** **Behaviour's Expected Social Impact on:** *(Section 6.3.2)* • *PWA competence* **Behaviour's Expected Emotional Impact on:** *(Section 6.3.3)* • *Levels of frustration* • *Expected negative reaction of PWA*
	SOCIAL NORMS	***Reasons Determining Conversational Behaviour***
		Social Reasons *(Section 6.3.2)* • *Concern about perceptions of others*
	SOCIAL IDENTITY	***Reasons Determining Conversational Behaviour***
		Fit with identity *(Section 6.3.4)*
	OPTIMISM	
	REINFORCEMENT	
	EMOTION	***Reasons Determining Conversational Behaviour***
		Emotional Reasons *(Section 6.3.3)* • *Own negative emotions* **Internal fluctuations** *(Section 6.3.5)* • *Own fluctuations*

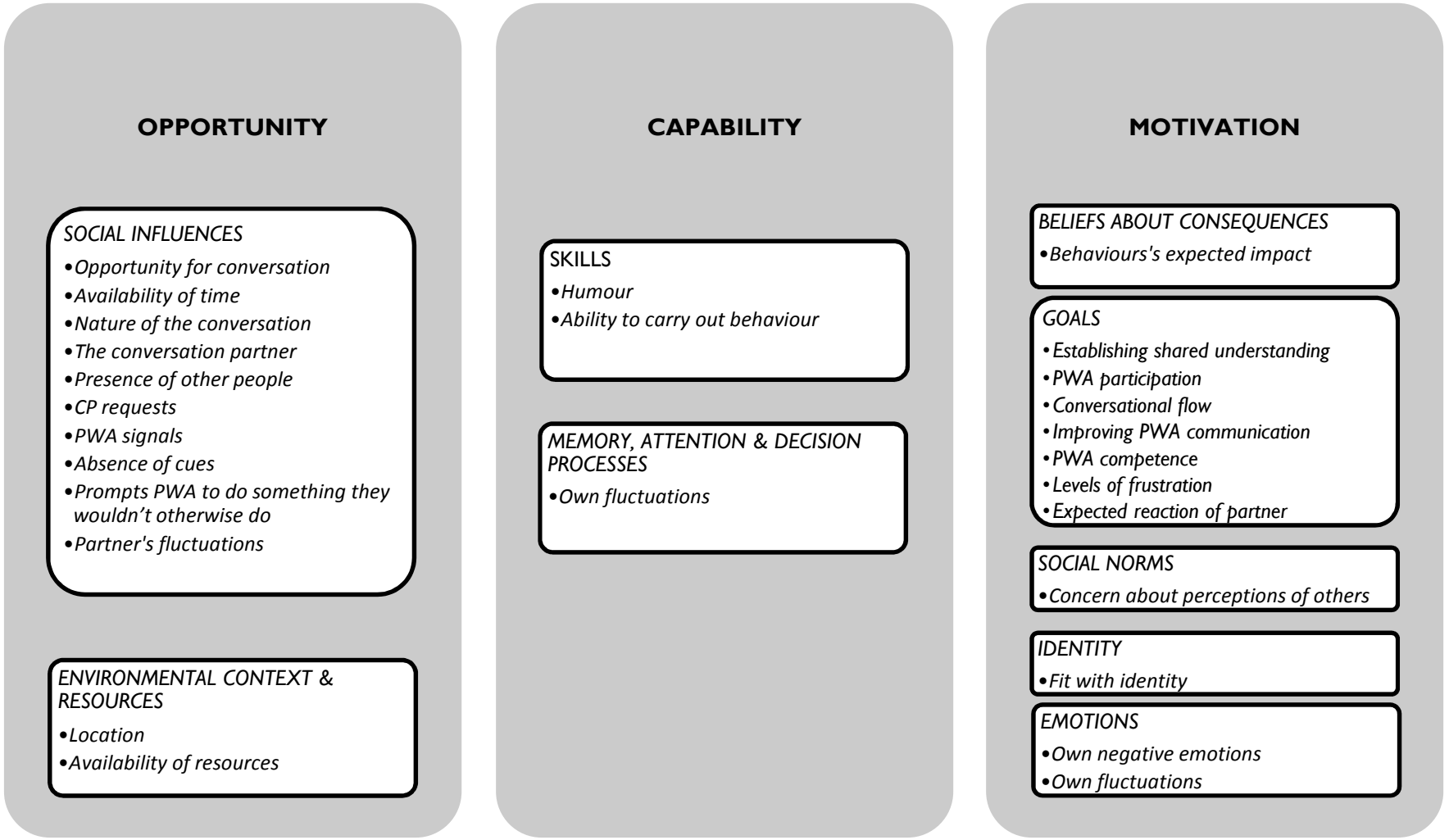
6.4.4 Summary: Linking Findings to Theory

One aim of comparing analytic findings to theory was to verify whether theoretical models and constructs relating to general human behaviour can be usefully applied to conversational behaviour. Most of this study's themes have been shown to have clear conceptual similarities to specific theoretical domains from the TDF (Cane et al 2012; see Figure 4, p54). Furthermore the key conditions for behaviour proposed by the COM-B model (Michie, van Stralen & West 2011), are all reflected in the data. Figure 14 on the next page provides a visual summary of how the determinants of conversational behaviour identified during this analysis have been mapped to the TDF (Cane et al 2012). This exercise has therefore demonstrated that the COM-B and the TDF offer a meaningful and appropriate basis for describing and organising qualitative findings relating to conversational behaviour and its change.

Furthermore, identifying coherent links between the analytic themes established here and theoretical models adds an external level of credibility to the salience and validity of the interpretations made in this study. These findings can now be extended to incorporate knowledge from a wider literature about behaviour in order to develop a theory of change.

Finally, this exercise has also highlighted some gaps in the evidence generated here, thereby reminding us that this account should not claim to be comprehensive, and that the limitations of the data collection procedures should continue to be acknowledged. So for example, this study has not generated any information about the cognitive components of CAPABILITY, the subconscious influences on behaviour of *OPTIMISM* or *REINFORCEMENT*, or for the influence from *BELIEFS ABOUT CAPABILITIES*, otherwise known as self efficacy. While it would be tempting to conclude that these domains are simply not relevant to conversational behaviour, the literature suggests otherwise. In particular, Purdy & Koch (2006) have shown that cognitive flexibility - a likely component of *BEHAVIOURAL REGULATION* – has a predictive relationship with strategy use in conversation among PWA. In addition, the literature on communication skills training among non brain-injured participants regularly demonstrates a relationship between self efficacy and communicative behaviour (Ammentorp et al 2007; Gulbrandsen et al 2013; Tinati et al 2012; Yang 1999). This suggests that these potential influences on behaviour were not explored within the discussions that form this dataset, and remained implicit. The potential limitations of this study's method for generating data in these areas will be considered further in the final conclusions of this thesis (Chapter 11).

Figure 14. Determinants of Conversational Behaviour Mapped to Theoretical Domains (Cane et al 2012)



6.5 Conclusions

This study has sought to identify some key determinants of conversational behaviour. The analysis of data, and subsequent mapping of themes to theory, has demonstrated that conversational behaviour is indeed shaped by OPPORTUNITY, CAPABILITY and MOTIVATION. The findings of the qualitative analysis carried out here suggest specific features of these conditions that are relevant to conversation behaviour, and how they may potentially operate to influence specific behaviours in specific contexts. This study has shown that conversational behaviour may be primarily motivated by how speakers expect it to contribute or detract from a range of valued communicative, social and emotional goals. However, obstacles to carrying out conversational behaviour come not only from the physical and social environment, but also from one's emotions, identity and perceived social norms.

This study has concluded that COM-B (Michie, van Stralen & West 2011) and the TDF (Cane et al 2012) are valid tools for exploring conversational behaviour. In order to maximise coherence with external theory and literature, the rest of this thesis will interpret findings in reference to concepts from the COM-B model and the TDF. The next chapter, which presents Study 2, will use the COM-B model to organise its analysis of participants' accounts of change. Study 2 will consider evidence for the specific role of speaker CAPABILITY and MOTIVATION when attempting to enact change, and also look at evidence for potential mechanisms of change across OPPORTUNITY, CAPABILITY and MOTIVATION, which may be activated by participating in the BCA therapy programme.

7 Study 2: Accounts of Change

The analysis carried out for this study focuses on participants' accounts of change via BCA. Whilst Study 1 explored evidence for the range and nature of the determinants influencing conversational behaviour generally, this study looks at the determinants that may be involved in the process of changing these behaviours, and which may be critical to its success or failure.

The research objective for this study is:

- To identify the personal factors that participants report during and after therapy as having supported or limited their conversational behaviour change

Study 1 established that concepts from behaviour theory can be usefully applied to organise and understand factors affecting conversational behaviour. This analysis therefore builds on this finding, and uses the concepts of OPPORTUNITY, CAPABILITY and MOTIVATION (Michie, van Stralen & West 2011) directly within the organisation of thematic hierarchies. Furthermore, findings will continue to be interpreted and discussed with reference to the theoretical domains supplied by the TDF (Cane et al 2012, see Figure 4, p54). Comparison of findings between the two types of speaker (PWA, CP) and between the two behaviour types (barriers and facilitators) also continues in this chapter.

7.1 Methods & Structure of Chapter

This study is based on coded data taken from the during- and post-therapy datasets as captured by Personal Factors Hindering/ Supporting Conversational Behaviour Change (see Figure 9, p95). This coding category is intended to capture speakers' own experiences of how change is triggered and made, as opposed to their perceptions of the BCA therapy content (see Section 5.6.1, p90 for more details)

Personal Factors Hindering/ Supporting Conversational Behaviour Change is an intentionally broad category, as initial attempts to break it into further subcategories for coding were deemed too interpretive (see Section 5.6.1, p90 for further discussion). Consequently a wide range of data were coded under this category. However, the initial stages of data analysis suggested a salient distinction between two different types of account relating to conversational behaviour change. At this stage, it was possible to categorise the data into two major themes and focus further analysis within these two new analytic categories. These themes are presented separately in this chapter, each with their own hierarchy of subthemes.

The first major theme is **Factors Determining the Success of Making Changes.** This encompasses the factors determining speakers' success or failure when attempting to make

changes, and is particularly relevant to the factors involved in the process of anticipating and implementing change during conversation. The second major theme is **Mechanisms of Conversational Behaviour Change.** This type of account can be understood as speakers' explanations of how and why their behaviour changed, i.e. the changes in individual OPPORTUNITY, CAPABILITY or MOTIVATION that led to conversational behaviour change.

Hierarchy I, representing **Factors Determining the Success of Making Changes** is presented in Section 7.2. Hierarchy II, representing **Mechanisms of Conversational Behaviour Change** is presented in Section 7.3. Evidence for specific subthemes will be presented and referenced as previously, see Section 6.2 (p100) for details. A discussion of points of interest is presented in Section 7.4, with final conclusions presented in Section 7.5.

7.2 Hierarchy I: Factors Determining the Success of Making Changes

Hierarchy I comprises two key organising themes, which link to theory and reflect the concepts of MOTIVATION and CAPABILITY from the COM-B model (Michie, van Stralen & West 2011). The analytic subthemes associated with each of these theoretical concepts form two tiers. Each theme can be understood as a factor - or potential determinant - of whether or not a speaker will make a targeted change in their behaviour. Hierarchy I is presented in Figure 15 on the next page. The data for this thematic hierarchy are presented in Appendix 7.

Figure 15. Hierarchy I: Analytic Themes Representing Factors Determining the Success of Making Changes

Factors Determining the Success of Making Changes:

Hierarchy I of Analytic Themes to Represent the Data Captured by

Personal Factors Hindering/ Supporting Conversational Behaviour Change

MOTIVATION for Conversational Behaviour Change

- ***Personal Investment in Therapy***
  - *Motivation for goals of therapy* [PWA 7, 9; CPs 2, 3, 6, 7, 9]
  - *Commitment to participate in therapy* [CPs 1, 5, 7]
- ***Commitment to Enacting Behavioural Changes***
  - *Intention to make changes* [CPs 1, 2, 3 4, 6, 7]
  - *Perceived effort required for strategies* [CP 9]

CAPABILITY for Conversational Behaviour Change

- ***Ability to Recognise Target Behaviour***
  - *Knowledge of target behaviour* [PWA 3, 5, 7]
  - *Monitoring own use of behaviour* [PWA 2, 5]
- ***Ability to Harness Cognitive Effort for Making Changes***
  - *Remembering to use strategies* [PWA 1, 5, 6, 7; CPs 6, 7]
  - *Thinking about doing something differently in context* [PWA 1, 2, 4, 6; CPs 1, 5, 6, 7]
  - *Decrease in monitoring strategy use over time* [CPs 1,2, 3, 7]
- ***Ability to Carry Out Target Strategy*** [PWA 1, 2, 4, 6; CPs 3, 6]

Section 7.2.1 below presents the findings relating to how speaker **MOTIVATION for Conversational Behaviour Change** can determine the success of making changes, whilst Section 7.2.2 presents findings relating to the influence from **CAPABILITY for Conversational Behaviour Change.** Summaries at the end of these sections will discuss findings in relation to the theoretical determinants of the TDF. A final summary in Section 7.2.3 ties together the findings from **Factors Determining the Success of Making Changes.**

7.2.1 MOTIVATION for Conversational Behaviour Change

Speakers' underlying level of motivation to make the changes discussed during BCA appeared to influence their potential for behavioural change. Relevant aspects of MOTIVATION reported in the data encompassed speakers' ***Personal Investment in Therapy*** at a general level, and also their ***Commitment to Enacting Behavioural Changes,*** specifically as regards the conversational behaviours targeted in therapy. The evidence for these findings is presented below.

7.2.1.1 Personal Investment in Therapy

Speakers' potential to benefit from intervention appeared to be mediated by their level of investment in therapy. This investment is expressed in the data by the following subthemes:

- *Motivation for goals of therapy* [PWA 7, 9; CPs 2, 3, 6, 7, 9]
- *Commitment to participate in therapy* [CPs 1, 5, 7]

The broad goals of BCA are essentially to address some of the interactive limitations of aphasia, via a focus on adaptation and compensation rather than on the underlying language impairment. Therefore the engagement of CPs and PWA in therapy depends in part on whether speakers are motivated by the social emphasis of the goals, and whether they accepted the fact that BCA did not target language function.

Among some CPs there was a strong personal *Motivation for goals of therapy* and readiness to explore new ways of communicating. CPs reported finding the loss of their partners' speech difficult, and positioned themselves as being willing to try anything that might help (CPs 2, 3, 6 & 7). The below quote captures this outlook:

> *I think right from the word go, because the speech was quite poor to start off with after the stroke, I think trying to find a strategy to work was important.*
>
> ***Post Therapy: CP2***
>
> ***[Appendix 7,* Motivation for Conversational Behaviour Change*: Personal Investment in Therapy; Motivation for goals of therapy]***

However for other participants – both CPs and PWA (CP9, PWA 7 & 9) – the approach of therapy did not fit with their personal goals for rehabilitation. For Dyad 9 the development of compensations in conversation was viewed as constraining potential progress for language:

> *CP: You felt like you were going – probably backwards may not be the right way, but you were taking-*
>
> *PWA: (shows materials from previous language therapy)*
>
> *CP: You were actually working on words*
>
> *PWA: Yes*
>
> *CP: And the therapist was saying – you don't have to worry about saying orange, you just have to go to the fruit bowl and everyone will know; you just have to go to the kitchen and get a carton of milk and everyone will know you want milk*
>
> *PWA: Yes. NO. No NO no.*

CP: So in a way. Again it isn't wrong, but the avenue that we started on

R: Your priorities were elsewhere

CP: Yeah, were elsewhere

PWA: Yes. Yeah

Post Therapy: Dyad 9

[Appendix 7,* Motivation for Conversational Behaviour Change: *Personal Investment in Therapy;* *Motivation for goals of therapy]

The fact that Dyad 9 dropped out of therapy half way through highlights the importance of this issue when considering who to engage in conversation therapy. This example suggests that therapy will not be successful among participants who are not open to a socially-focussed approach.

Investment in therapy was also expressed in the CP data by a strong *Commitment to participate in therapy* and make it work, as illustrated in the quote below:

We used to work hard at doing what we needed to do for [the SLT]*. And it went well y'know. There's no point in being part of something – 'cause we enjoyed being part of it, and so, you've got to make it work haven't you.*

Post Therapy: CP1

[Appendix 7*, Motivation for Conversational Behaviour Change: *Personal Investment in Therapy;* *Commitment to participate in therapy]

This commitment translated practically into prioritising therapy sessions over other demands, such as work (CP1, CP5); continuing to participate in intervention despite poor motivation from the partner with aphasia (CP7); and making the effort to carry over the work and suggestions discussed within therapy to activity outside of the sessions (CP1, CP7).

7.2.1.2 Commitment to Enacting Behavioural Changes

Speakers' level of commitment to enacting specific behavioural changes affected whether they attempted them in conversation. This form of commitment is characterised by the following subthemes:

- *Intention to make changes* [CPs 1, 2, 3 4, 6, 7]
- *Perceived effort required for strategies* [CP 9]

One CP did not specifically plan to use her strategies, but instead simply monitored examples of target behaviour as and when they cropped up in conversation (CP6). However most other CPs reported on their *Intention to make changes*, and made specific plans to change their

conversational behaviour. Speakers talked about trying hard to terminate unhelpful behaviours (CP3, CP4), and deliberately using their target strategies (CPs 1, 2, 3, 4 & 7). The quotes below show CPs reflecting on their attempts at deliberate change:

> *I've been trying really hard to use the strategies we talked about. I've been giving you more time to talk. I think I've been trying not to give you words.*
>
> ***During Therapy: CP3***
>
> ***[Appendix 7,* Motivation for Conversational Behaviour Change: *Commitment to Enacting Behavioural Changes;* *Intention to use trained strategies*]**

> *SLT: Have you noticed, Christina, doing your strategies?*
>
> *CP: I'm really noticing, yeah, I'm dedicating myself to that. mm!* [i.e. passing turn] *And nice pauses. Lots of paraphrasing, which I think I do do quite a lot.*
>
> ***During Therapy: CP7***
>
> ***[Appendix 7,* Motivation for Conversational Behaviour Change*: Commitment to Enacting Behavioural Changes;* *Intention to use trained strategies*]**

However there is evidence that the *Perceived effort required for strategies* could potentially limit speaker commitment for change. The evidence for this comes from CP9 who reported feeling that implementing strategies represented a huge amount of work for a ''throw-away remark''.

7.2.1.3 Summary of MOTIVATION for Conversational Behaviour Change

These findings suggest that speaker MOTIVATION to enact the behaviour changes targeted by BCA will be limited in certain situations. Specifically, where there is a perception of disproportionate effort involved for strategies, or a generalised lack of commitment to BCA's emphasis on social adaptation. This is true for both barriers and facilitators, and across both CPs and PWA.

However where speakers are motivated to participate in BCA, translating motivation into action appears to be supported by directing deliberate intention and effort towards making changes in conversation. The MOTIVATION domains best reflecting the themes identified here are *INTENTIONS* and *GOALS* (Cane et al 2012; see Figure 4, p54). *INTENTIONS* represent the effect on behaviour from making a conscious decision or commitment to act in a certain way, and therefore encapsulate the effect on implementing change from *Intention to make changes* and *Perceived effort required for strategies.* This domain also represents the effect on a speaker's general participation in BCA from *Commitment to participate in therapy. GOALS* are the influence on behaviour from a preferred end state that a speaker wants to achieve. This domain reflects the effect from a speaker's *Motivation for goals of therapy* on their potential to benefit from

BCA. Table 15 below summarises how the analytic themes developed in Section 7.2.1 can be understood in relation to theory.

Table 15. MOTIVATION for Conversational Behaviour Change: Themes Mapped to Theoretical Domains

COM-B *(Michie, van Stralen & West 2011)*	Theoretical Domain *(Cane et al 2012, see Figure 4, p54)*	Analytic Themes
MOTIVATION	*INTENTIONS*	➢ ***Personal Investment in Therapy*** *(Section 7.2.1.1)* • *Commitment to participate in therapy* ➢ ***Commitment to Enacting Behavioural Changes*** *(Section7.2.1.2)* • *Intention to use trained strategies* • *Perceived effort required for strategies*
	GOALS	➢ ***Personal Investment in Therapy*** *(Section 7.2.1.1)* • *Motivation for goals of therapy*
	BELIEFS ABOUT CAPABILITIES	
	BELIEFS ABOUT CONSEQUENCES	
	PERCEIVED SOCIAL NORMS	
	SOCIAL IDENTITY	
	OPTIMISM	
	REINFORCEMENT	
	EMOTION	

7.2.2 CAPABILITY *for Conversational Behaviour Change*

This section turns to the evidence for the role of CAPABILITY in making changes to conversational behaviour. Previously, in Study 1, the CAPABILITY-linked determinant **Skills** was shown to play a role in limiting PWA use of compensatory strategies in conversation (Section 6.3.6, p116). However the nature of the skills constraining performance in context remained underspecified. In contrast, the data contributing to the theme **CAPABILITY for Conversational Behaviour Change**, suggest that a range of physical and cognitive abilities are involved in successfully making changes in conversation (see Figure 15, p133). This includes the ***Ability to Recognise Target Behaviour***, the ***Ability to Harness Cognitive Effort for Making Changes*** and the ***Ability to Carry Out Target Strategy***. These three themes and their accompanying subthemes are presented below.

7.2.2.1 Ability to Recognise Target Behaviour

Not being able to consistently identify and recognise a behaviour targeted for change is a potential barrier to making changes among some PWA in this dataset. The data within this theme suggest that establishing adequate recognition of a target behaviour will be based on ability in two areas:

- *Knowledge of target behaviour* [PWA 3, 5, 7]
- *Monitoring own use of behaviour* [PWA 2, 5]

In order to recognise a behaviour intended for change, speakers first need to build up a consistent level of *Knowledge of* [the] *target behaviour*. This relies on being able to understand and retain information provided in therapy about the behaviour. Within the during-therapy data, there is evidence that this can be problematic for some PWA, who demonstrate difficulty identifying the strategies they chose to practice (PWA3, PWA5, PWA7). This is illustrated in the following example:

SLT: How are your strategies going? What were the ones you had to do? Can you remember?

PWA: No

CP: What strategies do we use when you get stuck?

PWA: Uh

CP: Yeah you do, you got it in your hand

PWA: (*looks down) Uh, reading. Writing.*

SLT: Yeah

PWA: Yeah.

SLT: And what were the other ones? You had 'writing/drawing'. What else were you going to have?

PWA: Dunno.

CP: You don't remember (*opens up manual*) *Shall I tell ya?*

PWA: Yeah!

During Therapy: PWA5

[Appendix 7,* Capability for Conversational Behaviour Change*: Ability to Recognise Target Behaviour;* Knowledge of target behaviour*]

Here PWA5 requires maximum support from the CP and SLT to identify her chosen strategies, suggesting that it is hard for her to maintain consistent and independent *Knowledge of* [the] *target behaviour.*

There is also evidence to suggest that PWA can potentially experience difficulty in understanding what specific strategies entail. This was the case for PWA3 who throughout the during-therapy dataset asks for ongoing reminders and clarification about his chosen strategy of 'mime'.

Being able to recognise relevant behaviour also involves *Monitoring own use of behaviour*. Difficulties with this skill among certain PWA (PWA2, PWA5) became evident at points where speakers were asked during therapy to reflect on their use of strategies in context.

For PWA2 this difficulty related specifically to the use of miming in conversation, and he was unable to reflect on whether he had used the strategy at all, or whether it was difficult to implement. In the case of PWA5, the following extract suggests that although she has been using the target strategy of writing during conversation, she is unable to recognise this independently:

SLT: So you got there in the end

PWA: Yeah

SLT: So how did you get there in the end? Can you remember?

PWA: No dunno (shrugs) no

CP: You were writing it down I think

PWA: Yeah, yeh

During Therapy: PWA5

[Appendix 7,* Capability for Conversational Behaviour Change*: Ability to Recognise Target Behaviour;* Monitoring own use of behaviour*]

Where PWA exhibit difficulty recognising their own use of targeted behaviour, it is hard to claim that this usage represents the active and strategic implementation of the behaviour to solve problems, as intended by therapy. Examples of the use of facilitators in these cases may be more likely to represent automatic, habitual compensations rather than examples of redirecting behaviour strategically. Or alternatively, they may represent behaviours that have been cued by CP requests and prompts rather than self-initiated.

7.2.2.2 Ability to Harness Cognitive Effort for Making Changes

The involvement of some form of cognitive effort emerged within the data as playing an important role when making changes within conversation. Data suggest that the capacity to remember and actively self-regulate behaviour in context is important for both CPs and PWA, and for changing both barriers and facilitators. However, engaging direct involvement of memory and self-regulation may be difficult to sustain over time. Three subthemes represent these data:

- *Remembering to use strategies* [PWA 1, 5, 6, 7; CPs 6, 7]
- *Thinking about doing something differently in context* [PWA 1, 2, 4, 6; CPs 1, 5, 6, 7]
- *Decrease in monitoring strategy use over time* [CPs 1, 2, 3, 7]

Both CPs and PWA reported that *Remembering to use strategies* could be inconsistent. While PWA6 reported remembering to actively try strategies out, PWA1 admitted that doing so was variable. And this variability in remembering to make changes was also cited as a factor affecting CPs (CP6, CP7). Meanwhile, perhaps unsurprisingly, PWA5 and PWA7, already identified as struggling to consistently recognise target behaviours (see Section 7.2.2.1), also had difficulty independently remembering to use them.

The below extract from Dyad 7 illustrates how memory may play a role in determining successful implementation of facilitators in therapy for both CPs and PWA:

> *SLT: Did either of you remember much about your strategies while you were away?*
>
> *CP: Every so often I remembered them yeah.*
>
> *PWA: Yeah (laughs)*
>
> *SLT: You didn't at all?*
>
> *PWA: No (laughs)*
>
> ***During Therapy: CP7***
>
> ***[Appendix 7,* Capability for Conversational Behaviour Change*: Ability to Harness Cognitive Effort for Making Changes;* Remembering to use strategies*]***

Implementing change online not only relied on speakers' memory, but it also involved speakers actively *Thinking about doing something differently in context.* During the therapy process, CPs talk about the conscious effort, self talk and mental preparation they engage in when attempting to make changes online, as the below quote illustrates:

And if you are getting stuck [...] I'll just back off, and just sort of think, 'stop trying to guess everything' and you know, 'you don't need to close the conversation in one second, just say yeah yeah yeah'.

During Therapy: CP1

[Appendix 7,* Capability for Conversational Behaviour Change*: Ability to Harness Cognitive Effort for Making Changes;* *Thinking about doing something differently in context]

This cognitive activity, which appears to be directed at identifying when to make a change and what change to make, demonstrates the use of self-regulation skills in deliberate behavioural change. It appears to be relevant both when speakers are actively avoiding the use of previous barrier behaviour (CP1, CP3), and when deciding to strategically implement facilitative behaviour (CPs 1, 5, 6, 7).

Amongst PWA there are also indications that a process of conscious internal effort is supporting attempts at strategy use during therapy, with some speakers confirming that they are starting to actively use trained strategies without needing to be prompted (PWA 1, 4 & 6). The following quote illustrates how PWA6 is actively and strategically regulating his choice of behaviour to manage problems when a first verbal attempt to communicate hasn't worked:

SLT: So it looks like you've had a good crack at using some of these [i.e. strategies]*. Do you find it easy if one of these isn't working. Do you find it quite easy to switch to a different one?*

PWA: Oh yeah, yeah

SLT: You're remembering, and that's not the issue.

PWA: Yeah yeah

CP: You try and speak first won't you? You'll always try to speak first

SLT: That's your number 1 one.

PWA: Yes yes. (pointing at therapy materials) That, no, [i.e. keyword] *and then that* [i.e. writing], *yeah.*

SLT: Yeah, ok.

During Therapy: PWA6

[Appendix 7,* Capability for Conversational Behaviour Change*: Ability to Harness Cognitive Effort for Making Changes;* *Thinking about doing something differently in context]

However there is evidence that PWA may potentially have trouble with these skills, or at the very least may find it hard to report back on this cognitive activity:

SLT: Have you been doing anything different? Have you been thinking differently about things?

PWA: Uh. No. I don't know.

SLT: Just not sure.

During Therapy: PWA2

[Appendix 7,* Capability for Conversational Behaviour Change*: Ability to Harness Cognitive Effort for Making Changes;* Thinking about doing something differently in context*]

Broadly speaking, the data suggest that thinking about doing something differently when responding to events in conversation may be a key component of the cognitive effort that supports speakers to attempt changes to their behaviour.

Post-therapy the involvement of cognitive effort continues, with speakers continuing to report 'thinking' before they speak (CPs 1, 7 & 6). However, speakers do report a *Decrease in monitoring strategy use over time* and that maintaining this level of conscious effort for change can become less consistent (CP6, CP7):

R: Has anything else changed for you, Louise?

CP: Um. Well only, to think about what I say to Barry – what context, what I actually say to get the meaning across. I don't always, but I try.

Post Therapy: CP6

[Appendix 7,* Capability for Conversational Behaviour Change*: Ability to Harness Cognitive Effort for Making Changes;* Decrease in monitoring strategy use over time*]

The data suggest that the focused attention and monitoring of target behaviours may recede over time, and particularly after the end of therapy. In the post-therapy interviews, some CPs (CP1, CP7) report no longer being sure to what extent they still use strategies, as the below quote illustrates.

Certainly during the therapy I tried hard to practise the things [the SLT] *was suggesting. I think it's sort of inevitable that they either sort of stick and sink in or they don't. That's why I'm kind of unsure about what I do now. Whether I'm practicing all of them or not. Probably not.*

Post Therapy: CP7

[Appendix 7,* Capability for Conversational Behaviour Change*: Ability to Harness Cognitive Effort for Making Changes;* Decrease in monitoring strategy use over time*]

It is unclear what consequences reduced involvement of cognitive effort for change has on the long term use of strategies. The above speaker worries that her lack of conscious effort means she may no longer be using her trained strategies. However, evidence from other speakers suggests that strategy use may become more automatic over time (CPs 1, 2 & 3), as the below quote illustrates:

> *I always do the mmhmm, yeah, are you still thinking. So all those things* [the SLT] *taught us, it's sort of second nature now.*
>
> ***Post Therapy: CP2***

***[Appendix 7,* Capability for Conversational Behaviour Change*: Ability to Harness Cognitive Effort for Making Changes;** *Decrease in monitoring strategy use over time*

In these cases, an increasing habit may mean that less conscious cognitive involvement is required when implementing strategies than during the initial stages of attempting change. Increased habit would therefore be an explanation for the reports of reduced monitoring of newly-trained conversational behaviours.

7.2.2.3 Ability to Carry Out Target Strategy

The discussion of findings relating to speakers' CAPABILITY for behaviour change has so far considered evidence for the role of knowledge and cognitive effort when making changes in context. This final subtheme now considers data relating to practical skills for carrying out target strategies.

Among CPs, there is little data relating to the practical skills involved in making changes in conversation. Speakers tend to confirm that making changes is 'easy' (CP3, CP6) and little further discussion is generated. This may be because these speakers' physical and practical skills for making changes are assumed to be intact.

For PWA, the practical skills for carrying out targeted strategies garner more discussion. Study 1 has already highlighted that a lack of required **Skills** is one of the reasons PWA give for not attempting to solve problems in conversation when they arise (Section 6.3.6, p116). This analysis suggests that difficulties performing target strategies may also limit their successful transfer to conversational use during BCA.

In particular, evidence from PWA suggests that different strategies have differing potential for success among individual speakers. So for example, although PWA1, 2, 4 & 6 report finding writing relatively easy, PWA1 and PWA2 report difficulties with mime, whilst PWA4 and PWA6 report difficulties producing spoken keywords to signal their topic. The following extract

highlights how individual PWA may experience differing ease for implementing different strategies:

SLT: Brilliant. So have you found then, Kate, that this one here (pointing at sheet) the keyword, has that been something you've been practicing? Thinking of the keyword?

PWA: Yes, me? Yeah.

SLT: Good. And how is that? Is that easy or is it difficult? When you're having to think of another word?

PWA: Yeah. Yeah

SLT: They're ok

PWA: Writing, yep, lovely. Yeah

SLT: We know you're good at that

PWA: Um key. Um. Fantastic, me. Two. Two.

SLT: Those two you've been doing

PWA: Yeah. Yes. (points back at sheet to new item, grimaces)

SLT: And the last one, mime

PWA: Mime, mime, miming, yeah

During Therapy: PWA1

[Appendix 7,* Capability for Conversational Behaviour Change; *Ability to Carry Out Target Strategy]

A recent paper from the main BCA project has suggested that PWA may have the best outcomes for strategies that they already demonstrate an existing ability for, rather than those that are brand new – even where these are chosen by the participant (Beeke, Beckley et al 2014). If a pre-existing ***Ability to Carry Out Target Strategy*** does indeed determine success via BCA, this has implications for identifying which facilitators should be targeted for conversational use.

7.2.2.4 Summary of CAPABILITY *for Conversational Behaviour Change*

Data for the role of CAPABILITY in enacting change comes from both CPs and PWA. But whereas the CP data showcase the range of skills involved in activating change successfully, the PWA data highlight how impairments to these skills may limit the potential for successful change.

This analysis has shown that in order to successfully make a change to conversational behaviour, individuals need to be able to recognise a target behaviour, harness cognitive effort for its use in context, and to have the skills to perform it effectively. While data discussed here relate mainly to the cognitive and practical skills involved in using target facilitators, there is also evidence that terminating barriers engages the cognitive activity of *Thinking about doing something differently in context*.

Conversation therapies, including BCA, rely on speakers being able to establish consistent knowledge about target behaviours as a basis for change. Evidence discussed here suggests that the ***Ability to Recognise Target Behaviour*** is derived from both a *Knowledge of target behaviour* and from *Monitoring own use of behaviour* in context. These subthemes are associated with the theoretical domains *KNOWLEDGE,* defined as knowledge about how the behaviour is carried out, and when it takes place; and *BEHAVIOURAL REGULATION*, which incorporates the ability to self monitor relevant behaviour in preparation for change (Cane et al 2012).

As well as recognising target behaviour in one's own conversation, successful change engages the ***Ability to Harness Cognitive Effort for Making Changes***. The subtheme *Remembering to use strategies* is best associated with the theoretical domain *MEMORY, ATTENTION & DECISION PROCESSES.* Meanwhile, *Thinking about doing something differently in context* may reflect aspects of *BEHAVIOURAL REGULATION*. There is evidence that this increased cognitive effort and attention for implementing change in context may reduce once therapy has ended.

Cognitive abilities appear to play a role in determining a speaker's success at making the behavioural changes required by BCA. Consequently CPs may do better in BCA than PWA, who are more likely to have a range of impairments affecting memory and executive functioning. Furthermore successful PWA change also depends on their ***Ability to Carry Out Target Strategy,*** a component of *SKILLS*. Even with adequate cognitive ability to recognise, remember and regulate target behaviour, if a speaker has difficulty performing the trained strategy, successful use in conversation will be compromised.

Table 16 below summarises the factors identified as relating to CAPABILITY for behaviour change, as mapped to theoretical domains from the TDF (Cane et al 2012).

Table 16. CAPABILITY for Conversational Behaviour Change: Themes Mapped to Theoretical Domains

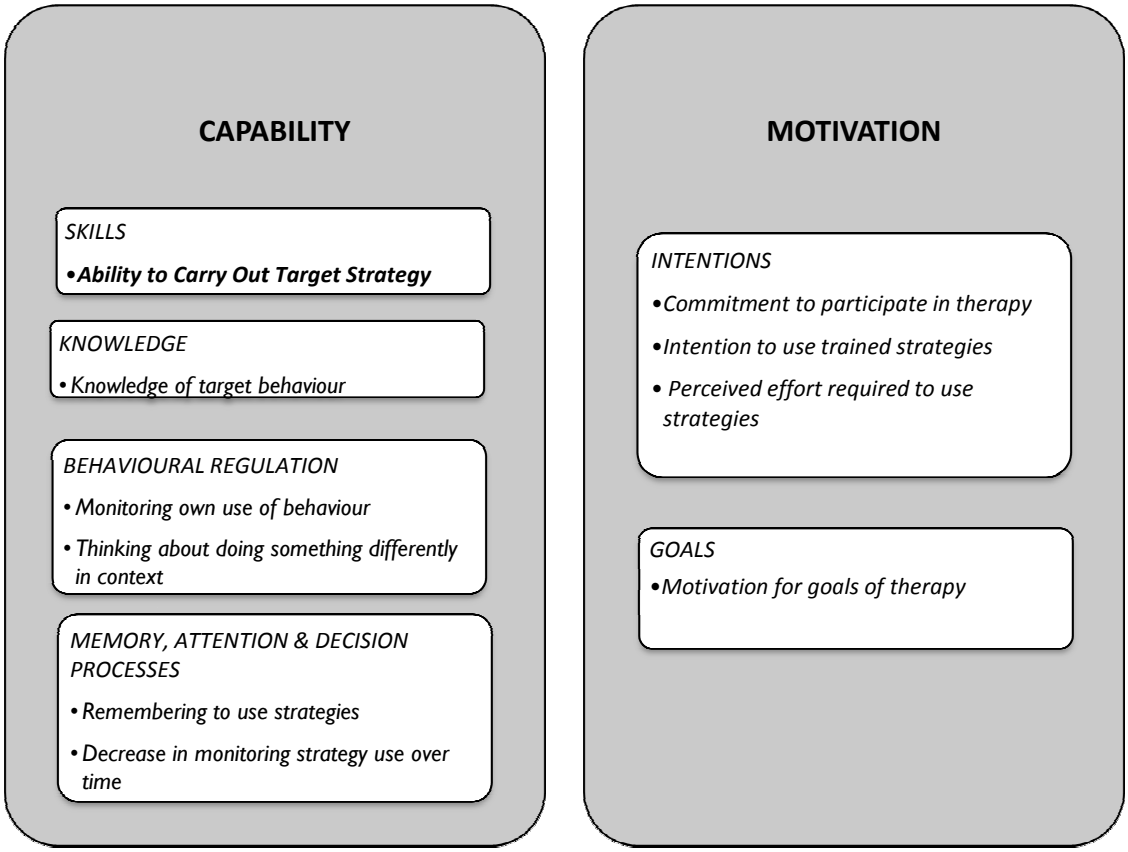
COM-B *(Michie, van Stralen & West 2011)*	Theoretical Domain *(Cane et al 2012; see Figure 4, p54)*	Analytic Themes
CAPABILITY	SKILLS	➢ ***Ability to Carry Out Target Strategy*** *(Section 7.2.2.3)*
	KNOWLEDGE	➢ ***Ability to Recognise Behaviour*** *(Section 7.2.2.1)* • *Knowledge of target behaviour*
	BEHAVIOURAL REGULATION	➢ ***Ability to Recognise Behaviour*** *(Section 7.2.2.1)* • *Monitoring own use of behaviour* ➢ ***Ability to Harness Cognitive Effort for Making Changes*** *(Section 7.2.2.2)* • *Thinking about doing something differently in context*
	MEMORY, ATTENTION & DECISION PROCESSES	➢ ***Ability to Harness Cognitive Effort for Making Changes*** *(Section 7.2.2.2)* • *Remembering to use strategies* • *Decrease in monitoring strategy use over time*

7.2.3 Summary of Factors Determining the Success of Making Changes

Analysis of **Factors Determining the Success of Making Changes**, the first major theme arising within the data captured by Personal Factors Hindering/ Supporting Conversational Behaviour Change has identified a range of behavioural determinants that are relevant to conversational behaviour change during BCA, and may determine its success. In particular, this analysis has provided deeper insights into the role of CAPABILITY for conversational behaviour and its change.

Taking the PWA and CP findings together, successful enactment of targeted behaviour change via BCA appears to be a derived from a strong ***Personal Investment in Therapy***, a strong ***Commitment to Enact Behavioural Changes***, a consistent ***Ability to Recognise Target Behaviour***, the ***Ability to Harness Cognitive Effort for Making Changes*** and the ***Ability to Carry Out Target Strategy***. A visual summary of these themes and how they link to theory is provided in Figure 16.

Figure 16. Factors Determining Success of Making Changes Mapped to Theoretical Domains



Making successful changes to behaviour in an everyday conversation appears to require a focussed and deliberate effort for change. This effort not only involves directing cognitive skills such as memory, self-monitoring and self-regulation towards making the target changes, but also harnessing a level of commitment towards doing so. Speakers who report that they have not attempted deliberate behavioural change in conversation often explain this in terms of difficulties remembering to do so, or in terms of not feeling it is worth the extra effort required. Among PWA, success at enacting change will also depend on the speakers' level of skill for carrying out the behaviour.

BCA candidates who are not motivated by the social communication focus of therapy may be less likely to summon the effort required for change, and therefore less likely to benefit from BCA. Furthermore PWA who lack the required skills to understand, monitor, remember, regulate and perform targeted behavioural changes may also have difficulty implementing self-initiated change.

Having discussed the data relating to the **Factors Determining Success of Making Changes**, this chapter now continues to present Hierarchy II **Mechanisms of Conversational Behaviour Change**.

7.3 Hierarchy II: Mechanisms of Conversational Behaviour Change

Hierarchy II represents the second of two major themes emerging from the analysis of Personal Factors Hindering/ Supporting Conversational Behaviour Change. The data used to develop Hierarchy II come from the during-therapy and post-therapy datasets and represent explanations from participants of how and why their behaviour changed as a result of therapy. The analytic focus here is on identifying the mechanisms of conversational behavioural change, i.e. the shifts in speakers' OPPORTUNITY, CAPABILITY, or MOTIVATION brought about by BCA, which were perceived to lead to changes in the use of barriers and facilitators.

As in Hierarchy I (Section 7.2), the components of the COM-B model of behaviour are used to organise findings according to theory. Consequently the three principle themes in Hierarchy II are **Changing OPPORTUNITY to Change Behaviour**; **Changing CAPABILITY to Change Behaviour**; and **Changing MOTIVATION to Change Behaviour**. Subsequent subthemes represent potential mechanisms of conversational behaviour change. One of these themes, ***Changed Expectation of Behaviour's Impact*** is divided into a further layer of subthemes representing the different kinds of impact associated with the behaviour i.e. benefits, and costs.

Hierarchy II is provided in Figure 17 on the next page. Data are provided for reference in Appendix 8.

Figure 17. Hierarchy II: Analytic Themes representing Mechanisms of Conversational Behaviour Change

Mechanisms of Conversational Behaviour Change:

Hierarchy II of Analytic Themes to Represent Data Captured by

Personal Factors Hindering/ Supporting Conversational Behaviour Change

Changing OPPORTUNITY to Change Behaviour

- ***Change in Conversational Support for PWA Strategies*** [PWA 5, 6; CP 5]

Changing CAPABILITY to Change Behaviour

- ***Increased Awareness of Own Behaviour*** [CPs 3, 5, 6, 7]
- ***Replacing Barriers with Facilitators*** [CPs 1, 3, 4, 5, 7]
- ***Increased Ease at Implementing Strategies*** [PWA 2; CPs 2, 4]

Changing MOTIVATION to Change Behaviour

- ***Changed Expectation of Behaviour's Impact***
  - *Changed expectation of benefits* [PWA 2, 6; CPs 1, 2, 4, 5, 6]
  - *Changed expectation of costs* [PWA 2, 6; CPs 4, 5]
- ***Changed Priorities for Conversation*** [CPs 3, 5, 6]
- ***Changed Perception of Success in Conversation*** [CPs 6, 7]
- ***Changed Emotions about Conversation*** [CPs 5, 6]

Section 7.3.1 presents and discusses the evidence for mechanisms associated with changing OPPORTUNITY as a route to changing conversational behaviour. Evidence for changes to CAPABILITY is presented in Section 7.3.2, whilst mechanisms associated with changing MOTIVATION are discussed in Section 7.3.3. A final summary will be presented in Section 7.3.4, where any key differences between the mechanisms involved in changing barriers and facilitators will be discussed, as will any differences in those mechanisms accessed by CPs and PWA.

Throughout, mechanisms will be considered in the context of previous findings from Study 1 (Chapter 6) and Section 7.2 of this chapter about the determinants shown to be relevant to carrying out conversational behaviour. For the purposes of ongoing comparison and coherence across the thesis, findings will also be linked to theory, via the domains of the TDF (Cane et al 2012, see Figure 4, p54).

7.3.1 Changing OPPORTUNITY *to Change Behaviour*

The aspects of OPPORTUNITY shown to determine conversational behaviour in Study 1 (see Table 12, p121) included **Cues from Conversation**, and aspects of the **Physical Environment** such as the *Availability of resources* e.g. pen and paper. In the data analysed within Hierarchy II, there was evidence that these particular determinants could undergo change via BCA. A ***Change in Conversational Support for PWA Strategies*** is therefore proposed to act as mechanism for supporting change in PWA facilitator behaviour. Data associated with this mechanism are now discussed.

7.3.1.1 Change in Conversational Support for PWA Strategies

Evidence from two dyads suggests that the changes made by CPs in conversation influenced their partners' use of compensatory strategies. The following extract suggests that within Dyad 5, the PWA's use of writing may only occur when prompted by CP:

> *CP: Being honest it's the writing things down that, that's our fallback.*
>
> *R: That's interesting, as you* [i.e. PWA] *were saying - yeah, we worked on writing, but I don't use it that much these days. So you need David to give you that reminder?*
>
> *CP: Give you a kick up the bum! (laughter)*
>
> *R: You wouldn't pick up a pen.*
>
> *PWA: Yeah*
>
> *CP: No if my mum comes to my house, that's when, she gets a pen and paper in her hand.*
>
> ***Post Therapy: D5***
>
> ***[Appendix 8,* Changing Opportunity to Change Behaviour*: Change in Conversational Support for PWA Strategies]***

This extract suggests that PWA5 rarely initiates the writing strategy herself, despite her son finding it an effective method for establishing shared understanding. Instead her use of writing appears to be dependent on external cues from CP5. This suggests BCA may promote PWA strategy use via change to *CP Requests,* or *Prompts PWA to do something they wouldn't otherwise do*, the OPPORTUNITY determinants identified in Study 1 (see Section 6.2.3, p104 and Section 6.3.1.4, p111 respectively).

Further evidence that BCA may successfully activate PWA strategy use in part via changes to conversational support comes from PWA6. In the below quote he feeds back that one of the

key changes he has experienced as a result of BCA is the amount of time that his wife now gives him in conversation:

R: And in terms of doing the therapy with [the SLT], *what's the main thing you remember about it?*

PWA: Time. Time.

R: How long it took?

PWA: No. You. To. Louise [i.e. wife] *Go. To time*

R: Giving you time?

PWA: Yes yes. (acts out sequence of being given time)

R: Ah, so that must have been – wow this really helps

PWA: Oh yes. Yes

Post Therapy: PWA6

[Appendix 8,* Changing Opportunity to Change Behaviour*: Change in Conversational Support for PWA Strategies]

While this quote does not directly link an increased availability of time to changed PWA strategy use, the data add to the evidence that, at least in some cases, BCA is perceived to successfully change the level of support CPs offer to PWA during conversation, thereby enabling or prompting them to do something differently. This suggests that BCA can potentially create shifts in the determinant *Availability of time* (see Section 6.2.2, p102), as a means of promoting PWA change.

There is also evidence BCA may support an increase in the *Availability of resources* for non-verbal strategy use (see Section 6.2.1, p102). The below extract shows that as well as prompting writing, CP5 also makes sure that pen and paper is readily available in different environments:

I've got a pen and paper in my car which I never used to have. Just so it helps us get unstuck

Post Therapy: CP5

[Appendix 8,* Changing Opportunity to Change Behaviour*: Change in Conversational Support for PWA Strategies]

7.3.1.2 Summary of Changing OPPORTUNITY *to Change Behaviour*

These data illustrate that CPs may actively increase their support for PWA strategy use, thereby increasing the likelihood that trained PWA facilitators will be used post therapy.

Change in Conversational Support for PWA strategies therefore represents a potential mechanism for PWA conversational behaviour change, and encompasses the OPPORTUNITY determinants of *CP requests, Prompts PWA to do something they wouldn't otherwise do* and *Availability of time* from the domain *SOCIAL INFLUENCES*, and the determinant *Availability of resources* from the domain *ENVIRONMENTAL CONTEXT & RESOURCES*.

This route to PWA behaviour change has the potential to complement and support a speaker's own efforts at using new conversational behaviours, e.g. by increasing the *Availability of time* and the *Availability of resources* to use strategies. Alternatively, by increasing appropriate *CP requests* or prompts for PWA strategies, this mechanism offers an indirect route to produce PWA change. This may be useful for PWA unable to self-initiate target strategies within conversation, perhaps due to the compromises to CAPABILITY identified in Section 7.2.2.2 (p140). An example of partner-prompted strategy use as an outcome of BCA is reported in Beckley et al (2013), for Dyad 3. Although Dyad 3 have not self-reported this outcome within the current data, Beckley et al's (2013) CA findings indicate that PWA3's use of trained strategies post therapy is not spontaneous and instead needs to be prompted by his wife. This indicates that BCA has potential to create PWA conversational change, even in the absence of deliberate and successful effort for change, as described in Section 7.2 of this study.

In terms of linking to theory, Table 17 below summarises how the mechanism ***Change in Conversational Support for PWA strategies*** can be understood in the context of the TDF (Cane et al 2012). This mechanism is not associated in the data with CPs or with barrier behaviour. There is no evidence in these data that speakers attribute therapy-related behaviour changes to any of the other OPPORTUNITY determinants identified in Study 1 as relevant to conversational behaviour. So, based on this evidence, the BCA therapy programme does not influence speakers' behaviour by making changes to the *Location* that people have conversations in, their O*pportunity for conversation*, the *Nature of conversation* that dyads' have, or by altering the impact from the *Presence of other people*. Nor is there evidence in these data to suggest that BCA has been successful at changing *PWA signals* or any *Absence of cues* in conversation in order to prompt appropriate behaviour from CPs.

Table 17. Changing OPPORTUNITY to Change Behaviour: Analytic Themes Mapped to Theoretical Domains

COM-B *(Michie, van Stralen & West 2011)*	Theoretical Domain *(Cane et al 2012)*	Analytic Themes
OPPORTUNITY	*SOCIAL INFLUENCES*	• ***Change in Conversational Support for PWA strategies*** *(Section 7.3.1.1)*
	ENVIRONMENTAL CONTEXT & RESOURCES	• ***Change in Conversational Support for PWA strategies*** *(Section 7.3.1.1)*

7.3.2 Changing CAPABILITY to Change Behaviour

In Section 7.2.2 of this Study (p137), the CAPABILITY to develop the strategic, self-initiated use of a target behaviour has been shown to involve establishing adequate *Knowledge of [the] target behaviour*, and then *Thinking about doing something differently in context*. Eventual success in making a change also relies on having the ***Ability to Carry Out Target Strategy.*** The data analysed within Hierarchy II, under **Mechanisms of Conversational Behaviour Change** (see Figure 17, p149) suggest that BCA has the potential to support these areas of CAPABILITY in order to bring about certain changes in conversational behaviour.

As anticipated and intended by BCA, CPs report an ***Increased Awareness of Own Behaviour,*** which they report helps them to recognise facilitators and barriers within their own communication. CPs also report finding the process of ***Replacing Barriers with Facilitators*** helpful for thinking about changes in online conversation. Finally, both CPs and PWA report some form of skill change over the course of BCA via the mechanism ***Increased Ease at Implementing Strategies***. Evidence for these mechanisms is discussed in the following subsections.

7.3.2.1 Increased Awareness of Own Behaviour

Many CPs report a change in what they frequently refer to as an 'awareness' of their own conversational behaviour (CPs 3, 5, 6, 7). And indeed, increased awareness of behaviour is proposed by both the SPPARC (Lock et al 2001) and BCA conversation therapy programmes to be a key mechanism by which therapy is expected to produce change. The data presented here help to further specify the concept of awareness in BCA, and demonstrate how it interacts with other behavioural determinants to activate change.

For CP7 and CP6, being aware means observing the use of a specific behaviour of interest within one's own communication – as in this example relating to the use of passing turns:

> *CP: I'll tell you what I did notice, and this was when I got back. I think I had to pay for something on the phone, and I caught myself going 'mm', so I realise I do do it.*
> *SLT: Yeah, everyone does*
> *CP: Yeah, but you just don't realise you do it. But I was aware of it then.*
>
> ***During Therapy: CP7***
>
> ***[Appendix 8,* Changing Capability to Change Behaviour*: Increased Awareness of Own Behaviour]***

This represents a change or increase in *Monitoring of one's own use of a target behaviour*, a theme identified in Section 7.2.2.1 (p138) of this chapter as supporting a speakers' ***Ability to Recognise Target Behaviour***. However, in the data presented here from CP7, an increased self-monitoring of target behaviour does not appear to be associated with developing the use of passing turns and making a deliberate change in behaviour.

In a different type of account, increased awareness involves a judgement about the value of the behaviour used – both negative (CP3, CP5) and positive (CP7). This does seem to be linked to attempts to change behaviour, both in relation to abandoning barriers, and in promoting the existing use of facilitators within a dyad's conversation. In the illustrative quote below, CP3 talks about being more aware of both her barrier behaviour (not helping her partner despite knowing what he was trying to say) and its impact (her partner struggling):

> *I think I've been trying not to give you words. Or I've been giving you words rather than letting you struggle. Things like that. Cause I think that has – that's made me much more aware of what I was doing. Before.*
>
> ***During Therapy: CP3***
>
> ***[Appendix 8,* Changing Capability to Change Behaviour*: Increased Awareness of Own Behaviour]***

For CP3, and the other speakers providing this type of account (CP5 & CP7,) trying to make a change in conversation is attributed to an enhanced awareness of the conversational behaviour that they use and the consequences it has for conversation or for their partner.

Based on these data, participating in BCA therapy does indeed have the potential to create an ***Increased Awareness of Own Behaviour***, as originally proposed by SPPARC (Lock et al 2001) and BCA. However, this study's findings suggest that for this to be an active mechanism for changing conversational behaviour, increased awareness should not be limited to an increased

ability to recognise and identify target behaviour in one's own communication, but instead should include an explicit evaluation of how that behaviour impacts on conversation.

The mechanism described here comprises shifts in both CAPABILITY and MOTIVATION for conversational behaviour change. In terms of changing aspects of CAPABILITY, BCA is proposed to have the potential to enhance speakers' ***Ability to Recognise Target Behaviour*** (see Section 7.2.2.1, p138). As this determinant has been shown to combine *Knowledge of target behaviour* and *Monitoring own use of target behaviour*, the relevant theoretical domains are *KNOWLEDGE*, and *BEHAVIOURAL REGULATION* (Cane et al 2012). However while shifts in these determinants here may be a crucial first step towards making a change, they may not be sufficient in themselves. The proposed mechanism ***Increased Awareness of Own Behaviour*** also includes forming a new opinion about the function and consequences of the target behaviour. This change is better understood as a shift in the theoretical domain *BELIEFS ABOUT CONSEQUENCES*, which - as a component of MOTIVATION - will be further discussed in Section 7.3.3.1, below.

7.3.2.2 Replacing Barriers with Facilitators

Many CPs in therapy were working simultaneously on learning to inhibit barrier behaviour whilst also developing new uses of facilitators. There is evidence in the data that *linking* these two processes supported CPs to make changes in context - there are several accounts which describe carrying out change by explicitly using a facilitator *instead of* a barrier (CPs 1, 3, 4, 5 & 7). Examples include: CP1 giving space instead of asking lots of questions; CP3 giving extra time instead of interrupting; CP5 replacing test questions with open questions; CP7 using comments instead of questions; and CP4 paraphrasing PWA4 instead of saying 'I don't understand'.

The below quote illustrates how the activity of replacing behaviour is experienced by speakers. CP1 talks about an example of PWA1 producing a word ('man') where the context is not clear. Instead of using her habitual strategy of rapid questioning to establish PWA1's meaning, CP1 attempts to leave space and use passing turns:

> *You think 'What's this?' Y'know.*
>
> *And then it was – I just knew, and all I did was my bit – which was to listen – and let Kate carry on, rather than going*
>
> *'Yeh? Man? What about man? Which man? What man, where?'*
>
> *I thought 'Right: I'm gonna shut up and not say anything, so yep – listen listen'.*
>
> ***During Therapy: CP1***
>
> ***[Appendix 8,* Changing Capability to Change Behaviour*: Replacing Barriers with Facilitators]***

The inner dialogue reported by CP1 illustrates the conscious regulatory effort she is directing towards inhibiting a previous behaviour and activating an alternative. 'Replacing' can be understood as an internal process in which speakers monitor points in conversation where they would habitually use a barrier, and use that as a cue to select an appropriate facilitator. This mechanism appears to successfully support speakers' ***Ability to Harness Cognitive Effort for Making Changes*** (Section 7.2.2.2, p140), a proposed component of the theoretical domain *BEHAVIOURAL REGULATION*. It seems unlikely that speakers' underlying abilities for self-regulation actually increase as a result of therapy. Instead, BCA may be prompting speakers to engage their pre-existing regulatory skills and combine them with their newfound knowledge about the usefulness of different behaviours, in order to make well-defined changes at specific moments in online conversation. Having one behaviour to use in place of another may have benefits for clarifying and simplifying the process of attempting to make a change.

7.3.2.3 Increased Ease at Implementing Strategies

Several CPs and PWA reported an increasing 'ease' in using facilitative strategies in context (PWA 2, PWA6; CP2, CP4). This suggests that the skills involved in implementing strategies may evolve and improve over the course of therapy and beyond, as these quotes from different time points and different types of speaker illustrate:

> *And also how to support you when you're talking innit. The prompts the aids and all that. Which you just start to use easier.*
>
> ***Post Therapy: CP4***
>
> ***[Appendix 8,* Changing Capability to Change Behaviour: *Increased Ease at Implementing Strategies]***

> *SLT: And how easy are you finding it to think. You know if the conversation is stopping, or you're having difficulty getting a word out. How easy are you finding it to sort of switch into doing something else?*
>
> *PWA: Yes. It's alright.*
>
> *CP: I think you're thinking about that a lot. When you're talking.*
>
> *PWA: Yeah. Yeah.*
>
> *SLT: Is it getting easier, or are you having to think about it a lot?*
>
> *PWA: Um. Getting on, getting on. Getting better.*
>
> ***During Therapy: PWA2***
>
> ***[Appendix 8,* Changing Capability to Change Behaviour: *Increased Ease at Implementing Strategies]***

While BCA is shown here to have the potential to produce an ***Increased Ease at Implementing Strategies***, the exact nature of the skill change involved in making strategies easier to use is unclear from these data. Section 7.2.2 (p137) highlighted that implementing strategies successfully within conversation depends not only on the physical ***Ability to Carry Out Target Strategy*** but also on the cognitive ***Ability to Harness Cognitive Effort for Making Changes.*** It seems plausible that increases in either or both of these determinants could be responsible for the experience of ***Increased Ease at Implementing Strategies***. Consequently this mechanism of change may be associated with the cognitive domains of *BEHAVIOURAL REGULATION* and *MEMORY, ATTENTION & DECISION PROCESSES*, as well as the practical domain of *SKILLS*.

7.3.2.4 Summary: Changing CAPABILITY to Change Behaviour

Data presented here support the BCA/SPPARC hypothesis that ***Increased Awareness of Own Behaviour*** is a mechanism of conversational behaviour change within therapy. However, this analysis has demonstrated that, in order to trigger change, raised awareness must combine an increased ***Ability to Recognise Target Behaviour*** with an evaluation of the behaviour's impact on conversation. Change may further be supported by engaging and focussing speakers' cognitive effort for change by directly ***Replacing Barriers with Facilitators***.

In terms of the comparison between CPs and PWA, both groups of speakers report experiencing an ***Increased Ease at Implementing Strategies*** over the course of therapy and beyond, and this is proposed to reflect a change in skill. However it is not clear to what extent this skill change represents an increasing ***Ability to Harness Cognitive Effort for Making Changes***, or an increasing ***Ability to Carry Out Strategies***. Meanwhile evidence for the involvement of cognitive mechanisms of CAPABILITY (i.e. increasing awareness, and the process of replacing) comes only from CPs. This may be to do with the difficulties inherent in reporting on internal cognitive activity when a speaker has aphasia. Alternatively, as much of the data for these mechanisms relate to changing barriers, this may automatically exclude many PWA who rarely targeted barriers during BCA.

In terms of linking to theory, this analysis has proposed that the theoretical domains of *KNOWLEDGE* and *BEHAVIOURAL REGULATION* may be involved in ***Increasing Awareness of Own Behaviour***, and that *BEHAVIOURAL REGULATION* may also be engaged when ***Replacing Barriers with Facilitators***. ***Increased Ease at Implementing Strategies*** is expected to map onto *SKILLS* and/or the cognitive domains of *MEMORY, ATTENTION & DECISION PROCESSES* and *BEHAVIOURAL REGULATION*. Table 18 below summarises how the subthemes associated with changing CAPABILITY map onto theoretical domains from the TDF (Cane et al 2012).

Table 18. Changing CAPABILITY to Change Behaviour: Analytic Themes Mapped to Theoretical Domains (Cane et al 2012)

COM-B *(Michie, van Stralen & West 2011)*	Theoretical Domain *(Cane et al 2012, see* Figure 4, *p54)*	Analytic Themes
CAPABILITY	*SKILLS*	***Increased Ease at Implementing Strategies*** *(Section 7.3.2.3)*
	KNOWLEDGE	***Increased Awareness of Own Behaviour*** *(Section 7.3.2.1)*
	BEHAVIOURAL REGULATION	***Increased Awareness of Own Behaviour*** *(Section 7.3.2.1)* ***Replacing Barriers with Facilitators*** *(Section7.3.2.2)* ***Increased Ease at Implementing Strategies*** *(Section 7.3.2.3)*
	MEMORY, ATTENTION & DECISION PROCESSES	***Increased Ease at Implementing Strategies*** *(Section 7.3.2.3)*

7.3.3 Changing MOTIVATION *to Change Behaviour*

The MOTIVATION to use a specific behaviour has been shown in Study 1 to be determined by a range of influences (see Table 14, p126). *BELIEFS ABOUT CONSEQUENCES* were a major reason to use or withhold behaviour, with behaviour being selected according to its **Expected Impact on Communication**, its **Expected Social Impact**, and its **Expected Emotional Impact**. Data analysed earlier in this study within the theme ***Increased Awareness of Own Behaviour*** (see Section 7.3.2.1, p153) have already suggested that evaluating the consequences of a behaviour may be a mechanism for change within BCA.

In terms of the behavioural consequences that matter to speakers, the *GOALS* shown in Study 1 to be guiding the selection of behaviour included ***Establishing Shared Understanding***; ***PWA Participation***; ***Conversational Flow***; ***Improving PWA Communication***; *Protecting PWA competence;* minimising *Levels of frustration* and avoiding the *Negative reactions of PWA*. In addition, speakers' perceived *SOCIAL NORMS*, *IDENTITY* and *EMOTION* were also shown to play a role in determining their conversational behaviour.

Among the data analysed under Hierarchy II (Figure 17, p149), **Changing MOTIVATION to Change Behaviour** incorporates four key themes with the potential to represent mechanisms of behavioural change. A ***Changed Expectation of Behaviour's Impact*** may represent a *Changed expectation of benefits* associated with facilitator behaviour, or a *Changed expectation of costs* associated with barrier behaviour. A further mechanism, ***Changed Priorities for Conversation,*** is identified as being particularly relevant for reducing barrier behaviour. A

further two changes in MOTIVATION are identified within the data: ***Changed Perception of Success in Conversation*** and ***Changed Emotions about Conversation***. However, as will be discussed, it is not clear whether these changes actually have a role in triggering conversational behaviour change, or whether they represent distinct outcomes produced by BCA.

7.3.3.1 Changed Expectation of Behaviour's Impact

In Study 1, a **Behaviour's Expected Impact on Communication** was shown to be a key determining influence on speaker behaviour in conversation (Section 6.3.1, p108). However there was some evidence to suggest that the beliefs speakers held about the impacts of behaviours were not always accurate (see Section 6.3.1.1, p109). Here, these beliefs are shown to have the potential to be altered via BCA.

In the data for this theme, both PWA and CPs talked about how their expectations of the costs and benefits of specific behaviours evolved during therapy. Speakers often explicitly attributed behavioural changes to this process. The use of facilitators was linked to strengthened expectations that a behaviour would benefit conversation, whilst the termination of barriers appeared to be triggered by a new realisation that these behaviours carried costs for conversation or for the other speaker. *Changed expectation of benefits* is discussed first, followed by C*hanged expectation of costs*.

7.3.3.1.1 Changed Expectation of Benefits

Following initial experimentation with target strategies, CPs reported observing benefits associated with the strategies such as furthering the level of understanding between speakers (CPs 1, 4, 5, & 6), improving the naturalness of conversational dynamics and atmosphere (CPs 1, 2, & 6), reducing frustration and worry (CP4, CP6) as well as generalised benefits for the relationship (CP4). The example from CP2 below illustrates how experimenting with target strategies can lead to the development of a positive perception of their impact on conversation flow:

> *This letting the conversation go on. I have been waiting. And he's been not going as blank. And I have turned round to you and said: Are you still thinking? And you've gone: yes. And then it sort of – y'know. And that's been quite good.*
>
> ***During Therapy: CP2***
>
> ***[Appendix 8,* Changing Motivation to Change Behaviour*: Changed expectation of behaviour's impact:* Changed expectation of benefits*]***

There is some evidence that the process of strengthening the expectation of benefits associated with strategy use is relevant for successful PWA too, with both PWA2 and PWA6

reporting back on the usefulness of their strategies for managing problems in conversations. The extract below illustrates the change in attitude experienced by PWA6 during therapy, in relation to using pen and paper in conversation:

R: So it's about you making sure you've got paper and pens?

PWA: Yes, yes. Good, I think yes.

PWA: I go 'ooh' it's… (grimacing facial expression)

R: Don't wanna do it

PWA: Yeah but no I think yeh, yeh. Good.

R: So at first you were like, oh, um, dunno

PWA: Yeah. But no I think it's… oh.

Post Therapy: PWA 6

[Appendix 8,* Changing Motivation to Change Behaviour*: Changed expectation of behaviour's impact:* Changed expectation of benefits*]

A **Behaviour's Expected Impact on Communication** was shown in Study 1 to be a key determinant of conversational behaviour (see Section 6.3.1, p108). Therefore supporting positive expectations about the benefits of facilitative strategies may be an important mechanism for promoting use. The evidence discussed here indicates that BCA does have the potential to introduce or enhance positive beliefs about a **Behaviour's Expected Impact on Communication,** and that this appears to promote strategy use. These beliefs appear to be especially supported by building up experiences of successful strategy use and reflecting on their positive impacts.

7.3.3.1.2 Changed Expectation of Costs

The termination of barriers appears to be even more directly linked to a change in expectation about the impact of a behaviour. Change in barrier use is attributed in the CP data to newly-perceived costs for the dynamics of the conversation (CPs 4, 5 & 6) or for the emotions of the PWA (CP4). Whereas the data relating to facilitators suggest that active experimentation may be integral to shifting perceptions, the change in perception of barriers appeared to be based on realisations prompted by therapy – the process of 'becoming aware' of the impact of one's own behaviour, as already indicated in Section 7.3.2.1 (p153). The following extract illustrates the power that identifying the negative impact of a behaviour can have for motivating change:

I would ask questions that I would already know the answer to, y'know. So. I was aware I was doing it, but I wasn't aware of how it was affecting our conversation. So

that definitely opened my eyes a bit. And helped me. And obviously those things, for myself. They've stayed with me. I became aware of them over the few months that we were doing the therapy. Once you break a habit.

Post Therapy: CP5

[Appendix 8,* Changing Motivation to Change Behaviour*: Changed Expectation of Behaviour's Impact:* Changed expectation of costs*]

The quote demonstrates how being aware of one's own behaviour is not sufficient for change until the impact of the behaviour on conversation has been evaluated. The realisation of a behaviour's costs has the potential to resonate very strongly with speakers, with some reporting that this was the main thing that they remembered about therapy (CP4, CP5).

Few PWA targeted barrier behaviours. An exception was PWA2 who tended to disengage from interaction whilst thinking about what to say, leading his wife to believe he had finished talking (see Beeke et al 2011 for further details). In these data, there is evidence that this same process of 'realisation' motivated PWA2 to make changes, as indicated in the below extract:

R: So there are some nice things that seem to have developed a bit. And what do you think helped those things to change?

PWA: Um. I don't know.

R: Was it watching yourself on video, or was it something else? It's a hard question to answer.

PWA: Yes. Different things. The video. I don't know. Much better. Thinking. Doing. Much better.

[...]

PWA: Yeah. Before. (draws)

R: Something about the facial expression?

PWA: Yes. Down.

R: So not making eye contact with people.

PWA: Yes. But much better, speaking. Yeah much better. It's alright

Post Therapy: PWA 2

[Appendix 8,* Changing Motivation to Change Behaviour*: Changed Expectation of Behaviour's Impact:* Changed expectation of costs*]

Supporting re-evaluation of a behaviour's expected impact on communication, or its social and emotional impact, appears to be an important mechanism for changing barrier behaviour, which may have potential relevance to both CP and PWA.

7.3.3.2 Changed Priorities for Conversation

Study 1 demonstrated that some CPs may use behaviour directed towards eliciting accurate speech, and that this could be associated either with the goal of ***Improving PWA Communication***, or *Protecting PWA Competence* (see Section 6.3.1.4, p111 and Section 6.3.2, p113). Data in the current study show that the emphasis placed on accurate verbal communication in conversation can undergo change as a result of BCA (CP3, 5 & 6). This quote illustrates how CP6's priorities evolved following therapy:

> *CP: I think that's what came out of it. Instead of concentrating on oh Barry MUST speak, we must do this, we must do that. No. Communicate!*
>
> *PWA: Yeh*
>
> *CP: Y'know whichever way. Gestures. Writing. I think that was the biggest thing. Don't worry about it so much, as long as you communicate. Whichever way.*
>
> ***Post Therapy: CP6***
>
> ***[Appendix 8,* Changing Motivation to Change Behaviour*: Changed Priorities for Conversation]***

In the data for this theme, there is a shift away from prioritising verbal accuracy over interactive flow, and evidence of an increased value placed on effective conversation. In terms of theoretical domains, these cases suggest BCA has the potential to support speakers to re-prioritise their *GOALS* for interaction. Furthermore, there is evidence that a re-prioritisation of conversational *GOALS* is linked with the process of re-evaluating *BELIEFS ABOUT CONSEQUENCES* associated with specific behaviours.

Among the CPs reporting ***Changed Priorities for Conversation***, there is a sense that prior to BCA they felt a responsibility to promote accurate speech within conversation (CP3, 5 & 6). The expectation in these data is that using speech, even when it is difficult or unnecessary for establishing meaning, is somehow good for the PWA and will contribute to the valued outcome of improvement or recovery. However, as the below quote illustrates, this belief has potential to change as a result of BCA:

Before we had that therapy, we'd sort let you try and work out, try and tell us things...even though when we knew perhaps what you were going to be saying, we wanted you to say it because we thought it was helpful.

Post Therapy: CP3

[Appendix 8,* Changing Motivation to Change Behaviour*: Changed Priorities for Conversation]

The quotes provided here suggest that BCA therapy has the potential to prompt change for a certain type of barrier behaviour by supporting speakers to re-evaluate their beliefs about what conversation is for, and to reconsider how helpful and effective barrier behaviours really are.

There is no evidence within this dataset that PWA experience the same reprioritisation of conversational *GOALS*. However we do know that PWA are often willing participants in conversational activities focussed on accurate speech production, and often apply significant effort to get words right within conversation (Beeke, Beckley et al 2014; Beeke, Johnson et al 2014). Creating a shift in *GOALS* for conversation is at least relevant to PWA, even if we do not have any direct evidence that this mechanism is operational for them in BCA.

7.3.3.3 Changed Perception of Success in Conversation

Data in this theme suggest that BCA has the potential to enhance positive perceptions among CPs about their own abilities as a conversation partner to someone with aphasia (CP6, CP7). The following quote shows that CP7 found it beneficial to identify the pre-existing use of facilitators in conversation:

CP: You kinda think well, do we ever have conversation? And it made me think: I don't think we have much conversation. But we do. And we did. Particularly when we sat down and did the videos – obviously sometimes it was quite difficult but other times it was quite natural wasn't it?

PWA: Yup

CP: And it just showed. We were doing some things that were right. We worked our way round it. The communication problems.

Post Therapy: CP7

[Appendix 8,* Changing Motivation to Change Behaviour*: Changed Perception of Success in Conversation]

Here, rather than practising and reflecting on newly-introduced strategies, speakers are being prompted to recognise the success of existing behaviour. The positive feelings associated with having - and recognising - success in conversation are echoed by CP6. She reported it gave her a 'boost' to discover that there were other ways her partner could communicate with her. This

suggests that BCA may be engaging and changing aspects of *BELIEFS ABOUT CAPABILITIES* during therapy, i.e. a speaker's self confidence for managing aphasia in conversation, and that this is associated with the successful use of pre-existing facilitators or those used by a partner.

However, it is notable that the reported ***Changed Perception of Success in Conversation*** is not specifically linked by participants to doing something differently. The quote from CP7 above links her perception of success to the behaviours already in use prior to therapy, while CP6 links it to her partner's strategy use. It is therefore unclear to what extent these enhanced *BELIEFS ABOUT CAPABILITIES* represents a mechanism for promoting individual change in conversation during the therapy process. In the case of pre-existing facilitators especially, it is not clear if a ***Changed Perception of Success in Conversation*** offers a basis for extending the use of these behaviours, or if it represents a distinct outcome of the BCA programme in and of itself.

7.3.3.4 Changed Emotions about Conversation

Study 1 suggested that among CPs, the speaker's *Own negative emotions* could drive the use of barrier behaviours in conversation or alternatively prevent speakers from helping their partners (Section 6.3.3, p114). There is some evidence that negative emotions lessen as a result of therapy. Post-therapy CP5 reports that he feels more able to leave things "open", whereas previously he felt the need to "push" his mother in conversation, in order to help her regain her abilities as quickly as possible. CP6 reports therapy has helped her feel less "worried" about making her partner use speech, as this quote illustrates:

> *CP: We're not worrying about saying so much – 'again, what did you say? No, nearly there, come on'. We've stopped that.*
>
> *PWA: Yeah*
>
> *SLT: And how's that been has that been alright?*
>
> *CP: More normal I suppose. Must make you feel better*
>
> *PWA: mm*
>
> *CP: 'Cause we thought that's what we should do, we need to do*
>
> *PWA: mm*
>
> ***During Therapy CP6***
>
> ***[Appendix 8,* Changing Motivation to Change Behaviour*: Changed Emotions about Conversation]***

These data suggest that BCA has the potential to reduce negative emotions, and in particular the CP sense of anxiety and responsibility that they need to 'work' on PWA accuracy and use of verbal communication within conversation. However, although this reflects a change in the theoretical domain *EMOTION*, these data do not clearly suggest that this change operates as a trigger to do something differently. It appears equally plausible in these instances that reduced anxiety and impatience represent an outcome, rather than mechanism of BCA.

7.3.3.5 Summary: Changing MOTIVATION *to Change Behaviour*

Table 19 below summarises the themes associated with changing MOTIVATION via BCA, as mapped to domains from the TDF (Cane et al 2012, see Figure 4, p28).

Table 19. Changing MOTIVATION to Change Behaviour: Analytic Themes Mapped to Theoretical Domains

COM-B *(Michie, van Stralen & West 2011)*	Theoretical Domain *(Cane et al 2012)*	Analytic Themes
MOTIVATION	*INTENTIONS*	
	GOALS	***Changed Priorities for Conversation*** *(Section 7.3.3.2)*
	BELIEFS ABOUT CAPABILITIES	***Changed Perception of Success in Conversation*** *(Section 7.3.3.3)*
	BELIEFS ABOUT CONSEQUENCES	***Changed Expectation of Behaviour's Impact*** *(Section 7.3.3.1)*
	PERCEIVED SOCIAL NORMS	
	SOCIAL IDENTITY	
	OPTIMISM	
	REINFORCEMENT	
	EMOTION	***Changed Emotions about Conversation*** *(Section 7.3.3.4)*

The changes in MOTIVATION activated by BCA that are reported by participants are ***Changed Expectation of Behaviour's Impact, Changed Priorities for Conversation, Changed Perception of Success in Conversation*** and ***Changed Emotions about Conversation.*** Of these, ***Changed Expectation of Behaviour's Impact*** and ***Changed Priorities for Conversation*** are proposed to represent clear mechanisms by which BCA produces change to conversational behaviour.

Changed Perception of Success in Conversation and ***Changed Emotions about Conversation*** both have the potential to support conversational behaviour change; however, the evidence for this is less clear in participants' reports. ***Changed Perception of Success in Conversation*** is

not linked in the data to the adoption of new strategies; however, it may have a role in promoting the extended use of pre-existing facilitators. Meanwhile ***Changed Emotions about Conversation*** may well be the product of behaviour change, or of other processes activated by BCA. The possibility that BCA has the potential to bring about increased confidence for conversation, or decreased anxiety, represent potential additional outcomes of BCA that need to be better specified and evaluated in future research.

Changed Expectation of Behaviour's Impact, associated with the theoretical domain *BELIEFS ABOUT CONSEQUENCES*, appears to be an active mechanism for changing both types of behaviour (barrier and facilitator) among both groups of speakers (PWA and CPs). ***Changed Priorities for Conversation,*** a likely component of the domain *GOALS*, appear only to be associated with CP barrier behaviour.

The role of ***Changed Expectation of Behaviour's Impact*** in creating conversational behaviour change echoes the Study 1 finding that the expected impact of behaviour is an important determinant of many types of conversational behaviour. Evidence discussed in Study 2 suggests that not only is changing speakers' beliefs about the consequences of their behaviour a key process within BCA, but also that this process may function differently for barriers and facilitators. Motivating future use of facilitators appears to involve establishing initial experiences of using facilitators, and then using those experiences to reflect on and identify benefits. Meanwhile, a changed expectation about the impact of barriers may rely on realisations that are triggered by events in therapy.

Study 1 identified a range of valued communicative *GOALS* that speakers direct their behaviour towards. These include ***Establishing Shared Understanding***, ***PWA Participation, Conversational Flow*** and ***Improving PWA Communication*** (see Section 6.3, p106). ***Improving PWA Communication*** was identified as being particularly associated with barrier behaviours such as test questions and correct productions. The evidence discussed here suggests that BCA may in some cases bring about ***Changed Priorities for Conversation***, in which the emphasis on PWA's use of accurate verbal communication in conversation may recede in favour of a social or interactional emphasis.

Study 1 suggested that conversational behaviour may be determined by factors associated with the domains of *SOCIAL NORMS*, *IDENTITY*, and *EMOTION*. On the basis of these data, there is no evidence that these domains are engaged in producing conversational behaviour change via BCA. Although, as discussed earlier, the domain of *EMOTION* may undergo change for some, Study 1 did not identify evidence for the role for *BELIEFS ABOUT CAPABILITIES* in determining behaviour. In contrast, this analysis does suggest that *BELIEFS ABOUT CAPABILITIES* have relevance

to conversational behaviour, and indeed may undergo change during BCA. The specific role of the mechanism ***Changed Perception of Success in Conversation*** in conversational behaviour change remains unclear however.

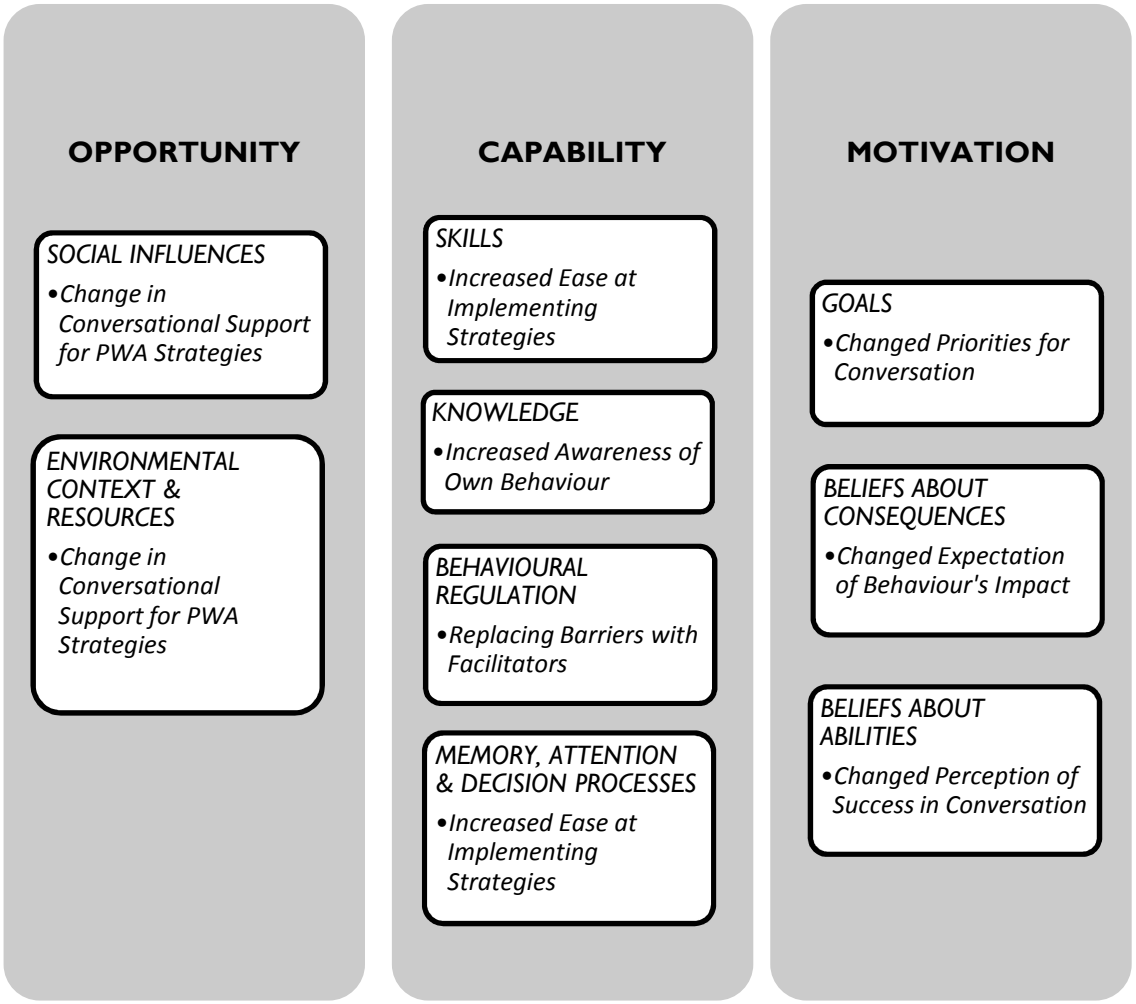
7.3.4 Summary: Mechanisms of Conversational Behaviour Change

The major theme **Mechanisms of Conversational Behaviour Change** is based on CP and PWA accounts in the during-therapy and post-therapy datasets coded under Personal Factors Hindering/ Supporting Conversational Behaviour Change. These accounts represent participants' perceptions of how conversational behaviour change was produced as a result of participating in the BCA therapy programme.

The hypothesised mechanisms of change within BCA developed through this analysis have been compared to the determinants of conversational behaviour identified in Study 1. In addition they have been mapped to the theoretical domains of the TDF (Cane et al 2012). This is in order to maximise the coherence of findings across the chapters in this thesis, and also to further the theoretical understanding of how BCA may support change.

Figure 18 below summarises the mechanisms of conversational behaviour change discussed in Sections 7.3.1, 7.3.2 and 7.3.3 according to their associated theoretical domains. The format of the figure is consistent with Figure 14 (p128) and Figure 16 (p147) for ease of comparison across chapters and sections. ***Changed Emotions about Conversation*** has been excluded from Figure 18 on the basis that the evidence available does not clearly point to a role in motivating conversational behaviour change.

Figure 18. BCA Mechanisms of Conversational Behaviour Change Mapped to Theoretical Domains



This thesis is particularly interested in whether change to barriers and change to facilitators is produced in a similar way. The current analysis has suggested that not all mechanisms of change hold equal relevance for barriers and facilitators. For example ***Increased Ease at Implementing Strategies*** is only relevant to facilitators, while ***Changed Priorities for Conversation*** appears most relevant to reducing barriers. Furthermore, where a mechanism is relevant to both categories of behaviour it may still operate in a different way to create change for barriers and for facilitators, as in the example of ***Changed Expectation of Behaviour's Impact***. A comparison of the mechanisms shown in the data to be involved in changing barriers and facilitators is provided in Table 20 below.

Table 20. Comparing Mechanisms of Change: Barriers vs. Facilitators

Mechanism	Relevant to Barriers?	Relevant to Facilitators?
Change in Conversational Support for PWA Strategies	X	✓
Increased Awareness of Own Behaviour	✓	✓
Replacing Barriers with Facilitators	✓	✓
Increased Ease at Implementing Strategies	X	✓
Changed Expectation of Behaviour's Impact	✓	✓
Changed Priorities for Conversation	✓	X
Changed Perception of Success in Conversation	X	✓

As Table 20 shows, change to both barriers and facilitators is supported by an ***Increased Awareness of Own Behaviour***, combined with an evaluation of the function of the behaviour that leads to ***Changed Expectation of Behaviour's Impact***. For some speakers, translating identified areas for change into conversation may be additionally supported by the regulatory activity of ***Replacing Barriers with Facilitators***.

However, while this process may be sufficient for barrier change, longer term facilitator change may need to be built through use. Reviewing the use of existing facilitators and their impact may produce a ***Changed Perception of Success in Conversation***. Further experiences of trying out both new and existing facilitators also contribute to a ***Changed Expectation of Behaviour's Impact.*** Repeated use leads to an ***Increased Ease at Implementing Strategies.***

For some CPs who are using barrier behaviour associated with attempts to improve their partner's communication, change may also be associated with ***Changed Priorities for Conversation***. Whilst among some PWA, facilitator use may be indirectly supported by a ***Change in Conversational Support for PWA Strategies***.

The relative strength or universality of these mechanisms for creating change to barriers and facilitators is not possible to deduce from these data. However, the finding that barriers and facilitators rely on different processes of change represents a new insight into BCA, and will be important for understanding and evaluating the intervention in future research.

This thesis is also interested in whether change happens in the same way for PWA and CPs. There are indications that the key mechanisms for establishing deliberate, self-initiated facilitator use are the same across PWA and CPs. However, this analysis has also identified some mechanisms which, on the basis of these data, appear to be relevant to only one group

of speakers. Table 21 provides a comparison of the mechanisms of change associated in the data with each group of speakers.

Table 21. Comparing Mechanisms of Change: CPs vs. PWA

Mechanism	Relevant to CPs?	Relevant to PWA?
Change in Conversational Support for PWA Strategies	X	✓
Increased Awareness of Own Behaviour	✓	X
Replacing Barriers with Facilitators	✓	X
Increased Ease at Implementing Strategies	✓	✓
Changed Expectation of Behaviour's Impact	✓	✓
Changed Priorities for Conversation	✓	X
Changed Perception of Success in Conversation	✓	X

Table 21 highlights that creating changes in strategy use via increased conversational support appears to apply only to PWA in these data. This route to change is expected to complement individual efforts to use strategies among PWA. However in some cases it may offer an alternative route to change, in which strategy use is reliant on CP requests and prompts.

Data for the mechanisms of ***Increased Awareness of Own Behaviour***, ***Replacing Barriers with Facilitators***, and ***Changed Priorities for Conversation*** come only from CPs. Inevitably, this is because CPs were linguistically able to report on a wider variety of mechanisms than PWA. However, it is also noticeable that these mechanisms are all noted to be especially relevant to barrier change. In BCA, CPs routinely target barrier change in a way that PWA do not, and so it is also possible that these mechanisms may have simply been more relevant to these CPs. In addition, only CPs report a ***Changed Perception of Success in Conversation***.

The mechanisms of ***Changed Expectation of Behaviour's Impact*** and ***Increased Ease at Implementing Strategies*** appear to be relevant to both PWA and CP, suggesting that these processes may be particularly central to the BCA programme.

7.4 Discussion

This chapter has considered participants' own accounts of changing behaviour. Section 7.1 outlined the two major themes that emerged within the very broad coding category Personal Factors Hindering/ Supporting Conversational Behaviour Change. Section 7.2 presented the first major theme, **Factors Determining the Success of Making Changes**, and considered evidence relating to the nature of the personal skills and outlook needed in order to benefit from therapy, and

make successful changes in conversation. Section 7.3 presented the second major theme, **Mechanisms of Conversational Behaviour Change**, and considered participants' accounts of how and why their behaviour changed as a result of BCA. This final section presents a discussion of key findings from the chapter with reference to existing literature.

7.4.1 Changing Conversational Behaviour via BCA

Simmons-Mackie & Damico (1997, p775) suggest that the aim of compensatory strategy training should be to "develop automatic, efficient behaviour which does not compete with the attentional requirements of maintaining a cooperative social interaction". However, Study 2 suggests that in order develop new uses of strategies, and when terminating unhelpful behaviours, a certain level of increased cognitive effort and attention is required, at least initially. This extra effort can be characterised as a combination of an enhanced commitment to make a change, and a focussing of cognitive activity towards making the right change at the right moment. However it should be highlighted that the exact nature of this cognitive effort is hard to deduce from these qualitative data, as self report is not considered a reliable method for investigating cognitive processes in detail (Nisbett & Wilson 1977). Nonetheless, the evidence discussed here can still broadly indicate that participants experience increased effort when successfully making changes, and that this effort may wane after therapy. While this decreased monitoring of strategy use potentially has ramifications for the success of maintaining behaviour changes, it may alternatively reflect BCA's success in developing 'automatic efficient behaviour' whose implementation is so habitual that it does not distract from the activity of conversation.

The findings of Study 2 suggest that BCA works by strengthening speakers' reasons to do something differently, and by structuring and supporting their efforts to make changes in context. This behaviour change process appears to engage a deliberate and active attempt to make changes on the part of the speaker. However, this study has also illustrated that, among PWA, while individual deliberate behavioural change is a possibility for some, it may not be realistic for all. For these speakers, BCA has been shown to have the potential to *indirectly* produce strategy use, as a result of new conversational supports introduced by CPs. This reflects BCA's roots in CP training programmes, where indirect environmental change has long been proposed to be a mechanism for revealing PWA competence (Kagan & Gailey 1993), or enabling a PWA to do more in conversation (Beeke et al 2011; Wilkinson et al 2010; 2011).

Previously, in terms of accounting for deliberate conversational behavioural change, CP training approaches such as SPPARC (Lock et al 2001) and 'Recognition Training' approaches (Simmons-Mackie et al 2005) have emphasised the mechanism of 'raised awareness' or 'recognition' of conversational behaviour. However, the findings of this study have suggested

that raised awareness may in fact be only one of several interacting mechanisms supporting conversational behaviour change. While the data discussed here support the hypothesis that raised awareness of conversational behaviour contributes to change, the analysis has brought greater definition to the concept of change-relevant awareness. Crucially, it is suggested that increasing knowledge and monitoring of one's own behaviour may not in itself be sufficient for change. Instead, the evidence indicates that speakers must also evaluate the *impact* of these behaviours in order to prompt change. This finding may explain Lock's (2005) evaluation of SPPARC, which identified a number of CPs reporting a greater 'awareness' of their own conversational behaviour, but no behavioural changes. The distinction between producing raised awareness and producing behavioural change is a key issue for conversation therapies such as SPPARC and BCA. Intervention may need to be clearer about whether raised awareness is a sufficient outcome in and of itself for these therapy programmes, or whether therapy needs to do more to prompt evaluation of behaviour alongside awareness-raising.

This study has also concluded that there are key differences in how BCA produces change to barrier behaviours compared to how it produces change to facilitator behaviours. Although making a distinction between treating barriers and facilitators has recently been highlighted by a new review of conversation therapy (Simmons-Mackie et al 2014, in press), this difference has not typically been discussed in the conversation therapy literature. This study's identification of ways in which these change processes differ therefore represents an important new finding.

Change to barriers is proposed to rely on changing speakers' beliefs about the function of barriers in conversation, and on shifting their priorities from accuracy to interactive efficiency and naturalness. While an orientation towards accuracy has been observed in conversations with aphasia (Booth & Swabey 1999; Lock et al 2001), it has not previously been made explicit that conversation therapy operates to change the beliefs that underpin this behaviour. While these shifts have a powerful potential to motivate change, this study has shown that some speakers may additionally benefit from structured support to inhibit the use of barriers in context, specifically by having a facilitator behaviour to use in its place. This particular finding corroborates Simmons-Mackie et al (2005) who show that translating increased recognition of barrier behaviours into measurable behaviour change can be supported by instructing speakers on the use of alternative behaviours. Considering how speakers can be supported to remember and regulate changes online in conversation is relatively rare in the conversation therapy literature. So in highlighting the extra 'thinking' that appears to be involved when making changes in context, this thesis makes the case for a better understanding of how

memory and self-regulation can be supported when targeting conversational behaviour change.

The adoption of new facilitators appears to be developed through a building up of experiences in using the behaviours in context. To some degree this reflects the experiential learning process described by Beckley et al (2013), Sorin-Peters (2003, 2004) and Lock (2005) in relation to conversation therapy, in which active experimentation and self-reflection are emphasised in order to develop new beliefs about how things work (Kolb 1984). The findings of this study support the idea that experimentation with and reflection on facilitator use contributes to change. However this evidence shows we can be much more detailed about how these activities may work. Specifically, reflection enables a focus on the *impacts* of facilitators, which helps to build up positive expectations for these behaviours. This in turn may motivate further use. The findings also indicate that initial experimentation with strategies may benefit from being followed up by repeated practice. It is suggested that this practice may support an increase in skills for using the strategies, and potentially may also help to reduce the cognitive load involved in implementing them. There is an indication that this process may be slightly different when treating pre-existing as compared with newly-introduced facilitators. For pre-existing facilitators, the initial motivation for using the behaviours in new strategic ways of may be established by reflecting on difficulties in conversation that are already being managed successfully. It seems possible that the enhanced self efficacy derived from this activity would be relevant when promoting the use of newly-trained facilitators as well; however, there is no clear link indicated in these data between increased feelings of success in conversation and the self-initiated adoption of new conversational behaviours.

While this study has yielded clinically useful and important insights into how BCA may operate to create change in conversation, it has also raised a number of questions to which the answers remain unknown. For example, it is not clear from this investigation what the relative priority or strength of the identified mechanisms of change is within BCA. Nor is it clear if all mechanisms apply to all speakers, or if they do not, why this might be. Furthermore, while this study has identified that speaker self efficacy and emotions about conversation have the potential to undergo change as a result of BCA, it is not clear how or whether these changes feed into behavioural change. As with Study 1, the limitations in self-report, study design, and the relative wealth of data from CPs compared with PWA mean the account of change developed in Study 2 is unlikely to be comprehensive, or definitive. Nonetheless, some important preliminary conclusions about the nature of the change process produced by BCA have been drawn, and potential mechanisms identified.

7.4.2 Candidacy Issues within BCA

Not only has this study generated evidence for likely mechanisms of behavioural change activated via BCA, it has also defined some key issues for considering who is most likely to benefit. These will be explored here.

Previous literature has suggested that the pre-existing attitudes and conversational skills of CPs will determine their perceived candidacy for conversation partner training (Turner & Whitworth 2006b). Specifically, Turner & Whitworth (2006b) show that SLTs expect CPs who prioritise the production of accurate speech over the interactive function of conversation to be less likely to benefit from conversation-level training. The findings of this analysis do indeed indicate that BCA may only be effective among those who are ready and willing to invest in an interaction-focussed approach. Potential candidates whose preference and expectations are strongly for language-focussed therapy are likely to lack the commitment needed to benefit from BCA. However evidence here also suggests that among some CPs at least, BCA can be effective at shifting beliefs about what conversation is for, and redirecting the priority on using accurate speech in conversation towards an emphasis on conversational flow and effectiveness.

Among PWA, the literature on compensatory strategies suggests that the speakers most likely to use strategies successfully are those with good executive functioning skills, in particular cognitive flexibility (Purdy & Koch 2006; Frankel et al 2007; Penn et al 2010). This is supported in this study's qualitative data. Among the PWA, those who had difficulties with self-initiated change attributed this to difficulties in understanding, self-monitoring, remembering and self-regulation. To some degree, this may indicate a need for BCA to better facilitate PWA in these areas. However, it is likely that many PWA exhibiting poor memory and self-regulation skills will simply not be successful in accessing the process of deliberate individual change at the heart of BCA. This finding suggests that the distinction made in the AAC literature between independent and partner-dependant users of AAC (Lasker & Garrett 2006), may to some extent be relevant to the use of compensatory strategies among PWA. Where PWA struggle with self-initiated strategy use, clinicians may instead choose to emphasise the indirect route to PWA change, and focus on increasing CP support for PWA strategy use. Clearly this route will still rely on active behaviour change by the CP, so choosing sufficiently motivated CPs remains relevant.

7.5 Conclusions

Evidence for BCA's mechanisms of change has come from speakers' own accounts of change via therapy. These findings are exploratory, and will no doubt reflect the limitations of self

report, particularly in terms of understanding the cognitive processes involved in making changes to conversational behaviour. Furthermore, without targeted quantitative evaluation, it is not possible to deduce the relative strength of each mechanism for producing change and it is very likely that some may be more or less peripheral or relevant. These issues and other potential limitations to the study will be discussed in more detail in Chapter 11. While the findings discussed here are unlikely to be comprehensive, even at the broadest level, the findings of this study contribute important additions to knowledge about how conversation therapy works. In particular the key role of focussed cognitive effort and activity in making behavioural changes in conversation has been highlighted, and evidence that barriers and facilitators may undergo change in different ways has been explored. Study 3 (Chapter 8) and Study 4 (Chapter 9) explore these claims in more detail by examining the content of BCA and identifying which of its components may contribute to the changes described in this study.

8 Study 3: Looking for Active Ingredients

Study 2, Section 7.3, examined how BCA creates change to conversation. It identified which aspects of OPPORTUNITY, CAPABILITY and MOTIVATION undergo change as a result of therapy, and which can therefore be hypothesised to act as mechanisms of conversational behaviour change. These hypothesised mechanisms not only offer an account of how the therapy works, but are also linked to formal explanations of behaviour change found within psychological theory. However what this account currently lacks is specific details about which components of the therapy trigger the described changes. Study 3 therefore aims to explore the BCA intervention content using methods from behaviour change research, in order to extract and describe its 'active ingredients'.

The research objectives for this chapter are to:

- Code the content of Better Conversations with Aphasia using the taxonomy of Behaviour Change Techniques (BCTs), and evaluate the reliability of coding.
- Draw links between the therapy's confirmed BCTs and the theoretical domains with which they may be associated.
- Compare BCTs delivered to CPs versus PWA, and barriers versus facilitators.

Note that, in this chapter the intervention will be referred to by its full name, Better Conversations with Aphasia, or as 'the therapy' (or intervention) - this is to avoid confusion between the acronyms BCA and BCT, the latter being the accepted shorthand for behaviour change techniques.

The chapter starts with a recap of the intervention's aims and content in Section 8.1 to orient the reader, followed by detail on using the BCT taxonomy in Section 8.2. The methods used in this study to code the intervention and establish the reliability of doing so are described in Section 8.3. The results of coding are presented in Section 8.4, while the mapping of BCTs to theoretical domains is discussed in Section 8.5, alongside a discussion of how these findings compare with Study 2's hypothesised mechanisms of change. A comparison of BCTs delivered to barriers and facilitators is considered in Section 8.6, while a comparison of BCTs delivered to CPs and PWA is provided in Section 8.7. Findings will be summarised and discussed in Section 8.8. This section will focus on reviewing the use of the BCT taxonomy with Better Conversations with Aphasia, considering how the findings of Study 3 contribute to a theory of change for the intervention, and reviewing the implications of BCT coding for the design of Better Conversations with Aphasia. Final conclusions are provided in Section 8.9.

8.1 Recap of the Intervention

A detailed overview of Better Conversations with Aphasia is provided in Chapter 2, p25. The process of the therapy is summarised as follows. During the early stages, the SLT uses pre-prepared handouts and video clips to help the couple reflect on existing conversational patterns. Here, problematic aspects of conversation are identified, including barrier behaviours. Helpful behaviours which support the naturalness and effectiveness of conversation are also identified. Each partner then chooses a set of facilitators to practice, and the rest of therapy is dedicated to developing their strategic use in order to overcome problems in conversation. The use of strategies in context is targeted by (i) reviewing video clips of problems in conversation and identifying possible strategies for dealing with them, (ii) regular practice, both in open conversation and in more structured activities, and (iii) experimenting with strategies between sessions and reflecting on the experience using a handout.

For ease of reference, the structure of the eight-session programme and the aims of each session are presented in Table 22 below, alongside an indication of the broad types of activities included within sessions, under the headings: “Education”; “Video Feedback”; “Goal-Setting”; “Practice Conversations”; “Video Problem Solving”; “Homework Practices” and “Discussion of Homework Practices”. These headings are primarily derived from the literature review, which identified that education, practice, and feedback - often via video - are typical content reported for many conversation therapies including Better Conversations with Aphasia (see Section 4.3, p70). In addition, the papers associated with the Better Conversation with Aphasia project have highlighted the inclusion of goal setting within therapy, and the use of video to identify solutions to problems in conversation (cf. Beckley et al 2013). Finally, as is evident from the use of during-therapy qualitative data in this thesis (see Section 5.3.2, p81, for a description), homework practices and the discussion of homework practices have also been shown to form a regular component of the therapy, and so are included here. While these headings provide a reasonable description of what type of activities take place in therapy, this study will highlight that the information they offer about the function of such activities for producing change is variable.

Table 22. Structure, Aims and Activities within Better Conversations with Aphasia

Session	Aims	Activity Type
Session 1: Introduction to conversation and agrammatism	• Discuss aims of therapy • Discuss and explore what conversation is and why it is important • Initial exploration of how aphasia, and agrammatism, can affect conversation	Education
Session 2: Turns, sequences and actions 1	• Discuss and explore turns and sequences, aims of turns • Discuss how aphasia affects PWA's turns • Discuss CP's effective turns in response to PWA turns	Education Video Feedback
Session 3: Trouble and repair	• Discuss and explore patterns of repair in conversation • Practise identifying the 3 steps of repair in their own conversation • Introduce idea of a 'correct production sequence' (if relevant)	Education Video Feedback
Session 4: Turns, sequences and actions 2 - Strategies for PWA	• Discuss common problems with turn-taking in agrammatism • For PWA to choose three strategies they wish to practise • Practice activity during session	Education Video Feedback Video Problem Solving Goal Setting Practice Conversations Homework Practices
Session 5: Turns, sequences and actions 3 - Strategies for CP	• Discuss CP's responses to PWA's turn constructions - the focus is on exploring both CP facilitators and barriers and why the CP engages in these behaviours • For CP to choose three strategies they wish to practise • Practice activity during session	Discussion of Homework Practices Education Video Feedback Video Problem Solving Goal Setting Practice Conversations Homework Practices
Session 6: Topic and overall conversation	• Discuss the idea of topic and a balance of contributions • Think about how topics get introduced and developed in their own conversations • Choose and practice some strategies to help topics flow	Discussion of Homework Practices Education Video Feedback Goal Setting Practice Conversations Homework Practices
Session 7: Practising conversation: Putting your strategies to use	• Recap of the strategies they each chose • Reflection on whether they have been using them over the last few weeks • Identify points when they could have used their strategies (using videos) • Practice conversation during session	Discussion of Homework Practices Video Problem Solving Practice Conversations Homework Practices
Session 8: Reviewing and moving forward	• Discuss examples of strategy use in video they made after Session 7 • Make advice sheet for family and friends • Further practice conversations	Discussion of Homework Practices Practice Conversations

The pilot versions of session plans for Better Conversations with Aphasia are provided in Appendix 2, and offer further detail on the intended activities of the therapy carried out for the main intervention study. For information on how these differ from the revised session plans, which were later made publicly available on the Better Conversations with Aphasia e-learning resource (https://extend.ucl.ac.uk), see Section 2.2.2 (p28). Details of how the revisions are handled during BCT coding are outlined in Section 8.3.1 below (p181).

Many of the therapy's activities provide participants with handouts, in order to structure discussions and tasks, or provide information. Again, the revised handouts are publicly

available via the e-learning resource. Appendix 3 however contains the pilot versions of handouts specifically referred to during thesis. For further discussion of the differences between the pilot handouts and the revised handouts that are available for SLT use, please refer back to Section2.2.2 (p28).

8.2 Describing Intervention with Behaviour Change Techniques

BCTs represent the simplest procedures within intervention that have the potential to disrupt the normal influences on behaviour, and thereby trigger change (Michie, Abraham et al 2011). In response to the MRC (2008) call for improved reporting of the essential components of complex interventions, a taxonomy of BCTs (Abraham & Michie 2008; Michie et al 2013) was developed to support researchers and practitioners to consistently and comprehensively describe the active content of their interventions. The taxonomy has also been developed for coding descriptions of intervention. Coding not only allows key content to be identified, but also permits comparison of the content of similar interventions, i.e. for the purposes of systematic review. Details of the development of the taxonomy can be found in Section 3.4.5, (p57).

The latest version the taxonomy, Version 1.1 (available as an open access electronic supplement to Michie et al 2013) contains 93 BCTs consisting of a label, definition and example. For an illustration of how the example ***2.7 Feedback on the outcome(s) of behaviour*** is presented within the taxonomy, see Figure 19, below.

Figure 19. Example Taxonomy BCT

Example BCT			
No.	**Label**	**Definition**	**Example**
2.7	***Feedback on the outcome(s) of behaviour***	Monitor and provide feedback on the outcome of performance of the behaviour	Inform the person of how much weight they have lost following the implementation of a new exercise regime

BCTs are expected to have the potential to trigger change to specific determinants of behaviour (Abraham & Kools 2012; Abraham et al 2011; Cane et al 2014; Michie et al 2008; Michie et al 2014). Returning to ***2.7 Feedback on the outcome(s) of behaviour*** for example, this may be expected to affect determinants associated with the theoretical domain *BELIEFS ABOUT THE CONSEQUENCES,* a component of MOTIVATION. Identifying an intervention's BCTs therefore contributes to developing a theoretical account of how the intervention works to produce its outcomes.

Because the taxonomy has been developed in the field of health behaviour change within applied psychology, the techniques included in the taxonomy have been compiled from interventions addressing health behaviours such as smoking, healthy eating and physical exercise. They reflect widely known processes described in psychological theories of behaviour and change, such as feedback, reinforcement, goal setting, cognitive dissonance, or mastery experiences. Although this means the content of the taxonomy is weighted conceptually towards the field of health psychology, it is nonetheless intended as a tool for general use, and also acknowledged to be a work in progress (Michie et al 2013). The application of the taxonomy to intervention within Speech & Language Therapy is new, as is its use with communicative behaviour. As a result, this investigation will need to tackle the question of whether the taxonomy is fit for use with communication. This issue will be addressed by establishing the level of reliability when applying the taxonomy to Better Conversations with Aphasia.

It is expected that many BCTs from the taxonomy will not be relevant to this intervention. Furthermore, because Better Conversations with Aphasia targets change to a qualitatively different type of behaviour to the health behaviours outlined above – i.e. the minute social actions produced within the fast flowing and habitual activity of conversation - it is also possible that it contains active content which has not so far been identified during the development of the taxonomy, and which could represent 'new' BCTs. Therefore it is anticipated that the process of using the taxonomy with this intervention will not only produce information relevant to the research objectives of the current study, but will also generate feedback on the broader applications of this developing methodology to Speech & Language Therapy and to other fields.

8.3 Methods

The method used in this chapter is different to that used in Studies 1, 2 and 4. This section introduces the data (Section 8.3.1), the procedure for coding (Section 8.3.2), and the procedure for establishing the IRR of coding (Section 8.3.4).

8.3.1 Description of Data

The BCT taxonomy is usually used to code manuals or descriptions of intervention. However no manual currently exists for Better Conversations with Aphasia, and, to date, descriptions provided in publications such as Beckley et al (2013) or Beeke et al (2011) are short and vary in terms of which aspects of therapy are emphasised. The data used in coding to represent the content of the therapy are therefore the eight session plans (see Appendix 2, and https://extend.ucl.ac.uk), and the accompanying handouts used with participants (see Appendix

3, and https://extend.ucl.ac.uk). These were felt to offer the most comprehensive and direct source for coding BCTs.

As explained in Section 2.2.2 (p28), the session plans and handouts available in the e-learning resource are revised versions of pilot materials originally used to guide and deliver therapy to the participants in the main project. While the changes made were minor, nonetheless in some cases a change in wording, or in the amount of descriptive detail provided, had the potential to affect coding decisions. It was felt to be important for the quality of this research that BCT coding reflected the materials used with the participants who provide the qualitative data for the rest of this thesis. However, it is also recognised that it will be useful for the results of BCT coding to reflect the therapy materials now available to clinicians. Consequently, this study only coded content that was *common to both the pilot and revised versions of the therapy materials*.

For session plans, this meant that any new detail added during the process of revision was excluded. So for example, the revised version of Session 4 (see https://extend.ucl.ac.uk) suggested that participants should evaluate their performance in practice conversations using a set of rating scales. This was not part of the pilot therapy delivered to participants. Therefore, the use of rating scales to self-evaluate performance was not coded, even though it had the potential to represent a distinct BCT. This also meant that any details from the pilot session plans which were removed during revision were also excluded from coding. So for example, the pilot version of Session 4 (see Appendix 2) included the instruction – "*Encourage PWA to take time to get an idea in his/her head before using words/gestures/aids etc to say it (i.e. encourage to frame/limit thoughts for language before beginning)".* However this was removed from the final version of the session plan. Again, although this had the potential to represent a BCT in and of itself, it was excluded from coding on the basis that it was presumably not considered to be an essential ingredient of therapy by the project team.

These same criteria for coding were applied to all the handouts that had been developed especially for Better Conversations with Aphasia, and which underwent revision for inclusion on the e-learning resource. The only exceptions were the handouts adapted from SPPARC material (Lock et al 2001) (see Appendix 2 for a full list of handouts based on SPPARC). These were not revised - the e-learning resource refers back to the original material in SPPARC. In these cases, coding focuses on the handouts used with participants during the pilot. See Appendix 3 for examples of these pilot materials.

8.3.2 Procedure for Coding Better Conversations with Aphasia

This section outlines the procedure for streamlining the BCT taxonomy (Section 8.3.2.1). It also provides background on the two raters using the taxonomy (Section 8.3.2.2) and details of pre-coding training they received (Section 8.3.2.3).

8.3.2.1 Streamlining the BCT taxonomy

The BCT taxonomy used to code the therapy materials is based on the published 93 technique taxonomy (Version 1.1, Michie et al 2013). However, in order to make the taxonomy more manageable to use and more relevant to the purposes of this study, Version 1.1 was streamlined to 46 techniques by the author. BCTs that were considered unlikely to be associated with social therapies for aphasia were removed, for example individual BCTs such as ***2.6 Biofeedback*** or ***11.1 Pharmacological support***, and whole groups of BCTs such as those associated the formal behaviourist approach of using rewards and punishments to elicit behaviour.

The reduced version of the taxonomy is provided in Appendix 9.

8.3.2.2 Raters

In order to determine the reliability of using the BCT taxonomy to describe the Better Conversations with Aphasia therapy content, two raters coded therapy, and their findings were compared. Rater 1 was the author of this thesis, who as well as having experience in conversation therapy research, is an SLT with over 5 years post-qualification experience of working with people with aphasia. Rater 2 was a newly qualified SLT who had recently completed an undergraduate level research project using CA to investigate the conversations of speakers with communication disabilities.

There were two aims underpinning the evaluation of IRR for the 46 BCT taxonomy used in this study. Firstly it acted as a check on the validity of using the BCT taxonomy to describe a conversation therapy; this was the first time it had been attempted. Secondly, it was intended to produce a list of clearly defined therapy ingredients which were reliably agreed to be present, and had the potential to change conversational behaviour.

8.3.2.3 Training

Raters spent half a day jointly following a self-led training programme, developed and evaluated alongside Version 1.1 of the taxonomy (Wood, Richardson, Johnston, Abraham, Francis, Hardeman & Michie submitted). This included reading material, key guidance on coding and common pitfalls, and a range of practice coding materials. The training makes clear

the following key points for identifying and coding BCTs from descriptions of intervention content:

- To code a BCT, the activity in question must be clearly directed towards a behaviour that is targeted for change.
- Identification of a BCT must be based on concrete details provided within the intervention description. BCTs must not be inferred.
- Judgements about the presence of BCTs must be based not only on the name of the BCT but also the definition provided in the taxonomy.

Joint participation in the training enabled raters to discuss and clarify their understanding of information together. Using practice materials, they were able to compare their coding decisions, and also refer to the expert consensus provided in the training.

Rater 1 had also previously attended a one day training course run by the developers of the taxonomy, in the use of an earlier version of the tool (Version 1).

8.3.3 Procedure for Establishing IRR of BCT Coding

Raters independently coded the eight session plans and all therapy handouts using the streamlined taxonomy. All distinct instructions, information and discussion topics described on the session plans and included in the handouts represented potentially codable therapy content, or 'activities'. As per the coding guidelines, raters first judged whether or not each therapy activity had a clear behavioural target, i.e. was it focussed on one or more of the conversational behaviours that BCA was targeting for change. Please see Section 5.1 (p76) for a definition of conversational behaviour, and Appendix 1 for a list of behaviours targeted by the intervention. Raters recorded their decisions individually on a spreadsheet, by placing a tick against the heading of the activity or handout if it was judged to target a behaviour, and a cross if it was not. Activities that were not judged to target behaviour were excluded from further analysis.

Each rater, having narrowed down therapy content to the activities and handouts they judged to target behaviour, went on to look for correspondences between the described activities, or the content contained within the handout, and the BCTs from the streamlined taxonomy. Activities and handouts potentially contained no BCTs, one specific BCT, or multiple BCTs. The number and label of any BCTs identified were recorded next to the corresponding activity or handout on the spreadsheet mentioned above. When a rater could not identify a BCT within an activity judged to target behaviour, they coded 'NO BCT' and noted on the spreadsheet as

to why, e.g. because of insufficient detail in the activity description, or no match in the taxonomy for the type of activity being described. Such notes were intended to help the analysis of coding problems, and to highlight any potential new BCTs occurring with the intervention.

After independent coding was complete, the raters met to discuss discrepancies in their decision-making. This discussion was intended to iron out any 'accidental' disagreements that had occurred due to individual errors and inconsistencies. It was also intended to identify consistent areas of disagreement about how to code the therapy's core activities, and to see if a consensus could be reached. The discussion lasted for approximately 2 hours. For the purposes of transparency, the criteria for reviewing coding decisions are outlined in detail below.

'Accidental' disagreements were judged to have occurred when the cause of disagreement was due to:

- inconsistencies or errors in the way coding decisions had been recorded;
- instances where the taxonomy had not been applied according to the training criteria, and coding discrepancies were therefore the result of a rater skills issue;
- instances where raters accidentally overlooked a component of the therapy content or a technique within the taxonomy.

Where such errors were identified, raters independently re-coded the items.

Raters then considered coding decisions in instances where it was clear that they had identified the same active component, but had consistently chosen a different BCT to describe the procedure. These discussions focussed on each rater's rationale for their choice of BCT, and included a rigorous comparison of the two BCT definitions against the therapy content to see if a consensus could be reached on the most appropriate coding of the procedure. If after this process, a consensus was reached on one BCT being the most appropriate, coding was altered as necessary. However, where no consensus was reached, these BCTs remained as disagreements.

An example of this process is represented by how raters coded the use of video in therapy, in the context of supporting speakers to identify what facilitators and barriers they used in conversation. One rater consistently coded this process as a form of ***2.2 Feedback on behaviour***. The other coded with a different emphasis: identifying ***2.3 Self-monitoring of behaviour.*** The definitions of these two BCTs (see Appendix 9) were compared and an agreement was reached that in this situation, video was being used as a tool and medium for therapist feedback, rather

than as a method for individuals to monitor and record their own behaviour. Coding of this procedure was therefore adjusted to ***2.2 Feedback on behaviour.***

Following this discussion, raters reviewed their own decisions independently. Revised coding eliminated all disagreements caused by raters coding the same procedure with different BCTs. Consequently there were no remaining disagreements representing instances in which raters had agreed a BCT was present, but had disagreed about which one. However several disagreements remained concerning whether certain BCTs were present within an activity or not. The final data are provided in Appendix 10. These data were used to calculate the level of IRR when coding Better Conversations with Aphasia with the BCT taxonomy.

Agreement in BCT coding represents instances where:

- both raters coded the same BCT for the same activity
- both raters coded NO BCT within an activity that they both agreed contained a target behaviour

Disagreement in BCT coding represents instances where:

- one rater coded a BCT as present in an activity but the other coded NO BCT

8.3.4 Calculating IRR

Cohen's kappa is the traditional choice for measuring IRR as it adjusts the overall percentage of agreements between raters for the possibility that these agreements are generated by chance (Cohen 1960). As the kappa is the most commonly used and widely recognised measure of reliability, it has therefore been applied to these data. The kappa coefficient produced by statistical analysis is a figure between 0 and 1. The conventions for interpreting this figure as a measure of strength of agreement are based on Landis and Koch (1977), who propose that 0 = poor; 0.01–0.20 = slight; 0.21–0.40 = fair; 0.41–0.60 = moderate; 0.61–0.80 = substantial; and 0.81–1.00 = almost perfect.

However, the kappa has been identified as often providing too conservative a measure, which in fact may underestimate the reliability of coding tools (cf. Hripcsak & Heitjan 2002). Indeed, in order to apply the statistical procedure to these data, the process for BCT coding is reduced to a binary yes/no decision about whether a BCT was present or not (i.e. 'BCT' vs. 'NO BCT'). This does not reflect the complex decision making process whereby, in order to register agreement, raters are not only required to identify the presence of a BCT, but also need to select the same BCT from a choice of 46. The chance that both raters would randomly select the same BCT is therefore extremely low. Because of this issue, some previous applications of

the BCT taxonomy have instead used simple measures of percentage agreement between raters to calculate IRR (see for example, Lorencatto, West, Seymour & Michie 2013; Lorencatto, West, Christopherson & Michie 2013). For these reasons, percentage agreement will also be reported here. Conventionally, the level of percentage agreement required for a measure to be considered reliable is 80% (Hartmann, 1977).

8.4 Findings: Behaviour Change Techniques

Presentation of findings reports first on the results of the statistical analysis, which investigates the IRR of applying the BCT taxonomy to Better Conversations with Aphasia (Section 8.4.1). Next, Section 8.4.2 provides a descriptive summary of how therapy's key activities were coded for BCTs, exploring in particular why disagreements between raters occurred. Section 8.4.3 presents the BCTs reliably agreed as present in Better Conversations with Aphasia, and includes subsections on rejected BCTs, potential new BCTs, and the activities agreed to contain no BCTs. A summary of findings is provided in Section 8.4.4.

8.4.1 IRR for Applying the BCT Taxonomy to Better Conversations with Aphasia

Across the therapy programme a total of 70 activities and handouts were identified by one or both raters as potentially targeting behaviour. In many cases, these activities contained multiple procedures. BCT coding of these 70 activities led to the identification of a total of 114 potential BCT procedures by one or both raters.

Table 23 presents the total agreements and disagreements among raters. Appendix 10 provides the full list of agreements and disagreements.

Table 23. Agreements and Disagreements in BCT Coding: Totals

Coding Data		Rater 1		
		Coded BCT	Coded NO BCT	Totals
Rater 2	Coded BCT	73	15	88
	Coded NO BCT	8	18	26
	Totals	81	33	114
	Total Agreements	91	Total Disagreements	23

Rater 1 coded a total of 81 BCTs across the therapy programme, whilst Rater 2 coded 88 BCTs. Within these, there were 73 agreements between raters about the presence of the same specific BCT within a particular activity. Raters also agreed in 18 instances, that a potentially codable procedure did not contain evidence of a BCT (NO BCT). The combined total of agreements between raters was therefore 91.

This left a remainder of 23 disagreements, in which one rater coded a BCT as present and the other did not. In many cases this represented a disagreement between raters about whether an activity definitely targeted behaviour. This issue was especially apparent in activities concerned with the broader conversational activities of 'repair' or 'topic', during which the conversational behaviours targeted by therapy may or may not be under discussion. Further disagreements occurred regarding the presence of particular BCTs within activities. These will be discussed in more detail in Sections 8.4.2 (Coding Better Conversations with Aphasia's Key Activities) and 8.4.3.2 (Rejected BCTs) below.

The calculation for the kappa coefficient (κ) (Cohen 1960), is presented below, where Pr(a) is the percentage of agreements between raters in the data coded, and Pr(e) is the probability that these agreements are generated by chance:

$$\kappa - \frac{\Pr(a) - \Pr(e)}{1 - \Pr(e)},$$

Table 24 shows how the relevant figures were calculated. Rather than reporting percentages, proportions are presented as a decimal figure between 0 and 1.

Table 24. Calculations for the Kappa Coefficient

Calculations for Cohen's kappa coefficient.			
Calculating Pr(a)			
Pr (a) (Proportion of agreements)	91 Agreements	114 Coding Decisions	Pr(a) = 0.798
Calculating Pr(e)			
Step 1: Establish proportion of BCT / NO BCT coding decisions per rater			
	BCT coded as proportion of raters' own coding decisions	NO BCT coded as % of own coding decisions	
Rater 1: % of own coding	0.711	0.289	
Rater 2: % of own coding	0.771	0.228	
Step 2. Establish probability chance agreement			
Probability of chance agreement that:	Both raters code BCT	Both raters code NO BCT	Total
	0.548	0.066	Pr (e) = 0.614
Kappa coefficient			
			K = 0.477

The proportion of agreements in the data, 0.798 is arrived at by dividing the total number of agreements between raters (91) by the total number of coding decisions (114).

Step 1 of working out chance agreement aims to establish the number of decisions each rater makes within either condition (i.e. BCT is present; or NO BCT is present) as a proportion of

their own total coding decisions. As shown in Table 24, the proportion of Rater 1's codings of 'BCT' is 0.711, and the proportion of 'NO BCT' is 0.289. For Rater 2, coding 'BCT' represents 0.771 of coding decisions and 'NO BCT' is 0.228. The chance that raters agree (Step 2 in Table 24) is calculated by multiplying the figures in each condition, and then adding them together. So the chance that raters would agree that a BCT is present is 0.548, while the chance they would both agree that there was NO BCT in an activity is 0.066. The combined likelihood of a chance agreement is therefore 0.614.

Feeding these figures into the calculation for the kappa coefficient produces a kappa of 0.477. According to the consensus in the literature, this represents a moderate level of agreement (Landis & Koch 1977). However, as highlighted in Section 8.3.3, this figure is expected to underestimate the true reliability of coding as it masks the low probability that raters would randomly select the same BCT from a choice of 46.

Percentage agreement, (produced by multiplying Pr (a) by 100) between raters stands at 79.8%. Consensus around the acceptable threshold for establishing IRR suggests that percentage agreement should reach 80% (Hartmann, 1977). The percentage agreement for coding the therapy content using the BCT taxonomy therefore misses this threshold by 0.02%. This near miss, combined with the findings of the kappa, suggest that at present, the reduced BCT taxonomy shows promise as a tool to support the description of therapy. However it also indicates that there are some issues to resolve in order for the taxonomy to be used reliably and consistently across raters. The reasons for these moderate levels of agreement may be better understood following a more detailed explanation of how therapy's main activities were coded, presented now in Section 8.4.3.

8.4.2 Coding Better Conversations with Aphasia's Key Activities

This section presents details of how the key activities of "Education" (Section 8.4.2.1), "Video Feedback"(Section 8.4.2.2) ; "Goal-Setting" (Section 8.4.2.3); "Practice Conversations" (Section 8.4.2.4); Video Problem Solving" (Section 8.4.2.5); "Homework Practices" (Section 8.4.2.6) and "Discussion of Homework Practices" (Section 8.4.2.7) were coded for BCT content. These activities are the ones that recur throughout the BCA programme, and which have been identified in the literature as the key components of this type of therapy (see Section 8.1 in this chapter, and Section 4.3, p70 of the Literature Review, for more information on how these activities have been selected). Each activity type is discussed, roughly in the order that the activities occur within therapy. Table 25 below presents BCTs that were agreed by both raters as they occur per session.

Table 25: BCT Coding of Better Conversations with Aphasia

Session	Aims	Activity Type	Reliably Agreed BCTs	BCTs Identified by One Rater
Session 1: Introduction to conversation and agrammatism	• Discuss aims of therapy • Discuss and explore what conversation is and why it is important • Initial exploration of how aphasia, and agrammatism, can affect conversation	Education	None	None
Session 2: Turns, sequences and actions 1	• Discuss and explore turns and sequences, aims of turns • Discuss how aphasia affects PWA's turns • Discuss CP's effective turns in response to PWA turns	Education Video Feedback	***2.2 Feedback on behaviour*** ***2.7 Feedback on outcome(s) of behaviour***	***4.1 Instruction on how to perform a behaviour*** ***5.2 Salience of Consequences*** ***15.3 Focus on past successes***
Session 3: Trouble and repair	• Discuss and explore patterns of repair in conversation • Practise identifying the 3 steps of repair in their own conversation • Introduce idea of a 'correct production sequence' (if relevant)	Education Video Feedback	None	***4.1 Instruction on how to perform a behaviour*** ***6.1 Demonstration of the behaviour***
Session 4: Turns, sequences and actions 2 - Strategies for PWA	• Discuss common problems with turn-taking in agrammatism • For PWA to choose three strategies they wish to practise • Practice activity during session	Education Video Feedback Video Problem Solving Goal Setting Practice Conversations Homework Practices	***1.1 Goal setting (Behaviour)*** ***1.8 Behavioural contract*** ***2.2 Feedback on behaviour*** ***2.3 Self-monitoring of behaviour*** ***2.4 Self-monitoring of outcome(s) of behaviour*** ***5.4 Monitoring of emotional consequences*** ***7.1 Prompts/cues*** ***8.1 Behavioural rehearsal/ practice***	***1.4 Action planning*** ***2.7 Feedback on outcome(s) of behaviour***

Session 5: Turns, sequences and actions 3 - Strategies for CP	• Discuss CP's responses to PWA's turn constructions - the focus is on exploring both CP facilitators and barriers and why the CP engages in these behaviours • For CP to choose three strategies they wish to practise • Practice activity during session	Discussion of Homework Practices Education Video Feedback Video Problem Solving Goal Setting Practice Conversations Homework Practices	***1.1 Goal setting (Behaviour)*** ***1.8 Behavioural contract*** ***2.2 Feedback on behaviour*** ***2.3 Self-monitoring of behaviour*** ***2.4 Self-monitoring of outcome(s) of behaviour*** ***4.1 Instruction on how to perform behaviour*** ***5.3 Information on social and environmental consequences*** ***5.4 Monitoring of emotional consequences*** ***5.6 Information on emotional consequences*** ***6.1 Demonstration of the behaviour*** ***7.1 Prompts/cues*** ***8.1 Behavioural practice/ rehearsal*** ***8.2 Behaviour substitution*** ***10.4 Social Reward***	***1.4 Action planning*** ***2.7 Feedback on outcome(s) of behaviour***
Session 6: Topic and overall conversation	• Discuss the idea of topic and a balance of contributions • Think about how topics get introduced and developed in their own conversations • Choose and practice some strategies to help topics flow	Discussion of Homework Practices Education Video Feedback Goal Setting Practice Conversations Homework Practices	***1.1 Goal setting (Behaviour)*** ***2.2 Feedback on behaviour*** ***2.3 Self-monitoring of behaviour*** ***2.4 Self-monitoring of outcome(s) of behaviour*** ***4.1 Instruction on how to perform behaviour*** ***5.3 Information on social and environmental consequences*** ***7.1 Prompts/cues*** ***8.1 Behavioural practice/ rehearsal***	***1.4 Action planning*** ***2.7 Feedback on outcome(s) of behaviour*** ***6.1 Demonstration of the behaviour***
Session 7: Practising conversation: Putting your strategies to use	• Recap of the strategies they each chose • Reflection on whether they have been using them over the last few weeks Identify points when they could have used their strategies (using videos) • Practice conversation during session	Discussion of Homework Practices Video Problem Solving Practice Conversations Homework Practices	***2.2 Feedback on behaviour*** ***2.3 Self-monitoring of behaviour*** ***2.4 Self-monitoring of outcome(s) of behaviour*** ***7.1 Prompts/cues*** ***8.1 Behavioural practice/ rehearsal***	***1.4 Action planning*** ***2.7 Feedback on outcome(s) of behaviour*** ***7.1 Prompts/ cues***
Session 8: Reviewing and moving forward	• Discuss examples of strategy use in video they made after Session 7 • Make advice sheet for family and friends • Further practice conversations	Discussion of Homework Practices Practice Conversations	***2.2 Feedback on behaviour*** ***7.1 Prompts/cues*** ***8.1 Behavioural practice/ rehearsal***	***2.7 Feedback on outcome(s) of behaviour***

Table 25 also highlights BCTs identified by one rater but not agreed by the other. Definitions of all BCTs discussed can be found in Appendix 9. In addition, Table 26 on p197 provides the definitions of all reliably agreed BCTs, while Table 27 on p199 provides definitions of all rejected BCTs.

8.4.2.1 Education

The education components of therapy consisted of handout-led activities. These handouts were designed to provide information about conversation, aphasia, and specific strategies, and to support participants to identify patterns and behaviours in their own conversation.

In the early stages of therapy (Sessions 1-3) handouts usually covered general information on aphasia and on conversational patterns. Raters usually agreed that these activities did not target specific behaviours, and could not be included in the BCT analysis. However there were some exceptions. Where handouts in these sessions provided information on conversational activity such as turn-taking (Session 2, Handout 2.3 "The aim of turns" in Appendix 3) or repair (Session 3, Handout 3.2 "Dealing with problems" in Appendix 3), Rater 2 did feel the activities targeted specific conversational behaviours and consequently coded ***4.1 Instruction on how to perform a behaviour.*** However Rater 1 did not code these handouts on the basis that it was not clear that any specific behaviour was being targeted for change. For Handout 2.5 "Strategies to help turn-building" in Session 2 (see Appendix 3) which prompts the PWA to identify strategies they currently use in conversation, Rater 2 coded ***15.3 Focus on past successes***. However Rater 1, although agreeing the activity targeted specific behaviour(s), did not feel the content of the activity clearly corresponded enough to the BCT definition and did not code this BCT as present.

In Sessions 4-6, the content of information-giving handouts became more appropriate for coding, with both raters consistently identifying them as having target conversational behaviour(s). This was particularly true in Session 5 where handouts gave information about CP barrier behaviour and the impact on conversation, and then provided suggestions of alternative behaviours to use in its place. So for example, in the Handout 5.2iii "Why are you stopping the conversation to solve problems?" (see Appendix 3) CPs are encouraged to paraphrase what the PWA has said or let the conversation continue, instead of correcting mistakes. Raters agreed the core content of Session 5 handouts represented: ***4.1 Instruction on how to perform the behaviour; 5.3 Information about social and environmental consequences of behaviour***; ***6.1 Demonstration of the behaviour*** and ***8.2 Behaviour substitution***. In addition, Handout 5.2ii "Are you using passing turns?" (see Appendix 3) was agreed to include one isolated example of the ***10.4 Social Reward***, where praise is given for the use of passing turns, while Handout 5.2i "Why are you asking questions/test questions" and Handout 5.2iii "Why are you

stopping the conversation to solve problems?" were both agreed to include ***5.6 Information about the emotional consequences of behaviour*** as the handouts prompted CPs to consider the emotional impact on their partner.

No education-based handouts were used in Sessions 7 and 8.

8.4.2.2 Video Feedback

Throughout therapy, participants were regularly asked to identify instances of facilitator and barrier behaviours within video clips of their own conversations (see Appendix 2, Session 5, "Partners turn-taking" for an example). As discussed in Section 8.3.3, raters needed to discuss whether this constituted a form of feedback or a form of self-monitoring, and reached a consensus that this activity represented ***2.2 Feedback on behaviour***.

These activities were also considered for whether they were intended to provide feedback on the impact of behaviour, and therefore whether they could be coded for ***2.7 Feedback on the outcome(s) of behaviour***. Rater 2 coded this BCT for all video feedback, feeling it was inherent within the activity. However Rater 1 did not code this BCT unless there was explicit detail in the description of the activity to clearly show that video was being used to feedback on the impact of behaviour. This was on the basis of the training principle that BCTs should not be inferred (see Section 8.3.2.3). Consequently, only one instance of this BCT was reliably agreed. This occurred during Session 2 ("Turn-building strategies", see session plan in Appendix 2) when videos were used to demonstrate and reinforce the role of facilitator behaviours for helping conversation. In this specific activity, Rater 1 additionally coded ***5.2 Salience of consequences***, on the basis that the medium of video could be expected to provide enhanced salience to the feedback given. However Rater 2 did not feel that there was enough evidence in the description of the activity that video was intended to be used in this way, and this BCT was therefore rejected.

8.4.2.3 Goal Setting

Both speakers were asked during the therapy to identify the strategies they would like to practice, and then sign a contract to agree to do so. This occurred in Session 4 (PWA), Session 5 (CP) and Session 6 (both). Raters agreed that these activities included ***1.1 Goal setting (behaviour)*** and in Sessions 4 and 5, ***1.8 Behavioural contract***.

8.4.2.4 Practice Conversations

From Session 4 onwards practice conversations were a regular component of therapy sessions. In these activities, participants were asked to put the changes they had discussed into action, with the SLT to coach strategy use if needed. Practice conversations were followed by a

discussion, in which the 'ease of strategy use' was described as a focus. In some cases, session plans suggested that the practice conversation should be videoed, and the subsequent discussion could incorporate segments of the video.

Raters agreed that the practices themselves represented ***8.1 Behavioural practice/rehearsal***, and that the SLT activity of 'coaching' represented ***7.1 Prompts/cues*** to strategy use. As practice conversations, including those required for homework, were repeated 13 times during therapy, ***8.3 Habit formation*** was also agreed to be represented.

The discussions that followed these practices were agreed to be a form of ***2.2 Feedback on behaviour***, based on the inclusion of video and the focus on the 'ease' of using strategies. Raters again disagreed about whether it was possible to code for ***2.7 Feedback on the outcome(s) of behaviour*** within this activity. Whilst both felt it was plausible, and even likely, that this BCT might occur at this juncture, raters differed in whether they felt confident that they could code the technique as a consistent component of these discussions based on the description available. Consequently, this BCT was not agreed to be present in this particular context.

A final queried BCT relating to practice occurred in Session 7, where a handout was provided to each speaker for reference, with a list of their chosen strategies. This was called a 'prompt sheet', and Rater 2 coded this as ***7.1 Prompts/cues***. However Rater 1 did not agree, on the basis that the definition of this BCT emphasises its role in prompting the immediate use of a behaviour, whereas this handout was instead intended to be used as a reference in the subsequent discussion. The use of this BCT was therefore rejected for this activity.

8.4.2.5 Video Problem Solving

In Sessions 4 and 7, video clips of problematic events within the dyad's conversation were shown (see Appendix 2, Session 7: Practising the use of strategies, for an example). Participants were asked to identify a problem with turn-taking, and then think of things they could do differently. Both raters felt confident that this activity represented a potentially behaviour changing component of therapy. However both had difficulty matching this activity to a technique on the taxonomy.

1.2 Problem solving was considered but rejected, as the definition of the BCT emphasises identifying problems which get in the way of implementing target behaviours, as opposed to identifying problems to which the target behaviour(s) offer a solution. ***8.2 Behaviour substitution*** was also considered, but again rejected, as its described process of replacing unwanted behaviour with new positive behaviours would only apply in this activity if the problematic event in conversation was the use of a barrier behaviour. So, for more general conversational

problems such as long gaps, or misunderstandings, identifying a facilitator to use would not represent a discrete process of 'substitution'.

Raters agreed that this activity could not be coded using the current taxonomy. It appeared therefore to contain a potential new BCT or BCTs. This will be discussed in Section 8.4.3.3 below.

8.4.2.6 Homework Practices

Having chosen their strategies, speakers were regularly asked to practice making changes in their conversations at home. Dyads were asked to video these practice conversations. They were also asked to reflect on strategy use via a handout that prompted them to identify what strategy they had used in response to what situation, what had happened next, and how this had made them feel (the handout for structuring homework practices: "Turn-taking in conversation: A chance to practice some strategies, can be found in Appendix 3).

Raters agreed that homework practices were another example of the ***8.1 Behavioural rehearsal/practice***. They also agreed that the reflective handout represented a tool for ***2.3 Self-monitoring of behaviour***, ***2.4 Self-monitoring of outcome(s) of behaviour*** and ***5.4 Monitoring of emotional consequences***.

Rater 1 also coded these homework practices as ***1.4 Action planning*** on the basis that participants were agreeing to practice strategy use within the defined situation of having to video themselves. However, Rater 2 did not agree, on the basis that it was not sufficiently clear that homework practices were intended to be framed as specific plans of action.

8.4.2.7 Discussion of Homework Practices

At the start of Sessions 5, 6, 7 and 8, and during whole segments in Sessions 7 and 8 of therapy, the therapist led discussions with participants in order to review examples of strategy use during homework activities, and in everyday conversations. These discussions were described in sessions simply as 'reviews' of strategy use. Although raters agreed that these review discussions targeted change to conversational behaviour, neither rater was able to code this description for BCT content as there was not enough information to identify what the process of 'reviewing' included.

8.4.2.8 Summary: Coding Better Conversations with Aphasia's Key Activities

This section has provided descriptive information about how raters coded the therapy's key activities, highlighting agreed BCTs, sources of disagreement, and the activities it was not possible to code for BCT content. This information is expected to be valuable in itself, in terms of understanding what BCTs represent which components of therapy. However this review of

coding also indicates some specific challenges in applying the taxonomy to Better Conversations with Aphasia, such as coding activities directed at collaborative conversational activity, and how much content it is acceptable to infer from a description of an activity. These indicate areas that may need to be tackled more thoroughly if a higher level of IRR is to be achieved.

The following section brings together some key findings from the coding of therapy content.

8.4.3 Key Findings from Coding Therapy Content

This section summarises the BCTs reliably identified within Better Conversations with Aphasia (Section 8.4.3.1), provides details of the rejected BCTs (Section 8.4.3.2), outlines the activities agreed to contain NO BCTs (Section 8.4.3.3), and highlights potential new BCTs (Section 8.4.3.3).

8.4.3.1 Reliably Agreed BCTs in Better Conversations with Aphasia

Raters repeatedly and consistently agreed on the presence of a core group of 16 BCTs within Better Conversations with Aphasia. These are presented in Table 26 below. Techniques are presented in the order they appear within the taxonomy (see Appendix 9), with their name, and definition. Supplementary columns show whether a technique targeted the CP, the PWA or both speakers, and whether it targeted a facilitator or a barrier. The recurring therapy activity in which the BCTs occur is highlighted, or if they are linked only to one specific activity, a reference to this is provided.

Table 26: Reliably Agreed BCTs Identified in Better Conversations with Aphasia

No. BCT Label	Definition	Target CP or PWA?	Target Behaviour?	Example Activity from BCA materials
1.1 Goal setting (behaviour)	Set or agree a goal defined in terms of the behaviour to be achieved	Both	Facilitator	Goal Setting
1.8 Behavioural contract	Create a written specification of the behaviour to be performed, agreed by the person, and witnessed by another	Both	Facilitator	Goal Setting
2.2 Feedback on behaviour	Monitor and provide feedback on performance of the behaviour *(e.g. form, frequency, duration, intensity)*	Both	Facilitator (PWA & CP) Barrier (CP)	Video Feedback
2.3 Self-monitoring of behaviour	Establish a method for the person to monitor and record the behaviour(s) as part of a behaviour change strategy	Both	Facilitator	Homework Practices
2.4 Self-monitoring of outcome of behaviour	Establish a method for the person to monitor and record the outcomes of the behaviour(s) as part of a behaviour change strategy	Both	Facilitator	Homework Practices
2.7 Feedback on outcome(s) of behaviour	Monitor and provide feedback on the outcome of performance of the behaviour	Both	Facilitator	Video Feedback, Session 2
4.1 Instruction on how to perform a behaviour	Advise or agree on how to perform the behaviour	CP	Facilitator	Education, Session 5 CP handouts
5.3 Information about social and environmental consequences	Provide information (e.g. written, verbal, visual) about social and environmental consequences of performing the behaviour	CP	Both	Education, Session 5 CP handouts
5.4 Monitoring of emotional consequences	Prompt assessment of feelings after attempts at performing the behaviour	Both	Facilitator	Homework Practices
5.6 Information about emotional consequences	Provide information (e.g. written, verbal, visual) about emotional consequences of performing the behaviour	CP	Barrier	Education, Session 5 CP handouts
6.1 Demonstration of the behaviour	Provide an observable sample of the performance of the behaviour, directly in person or indirectly e.g. via film, pictures, for the person to aspire to or imitate.	CP	Facilitator	Education, Session 5 CP handouts
7.1 Prompts/cues	Introduce or define environmental or social stimulus with the purpose of prompting or cueing the behaviour. The prompt or cue would normally occur at the time or place of performance.	Both	Facilitator	Practice Conversations
8.1 Behavioural practice/ rehearsal	Prompt practice or rehearsal of the performance of the behaviour one or more times in a context or at a time when the performance may not be necessary, in order to increase habit and skill	Both	Facilitator	Practice Conversations Homework Practices
8.2 Behaviour substitution	Prompt substitution of the unwanted behaviour with a wanted or neutral behaviour	CP	Both	Education, Session 5 CP handouts
8.3 Habit formation	Prompt rehearsal and repetition of the behaviour in the same context repeatedly so that the context elicits the behaviour	Both	Facilitator	Practice Conversations Homework Practices
10.4 Social reward	Arrange verbal or non-verbal reward if and only if there ***has been*** effort and/or progress in performing the behaviour	CP	Facilitator	Education, Handout 5.2ii

Of these 16 BCTs, five are associated with the "Education"-based handouts delivered to CP in Session 5. Two are associated with "Video Feedback", two with "Goal Setting", three with "Practice Conversations", none with "Video Problem Solving", five with "Homework Practices" and none with the "Discussion of Homework Practices".

Both speakers receive BCTs associated with goal setting and practicing facilitators, and with monitoring or getting feedback on these facilitators. CPs receive additional BCTs directed at facilitators, all of which occur during the information-giving handouts they receive during Session 5. Only CPs receive BCTs that are directed at barriers. A detailed comparison of the BCTs associated with barriers and facilitators, and those delivered to CPs and PWA is provided in Sections 8.6 and 8.7 respectively.

8.4.3.2 Rejected BCTs

Table 27 on the next page provides a summary of BCTs that were identified by one rater, but not agreed by the other to be present in that context, and so rejected. As well as the BCT label and definition, Table 27 supplies information on the activity in which a BCT was considered, and the reason for disagreement between raters.

As Table 27 reveals, a total of 7 BCTs were rejected. Disagreement between raters about the presence of ***2.7 Feedback on the outcome(s) of behaviour*** recurred throughout therapy, when it came to coding "Video Feedback" and the "Discussion of Homework Practices". The presence of ***1.4 Action planning*** was a consistent source of disagreement in the coding of "Homework Practices". Two examples of ***4.1 Instruction on how to perform a behaviour*** were rejected, though this BCT was reliably agreed elsewhere in therapy. One-off instances of ***5.2 Salience of consequences***, ***6.1 Demonstration of the behaviour, 7.1 Prompts/cues*** and ***15.3 Focus on past successes*** were also rejected. Of these, ***7.1 Prompts/cues*** and ***6.1 Demonstration of behaviour*** were reliably identified elsewhere.

Table 27: Rejected BCTs for Better Conversations with Aphasia

No.	Label	Definition	Activity Considered	Reason to reject
1.4	*Action planning*	Prompt detailed planning of performance of the behaviour (must include at least one of context, frequency, duration and intensity). Context may be environmental (physical or social) or internal (physical, emotional or cognitive)	Homework Practices in Session 4, 5, 6, 7	Rater 2 felt it was not sufficiently clear that this activity corresponds with BCT definition
2.7	*Feedback on outcome(s) of behaviour*	Provide feedback on the outcome of performance of the behaviour	Discussion of Homework Practices in Sessions 4, 5, 6, 7, 8	Rater 1 felt there was insufficient evidence in description of therapy activity to confirm this BCT
4.1	*Instruction on how to perform a behaviour*	Advise or agree on how to perform the behaviour	Handouts 2.1 "About turns" in Session 2 Handout 3.2 "Dealing with problems"	Rater 1 did not feel these activities had a clear target behaviour
5.2	*Salience of consequences*	Use methods specifically designed to emphasise the consequences of the behaviour with the aim of making them more memorable (goes beyond informing about consequences)	Video Feedback used in Session 2	Rater 2 felt it was not sufficiently clear that this activity corresponds with BCT definition
6.1	*Demonstration of the behaviour*	Provide an observable sample of the performance of the behaviour, directly in person or indirectly e.g. via film, pictures, for the person to aspire to or imitate	Video Feedback Session 3 – repair sequence	Rater 1 did not feel this activity had a clear target behaviour
7.1	*Prompts/cues*	Introduce or define environmental or social stimulus with the purpose of prompting or cueing the behaviour. The prompt or cue would normally occur at the time or place of performance.	Prompt sheet provided in Session 7, Activity 2	Rater 1 felt handout was used as reference rather than to prompt behaviour in session
15.3	*Focus on past success*	Advise to think about or list previous successes in performing the behaviour (or parts of it)	Handout 2.3, "The aim of turns" Session 2	Rater 2 felt it was not sufficiently clear that this activity corresponds with BCT definition

8.4.3.3 Activities Agreed to have NO BCTs

Raters agreed that a number of activities contained a target behaviour, but did not contain evidence of a taxonomy BCT. These activities are summarised in Table 28 below, which provides details on activity type, where it can be found in therapy, and why it was not possible to identify a BCT.

Table 28. Better Conversations with Aphasia Activities Agreed to have NO BCTs

Activity Type	Session Activity/ Handout	Why was NO BCT identified?
Education	Handout 4.1 "Turn-taking: A balancing act" Handout 6.2 "Starting a topic"	Behaviour changing component of activity not clear
Video Problem Solving	Session 4 – Videos: Strategies for PWA Session 7 – Videos: Practicing the use of strategies	No match on taxonomy
Discussion of Homework Practices	Session 5 - Review Session 6 - Review Session 7 - Review Session 7 – What do you remember about strategies?	Not enough information in description of activity
Discussion of Previous Session	Session 4 - Review Session 5 - Review Session 6 - Review Session 7 – Review	Not enough information in description of activity
Video Feedback	Session 6 – Videos: Explore strategies for change (*Topic)*	Behaviour changing component of activity not clear

The key reasons that BCTs could not be coded for activities agreed to target conversational behaviour were: (i) it was not clear what the behaviour changing component of the activity was; (ii) there was no match on the taxonomy for the described activity; and (iii) the content of the behaviour changing activity was not fully described within the therapy materials.

In some activities, particularly those associated with the broader conversational activities of turn-taking and topic, it was clear that specific conversational behaviours were being discussed. However raters found it hard to identify how and whether these behaviours were being targeted for change within these activities. Handouts such as Handout 4.1 "Turn-taking: A balancing act" and Handout 6.2 "Starting a topic" (see Appendix 3) presented facilitator behaviours within wider conversational activity, but it was unclear whether this information constituted a behaviour changing activity, and if so what specific BCT this information represented. Consequently no BCTs were coded.

Where no match could be identified on the taxonomy for an otherwise well-described activity, the possibility of new BCTs was considered. This is discussed further in Section 8.4.3.4 below.

Where it was not possible to identify the BCT content of an activity due to insufficient detail in description of the activity, this indicates an area of potential review and improvement for the Better Conversations with Aphasia therapy programme. The activity "Discussion of Homework Practices" has the potential for generating a wide range of BCTs, for example those directed at rewarding successful use, or efforts made for use, and those designed to help deal with obstacles to strategy use. Without further specification about the intended function of discussion-based activities, it will remain unclear how to describe or replicate the underlying process these activities are directed towards.

8.4.3.4 New BCTs

The activity of "Video Problem Solving" to identify situations in which strategies could be used was felt by both raters to represent a potentially behaviour changing activity (see Section 8.4.2.5). However this activity did not map onto any BCTs in the taxonomy. It is therefore suggested that this activity contains newly identified BCTs.

This activity can been broken down into two essential components: (i) identifying problematic events within conversation – i.e. the contextual opportunity for employing a strategic behaviour – and then (ii) selecting a specific strategy for resolving that problem – i.e. matching a behavioural solution to a problem. These potential new BCTs - provisionally called (i) ***Identify opportunity to use target behaviour*** and (ii) ***Match behavioural solution to problem event*** - may be particularly suited to interventions where the change being targeted is in fact a relatively small adjustment within a fast flowing context, as in conversation. Recognising exactly when to do something different may be an especially important determinant for change when behaviour is based on long established, barely conscious habits such as those of conversation, which are qualitatively different from clearly demarcated health behaviours such as going to the gym, or taking medication. In addition, these potential new BCTs may be useful when the change targeted is the newly strategic use of behaviour in response to specific situations.

The process for developing the precise definitions and labels for potential BCTs involves rigorous evaluation and the formal development of consensus (see Section 3.4.5, p57 in the Literature Review for details) in order to ensure the BCT really does represent a procedure that is conceptually distinct from the other techniques on the taxonomy. At this stage it is therefore enough to pass a broad identification of the function of these proposed techniques to the BCT taxonomy project, for further development.

8.4.4 Summary of Key Findings from Coding Therapy Content

The process of coding Better Conversations with Aphasia therapy materials for the presence of BCTs has enabled the identification of a group of reliably agreed ingredients within therapy

that may be involved in activating behaviour change. This includes the identification of two potential new BCTs, suggesting that intervention for communicative behaviour may require specialist procedures which have not so far been identified in the health behaviour change literature. Coding the therapy for BCTs provides a method for specifying the underlying functions of therapy activities, and also for describing therapy content in a way that is consistent with intervention literature in other fields.

A moderate level of IRR for coding conversation therapy using the BCT taxonomy has been established using the kappa coefficient, and the threshold for good reliability has only just been missed using a measure of percentage agreement. While this is promising, there are some key issues that resulted in coding discrepancies. These would need to be addressed for a more reliable use of the taxonomy to be established with Better Conversations with Aphasia, and indeed any other conversation therapies.

Firstly raters made different decisions about the extent to which a target conversational behaviour could be delineated within broader conversational activities such as turn-taking, topic and repair. Even where they agreed a target behaviour was clearly present, raters were often unsure how to code content for BCTs. This issue may point to something of a conceptual culture clash arising from the attempt to evaluate therapy activities that are based on CA descriptions of *collaborative* conversation, in terms of the behaviour of individuals. It may also reflect the still emerging skills of raters in understanding and applying the taxonomy, as the BCTs in question (***4.1 Instruction on how to perform a behaviour*** and ***6.1 Demonstration of behaviour***) were identified in Sessions 2 and 3 well before therapy had moved onto the selection and implementation of target strategies.

A second issue resulting in coding discrepancies was raters' varying confidence in identifying BCTs based on unfamiliar concepts such as ***1.4 Action planning, 15.3 Focus on past successes*** or less tangible concepts such as ***5.2 Salience of consequences***. This suggests that there may be some additional training issues to address with raters from a communication background, who may lack familiarity with the psychological vocabulary and concepts on which the taxonomy draws.

Finally, coding discrepancies also arose when raters made different decisions about what BCTs it was reasonable to infer from the descriptions provided in the therapy session plans. This related specifically to ***2.7 Feedback on outcome(s) of behaviour*** in the context of "Video Feedback" (see Section 8.4.2.2, p193) and the review discussions that followed "Practice Conversations" (see Section 8.4.2.4, p193). While in part this may again be the result of raters applying new skills for the first time, it also points to a tendency within the discussion-based

components of therapy to *imply* rather than *specify* intended active content. This issue was also responsible for the agreement between raters that no BCTs could be identified during "Discussion of Homework Practices" (see Section 8.4.2.7, p195). Where complex activities such as "Video Feedback" or "Discussion of Homework Practices" are described only briefly, it is perhaps inevitable that raters, and indeed clinicians carrying out the therapy, will make different judgements about what the activities can be assumed to include.

8.5 Mapping Better Conversations with Aphasia's BCTs to Theory

In principle, BCTs are expected to target shifts to the strength and nature of the determinants acting on behaviour, and thereby create change to behaviour. There are a number of proposals about how BCTs can be expected to map onto theoretical domains, based on broad expert consensus (Abraham et al 2011; Abraham & Kools 2012; Cane et al 2014; Michie et al 2008; Michie, et al 2014). This section therefore presents how the BCTs reliably identified within Better Conversations with Aphasia map onto theoretical domains, in reference to this expert consensus. Linking BCTs to theoretical domains is intended to make clear the links between the findings discussed here, and those of Study 1 and 2, and also to further the development of a theoretically-linked account of how the content of Better Conversations with Aphasia produces change to conversational behaviour.

Table 29 presents the 16 reliably agreed BCTs alongside their linked theoretical domain. For BCTs which have not been mapped to a theoretical domain by the existing literature, this author has made proposals about how they may be expected to function. Where this is the case, it has been highlighted in the table. BCTs will here be referred to by their name only. For definitions, please refer back to Table 26, p197.

Table 29: Better Conversations with Aphasia's BCTs Mapped to Theoretical Domains

BCT Label	Theoretical Domain
1.1 Goal setting (behaviour)	MOTIVATION: *GOALS*
1.8 Behavioural contract	MOTIVATION: *INTENTIONS*
2.2 Feedback on behaviour	CAPABILITY: *KNOWLEDGE* MOTIVATION: *BELIEFS ABOUT CAPABILITIES*
2.3 Self-monitoring of behaviour	CAPABILITY*: BEHAVIOURAL REGULATION* MOTIVATION: *BELIEFS ABOUT CAPABILITIES*
2.4 Self-monitoring of outcome(s) of behaviour	MOTIVATION: *BELIEFS ABOUT CONSEQUENCES; BELIEFS ABOUT CAPABILITIES*
2.7 Feedback on outcome(s) of behaviour	MOTIVATION: *BELIEFS ABOUT CONSEQUENCES*
4.1 Instruction on how to perform a behaviour	CAPABILITY: *SKILLS* (current study, Johnson 2014)
5.3 Information about social and environmental consequences	CAPABILITY: *KNOWLEDGE* MOTIVATION: *BELIEFS ABOUT CONSEQUENCES*
5.4 Monitoring of emotional consequences	MOTIVATION: *BELIEFS ABOUT CONSEQUENCES; EMOTION*
5.6 Information about emotional consequences	MOTIVATION: *BELIEFS ABOUT CONSEQUENCES; EMOTION*
6.1 Demonstration of the behaviour	CAPABILITY: *SKILLS*
7.1 Prompts/cues	OPPORTUNITY: *ENVIRONMENTAL CONTEXT & RESOURCES*
8.1 Behavioural practice/ rehearsal	CAPABILITY: *SKILLS* MOTIVATION: *BELIEFS ABOUT CAPABILITIES*
8.2 Behaviour substitution	CAPABILITY: *BEHAVIOURAL REGULATION* (current study, Johnson 2014)
8.3 Habit formation	CAPABILITY: *SKILLS* *MEMORY, ATTENTION & DECISION PROCESSES* (current study, Johnson 2014)
10.4 Social reward	OPPORTUNITY: *SOCIAL INFLUENCES* MOTIVATION: *REINFORCEMENT*

In terms of changing OPPORTUNITY, the consensus in the literature suggests that ***7.1 Prompts/cues*** and ***10.4 Social Reward*** target shifts in *ENVIRONMENTAL CONTEXT & RESOURCES* and *SOCIAL INFLUENCES* respectively (Cane et al 2014). However within Better Conversations with Aphasia, ***7.1 Prompts/cues*** is identified as occurring when the SLT cues participants' strategy use within practice conversations, and not as part of a longer term system for embedding use and ***10.4 Social Reward*** only occurs once in relation to the use of passing turns. Therefore neither of these BCTs explains the finding of Study 2 that PWA strategy use may be brought about by ***Change in Conversational Support for PWA Strategies*** consisting of extra prompts, requests and time from the CP (see Section 7.3.1.1, p150). The lack of fit between these two OPPORTUNITY BCTs and the associated mechanism of change identified by Study 2, suggest that these procedures may not be making an essential contribution to establishing change via Better Conversations with Aphasia. Therefore they will not be considered to be potential 'active ingredients' in subsequent discussions. However, this also means the hypothesised mechanism of changed OPPORTUNITY put forward in Study 2 remains unexplained by the current analysis of therapy content.

Change to CAPABILITY is expected to lie with the *SKILLS* BCTs ***6.1 Demonstration of the behaviour, 8.1 Behavioural practice/ rehearsal***, ***8.3 Habit formation*** (Michie et al 2008; Cane et al 2014). To this group, the author has added ***4.1 Instruction on how to perform a behaviour***, on the basis of its similarity to ***6.1 Demonstration of the behaviour.*** These BCTs offer an explanation for how the *SKILLS* associated mechanism ***Increased Ease at Implementing Strategies*** (see Section 7.3.2.3, p156) may be produced by therapy content.

In addition to a change in *SKILLS*, enhanced *KNOWLEDGE* about target behaviour is proposed to be associated with the use of ***2.2 Feedback on behaviour*** and ***5.3 Information about social and environmental consequences.*** Changed *KNOWLEDGE* has been linked to the mechanism ***Increased Awareness of Own Behaviour*** (see Section 7.3.2.1, p153). The identification of this combination of BCTs therefore furthers the hypothesis developed in Study 2 that change-relevant awareness about one's own behaviour in Better Conversations with Aphasia is developed not just by identifying the type of behaviour one uses, but by considering the *impact* of that behaviour.

BEHAVIOURAL REGULATION, another domain of CAPABILITY*,* is expected to be supported generally by ***2.3 Self-monitoring of behaviour*** (Cane et al 2014). As well as general support for self-regulation, this BCT may well contribute to the focussed regulatory activity of ***Replacing Barriers with Facilitators*** (See Section 7.3.2.2, p155)***.*** The author has also suggested that ***8.2 Behavioural substitution*** be included in this domain, as it appears directly relevant to ***Replacing Barriers with Facilitators***.

Finally, this author has also suggested that, ***8.3 Habit formation*** has the potential to be associated with the domain *MEMORY, ATTENTION AND DECISION PROCESSES*. This is in reference to the findings of Study 2, which suggested that as speakers' strategy use becomes more habitual, their reliance on actively monitoring opportunities to use strategies in conversation may reduce (see Section7.2.2.2, p140), potentially leading to an ***Increased Ease at Implementing Strategies***.

A number of MOTIVATION BCTs are associated with the domain *BELIEFS ABOUT CONSEQUENCES*. This includes ***2.7 Feedback on outcome(s) of behaviour, 2.4 Self-monitoring of outcome(s) of behaviour, 5.6 Information about emotional consequences, 5.3 Information about social and environmental consequences*** and ***5.2 Monitoring of emotional consequences.*** The number and range of BCTs associated with this domain provides further evidence that the associated mechanism of ***Changed Expectation of Behaviour's Impact*** (see Section7.3.3.1, p159) is central to how Better Conversations with Aphasia produces change.

The use of ***1.1 Goal setting (behaviour)*** and ***1.8 Behavioural contract***, associated with *GOALS* and *INTENTIONS* respectively, indicates how the therapy supports speakers to define and commit to the use of specific facilitative behaviours. Both of these BCTs might reasonably be expected to contribute to strengthening a speaker's *Intention to make changes* (see Section 7.2.1.2, p135), which in Study 2 was previously mapped to *INTENTIONS* only. Study 2 suggested that the domain of *GOALS* was instead associated with the proposed mechanism ***Changed Priorities for Conversation*** (see Section 7.3.3.2, p162). There are currently no reliably identified BCTs that can be clearly linked to this mechanism.

The linking of BCTs to theoretical domains also indicates that Better Conversations with Aphasia contains BCTs associated with *EMOTION* and *BELIEFS ABOUT CAPABILITIES*. This is particularly interesting as these domains were associated with shifts in MOTIVATION - ***Changed Perception of Success in Conversation*** and ***Changed Emotions about Conversation*** respectively (see Sections 7.3.3.3, p163 and 7.3.3.4, p164) - whose role in changing behaviour was less clear. Therefore a consideration of how well the associated BCTs 'fit' with these queried mechanisms may shed some light on the role of these shifts for producing behavioural change.

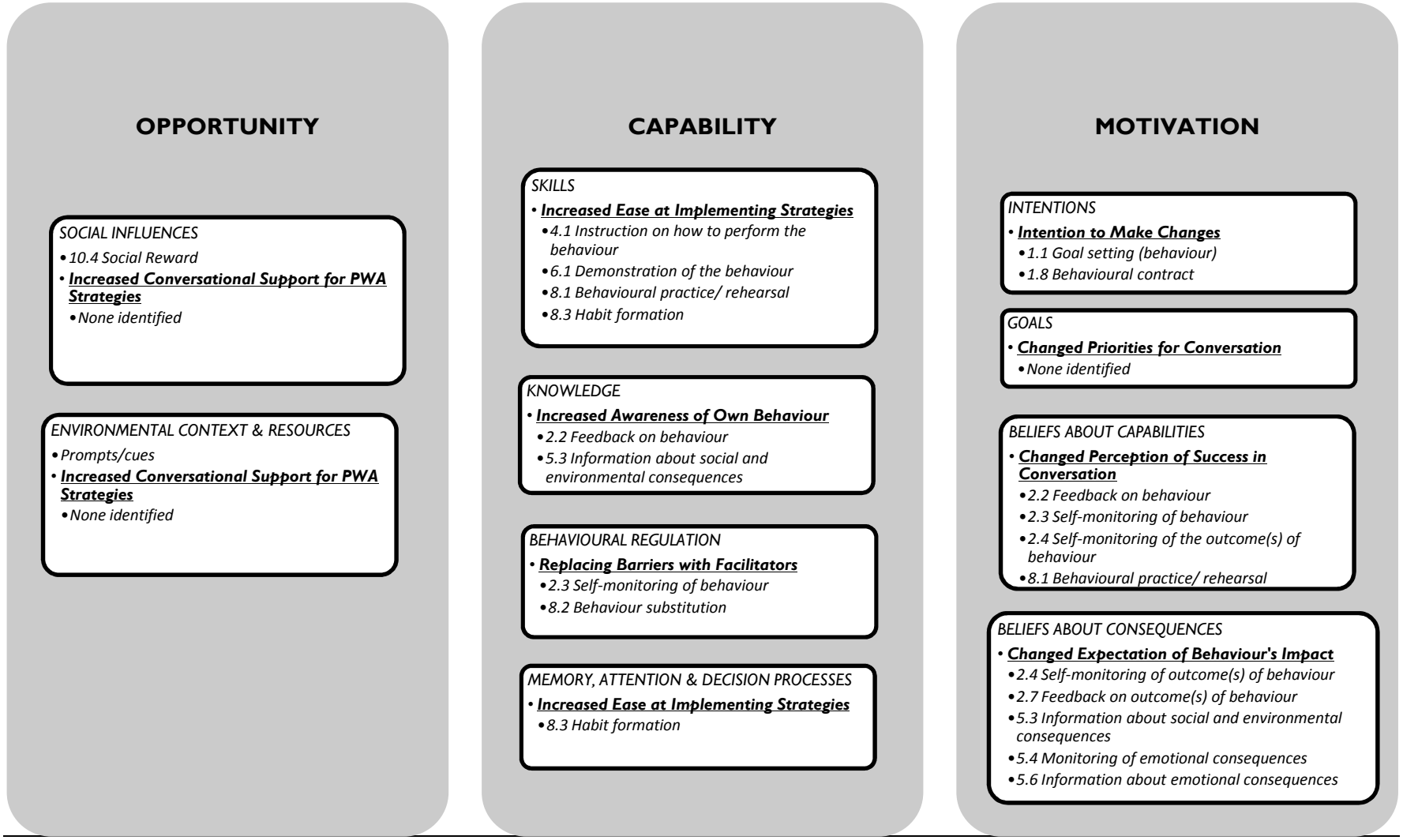
EMOTION is linked to ***5.6 Information about emotional consequences,*** a BCT delivered to certain CPs via Session 5 handouts which focus on the impact of their behaviour on PWA, and to ***5.2 Monitoring of emotional consequences,*** which forms part of homework practices, prompting both speakers to evaluate how they felt after using strategies in conversation. The primary focus of both of these BCTs is on emotional states as a *consequence* of conversational behaviour, rather than on exploring the negative emotions that drive unwanted behaviour, and were shown to be a potential determinant of barrier behaviour in Study 1 (see Section 6.3.3, p114). This suggests that these BCTs may be more directed towards changes in the *BELIEFS ABOUT CONSEQUENCES* that determine behaviour, than to changing the negative *EMOTION* driving behaviour. The queried mechanism ***Changed Emotions about Conversation*** is based on data that suggests that some CPs feel less impatient or worried about their partner's speech after therapy (see Section 7.3.3.4, p164). The lack of fit between these data and the BCTs identified here furthers the hypothesis that changed emotions following therapy are not a mechanism for creating behavioural change, but rather a distinct outcome of Better Conversations with Aphasia.

The domain of *BELIEFS ABOUT CAPABILITIES* is associated with the use of several BCTs including ***2.2 Feedback on behaviour***, ***2.3 Self-monitoring of behaviour***, ***2.4 Self-monitoring of the outcome(s) of behaviour***, ***and 8.1 Behavioural practice/rehearsal***. The nature of this group of BCTs suggests that usage, and reflecting on usage, is expected to have the potential to promote speakers self

efficacy for using new behaviours. Data discussed in Study 2 (Section 7.3.3.3, p163) suggested that the therapy has the potential to produce a ***Changed Perception of Success in Conversation***, primarily by highlighting *existing* facilitators. This finding is supported by the identification of feedback and self monitoring BCTs within this domain. However the additional inclusion of ***8.1 Behavioural practice/rehearsal*** suggests that this mechanism also has the potential to support the use of newly-introduced facilitators. The extent of the distinction between the change processes for pre-existing and newly-trained facilitators therefore remains unclear.

Figure 20 provides a visual summary of how BCTs identified with Better Conversations with Aphasia map onto therapy's proposed mechanisms of change, in the context of their shared theoretical domains from the TDF (Cane et al 2012; Cane et al 2014). In order to facilitate comparison with Study 2's findings, this figure uses the same format as Figure 18 in Study 2 (p168). BCTs appear underneath a mechanism of change where one has been identified, and are organised according to the COM-B components of OPPORTUNITY, CAPABILITY and MOTIVATION. It has been concluded here that ***Changed Emotions about Conversation*** is more likely to be an outcome of therapy, than a mechanism for creating behavioural change. Consequently it has been excluded from Figure 20.

Figure 20: Better Conversations with Aphasia BCTs Mapped to Mechanisms of Conversational Behaviour Change



8.5.1 Summary: Mapping Better Conversations with Aphasia's BCTs to Theory

Drawing links between theoretical domains and the BCTs identified in Better Conversations with Aphasia offers the possibility of generating preliminary hypotheses about how the coded therapy procedures produce change to conversational behaviour via the mechanisms identified in Study 2.

In some cases, comparison of Study 2's proposed mechanisms of change with therapy's identified BCTs has supplied a converging picture of how therapy may be working, and identified potential active ingredients. Examples of these are the BCTs associated with the mechanisms of ***Increasing Awareness of Own Behaviour***, ***Replacing Barriers with Facilitators*** and ***Changed Expectations of Behaviour's Impact***.

In others, comparing the functions of therapy's identified BCTs against data associated with potential mechanisms of change has helped clarify their role. For example, the lack of fit between *EMOTION* BCTs and data associated with ***Changed Emotions about Conversation*** suggest that this change may be an outcome, rather than a mechanism of Better Conversations with Aphasia. However a good fit between the BCTs associated with *BELIEFS ABOUT CAPABILITIES*, and the data for ***Changed Perception of Success in Conversation*** provides supporting evidence for the role played by this mechanism in promoting the use of pre-existing facilitators, and indicated that it may also have the potential to support newly-trained facilitators as well. In addition, the lack of fit between therapy's OPPORTUNITY-related BCTs and the relevant mechanism of change - ***Change in Conversational Support for PWA Strategies*** - has suggested that these ingredients do not make an active contribution to creating change via therapy's identified mechanisms.

Currently, the way in which therapy produces ***Change in Conversational Support for PWA Strategies*** remains unaccounted for in this analysis. This is also true for the mechanism ***Changed Priorities for Conversation***. This suggests that BCT coding has been unlikely to capture all relevant aspects of therapy. This may be due to some of the challenges in reliably describing Better Conversation with Aphasia's therapy content in terms of BCTs, outlined in Section 8.4.4 above (p201). However it should also be noted that large portions of therapy's "Education"-based content, as delivered across Sessions 1-3, were not included in BCT coding, as raters agreed that many of these activities did not target any specific conversational behaviours (see Appendix 2 for session plans). It is interesting to consider that both of the above mechanisms may plausibly be addressed by the information and discussion in these sessions, which tended to emphasise overarching themes such as the collaborative nature of conversation, and the role of conversation in sustaining relationships and wellbeing.

Having fully analysed and evaluated the BCT coding of Better Conversations with Aphasia, and considered how the findings of coding link into the therapy's theory of change, this study now turns to its final objective and compares BCTs targeted at barriers and facilitators (Section 8.6) and those targeted at PWA and CPs (Section 8.7).

8.6 Comparing BCTs Targeted at Barriers versus Facilitators

Study 2 hypothesised that change to barriers and facilitators relies on different processes within therapy. In order to explore this hypothesis in more detail, this section therefore compares the number and type of BCTs used to target barriers and facilitators. Reliably identified BCTs are presented in Table 30 according to which type of behaviour they target.

Table 30: Comparison of Better Conversations with Aphasia's BCTs Targeted at Barriers and Facilitators

BCT Label	Barriers	Facilitators
1.1 Goal setting (behaviour)		✓
1.8 Behavioural contract		✓
2.2 Feedback on behaviour		✓
2.3 Self-monitoring of behaviour		✓
2.4 Self-monitoring of outcome(s) of behaviour		✓
2.7 Feedback on outcome(s) of behaviour		✓
4.1 Instruction on how to perform a behaviour		✓
5.3 Information about social and environmental consequences	✓	✓
5.4 Monitoring of emotional consequences		✓
5.6 Information about emotional consequences	✓	
6.1 Demonstration of the behaviour		✓
7.1 Prompts/cues		✓
8.1 Behavioural practice/ rehearsal		✓
8.2 Behaviour substitution	✓	✓
8.3 Habit formation		✓
10.4 Social reward		✓

As Table 30 shows, barriers are targeted by fewer BCTs (3) than facilitators (15). The BCTs directed at barrier behaviour are also associated with a narrower range of theoretical domains (see Table 29, p204). Changing barriers primarily involves ***5.6 Information about emotional consequences*** and ***5.3 Information about social and environmental consequences***, (associated with *BELIEFS ABOUT CONSEQUENCES, KNOWLEDGE* and the respective mechanisms ***Changed Expectation of a Behaviour's Impact*** and ***Increased Awareness of Own Behaviour***) which is then combined with ***8.2 Behaviour substitution,*** (associated with *BEHAVIOURAL REGULATION,* and the mechanism ***Replacing Barriers with Facilitators***). This finding confirms and develops the

hypothesis proposed in Study 2, which is that the essential process for changing barrier use lies with establishing social and emotional reasons not to use an identified behaviour, and then providing an alternative to use in its place.

In terms of the range and number of BCTs involved, this is a relatively 'simple' process. Change here is targeted without the obvious use of BCTs to define and prioritise the termination of barrier behaviour as an explicit goal i.e. ***1.1 Goal setting (behaviour)*** or ***1.8 Behavioural contract***.

In comparison, developing the use of strategically-employed facilitators draws on a larger number of BCTs associated with a wider range of theoretical domains. This is a more 'complex' package of BCTs, building up change through a variety of mechanisms.

In terms of *KNOWLEDGE* about facilitators, and its linked mechanism ***Increased Awareness of Own Behaviour***, participants receive ***2.2 Feedback on behaviour*** and ***5.3 Information about social and environmental consequences.*** The domain of *INTENTIONS*, associated with speakers' specific *Intention to make changes*, is targeted with ***1.1 Goal setting (behaviour)*** and ***1.8 Behavioural contract.*** Some speakers (see Section 8.7 below for further discussion of whom) are then supported to prepare for strategy use in conversation with the *SKILLS* BCTs ***4.1 Instruction on how to perform a behaviour***, ***6.1 Demonstration of the behaviour,*** associated with the mechanism ***Increased Ease at Implementing Strategies***, and the *BEHAVIOURAL REGULATION* BCT, ***8.2 Behavioural substitution***, associated with the mechanism of and ***Replacing Barriers with Facilitators***.

Online facilitator use is then targeted by regular ***8.1 Behavioural practice/rehearsal,*** supported in sessions by ***7.1 Prompts/cues.*** This is associated with the development of *SKILLS* and the mechanism of ***Increased Ease at Implementing Strategies***. The repeated nature of this activity represents ***8.3 Habit formation***, which is proposed not only to support the practical *SKILLS* in implementing strategies, but also to reduce the conscious involvement of *MEMORY, ATTENTION & DECISION PROCESSES* when using facilitators in new ways. Further practice conversations at home bring the opportunity to monitor and evaluate the use and impact of facilitators in conversation, via ***2.3 Self-monitoring of behaviour,*** expected to support *BEHAVIOURAL REGULATION*, and ***2.4 Self-monitoring of outcome(s) of behaviour*** and ***5.4 Monitoring of emotional consequences,*** expected to contribute to changing *BELIEFS ABOUT CONSEQUENCES.* One-off instances of ***10.4 Social reward*** and ***2.7 Feedback on outcome(s) of behaviour*** for facilitators have also been identified within intervention.

This relatively complex package of BCTs suggests that the process of establishing the new use of strategically employed facilitators lies with a period of groundwork in which useful behaviours are identified, participants are asked to commit to using them, and instruction is

provided on how to make a change in context. This groundwork completed, speakers are then offered structured opportunities to make changes in context, which serve the dual purpose of (i) generating first-hand evidence for the speaker of benefits and successes when using the targeted behaviour, and (ii) enhancing their skills at using the behaviour in context. These findings reflect and expand the hypothesis developed in Study 2, which suggested establishing initial attempts to use facilitators within therapy may be central to the development of both the skills and the motivations for longer term use.

It is clear here that change to barriers and facilitators are targeted differently by therapy, and that the small group of BCTs used to trigger a change in barrier use operates in a distinct way from the package of BCTs coordinating to establish facilitator use. Whilst MOTIVATION to change barriers appears to be triggered by the provision of new information, MOTIVATION for facilitator use is built up through a focus on the commitment to do something differently, and reflection on the experience of doing so. Meanwhile, whilst the CAPABILITY to change barriers is supported only by a suggestion of how to replace unwanted behaviour, the CAPABILITY to change facilitators is supported through instruction, repeated practice, self-monitoring and feedback. The extent of the difference in these change processes has not so far been explicitly recognised in the conversation therapy literature. Furthermore, the specific contributions that the ingredients identified here make to each change process are not consistently recognised and reported. So, for example, the potential contribution to barrier change made by suggesting replacement behaviours is not widely recognised. And, for facilitators, although 'practice' is regularly reported in the literature, the active role played by self-monitoring and explicitly identifying the impact of facilitators during these practices is not explicitly emphasised. Implications for the optimisation of the Better Conversations with Aphasia programme are considered in Section 8.8.3, in the discussion of this study's findings.

8.7 Comparing BCTs Targeted at PWA versus CPs

Comparing the BCTs designed to be delivered to PWA against those intended to be delivered to their CPs is expected to show us whether each speaker's change process is targeted in the same way. Table 31 summarises BCTs intended to be delivered to both speakers, as well as those intended to be delivered only to CPs or only to PWA.

Table 31: Comparison of Better Conversations with Aphasia's BCTs Targeted at CPs and PWA

Both CP & PWA	CP only	PWA only
1.1 Goal setting (behaviour)	***4.1 Instruction on how to perform behaviour***	
1.8 Behavioural contract	***5.3 Information on social and environmental consequences***	
2.2 Feedback on behaviour	***5.6 Information on emotional consequences***	
2.3 Self-monitoring of behaviour	***6.1 Demonstration of the behaviour***	
2.4 Self-monitoring of outcome(s) of behaviour	***8.2 Behaviour substitution***	
2.7 Feedback on outcome(s) of behaviour	***10.4 Social Reward***	
5.4 Monitoring of emotional consequences		
7.1 Prompts/cues		
8.1 Behavioural practice/ rehearsal		
8.3 Habit formation		

As Table 31 reveals, the key finding of this comparison is that CPs receive more BCTs than PWA. Ten BCTs are delivered to both speakers. However an extra six BCTs are potentially delivered to CP via the handouts of Session 5. PWA do not receive any BCTs that are not also delivered to CPs.

Some of the CP-only BCTs reflect additional content for change mechanisms which are already being targeted among both speakers. So for example, both speakers' ***Changed Expectation of Behaviour's Impact*** is targeted by ***2.7 Feedback on outcome(s) of behaviour*** and ***2.4 Self-monitoring of outcome(s) of behaviour***. However CPs receive additional concrete information about the impact of conversational behaviour, via ***5.6 Information on emotional consequences*** and ***5.3 Information on social and environmental consequences***. Similarly, although both speakers are offered the opportunity for ***Increased Ease at Implementing Strategies*** via ***8.1 Behavioural practice/rehearsal***, and ***8.3 Habit Formation,*** it is again only the CPs who are given handouts containing explicit instruction and modelling of conversational behaviours representing ***4.1 Instruction on how to perform the behaviour*** and ***6.1 Demonstration of the behaviour***. Whether or not the inclusion of these extra BCTs make change within the relevant mechanism more likely is not possible to conclude from these data. However it does raise the query as to why PWA are not receiving similarly detailed information on why to do something differently, or similarly explicit support on exactly what to do to make a change.

In one case, a CP-only BCT is associated with a mechanism of change not targeted by any shared BCTs. CPs are given advice on ***Replacing Barriers with Facilitators*** via ***8.2 Behaviour substitution***. The delivery of this BCT and change mechanism solely to CPs therefore potentially gives them support to regulate change in context which is not offered to PWA.

The difference in the quantity and nature of BCT content directed towards PWA and CPs relates to the differences in design between Session 4, which targets PWA strategies, and Session 5, which targets CP strategies. In the PWA strategy session, the stated aim is for the PWA to discuss common problems with turn-taking, whereas in the CP strategy session, the equivalent aim is to discuss CP's responses to their partner and explore why they engage in these behaviours. This difference in emphasis means the CP-directed session is much more behaviourally focussed than the PWA session. CPs explicitly consider individual actions, why they may occur, and what their impact is. The education-based handouts in Session 5 include relatively directive depictions of facilitative behaviours used in context, which it is suggested CPs may wish to try (see Handouts 5.2 (i)-(v) in Appendix 3). In contrast, Session 4 handouts ask PWA to consider more generally how aphasia itself causes problems, rather than how they personally respond to and deal with these problems (see Handout 4.2, "Common problems with turn-taking in agrammatism", in Appendix 3).

With these data, it is not possible to draw any conclusions about whether this extra BCT content makes the intervention more effective for CPs than for PWA. Nonetheless it is obvious that the intervention incorporates concrete guidance for CPs about exactly what they should do, when they should do it, and why, while the same level of behavioural detail is not offered in an equivalent way to PWA. We also know from Section 7.2.2 (p137) of Study 2 (which looked at the factors determining success in therapy) that, in some cases, PWA experience difficulty recognising the behaviour they have agreed to practice, and can find it hard to remember to use strategies in context. These findings suggest that it may be appropriate for the intervention to better support PWA by presenting instructions, information and rationale for targeted behaviour in as detailed a form as to CPs. Of course it is possible that, even with adjustments, speakers with these types of impairments would have difficulty benefiting from Better Conversations with Aphasia. However until the equivalent – or even an increased – level of support is built into the intervention for PWA, we cannot solely attribute the more mixed outcomes amongst PWA to their linguistic or cognitive impairments.

8.8 Discussion

By identifying theory-linked BCTs within the content of the Better Conversations with Aphasia programme, this study offers new insights into how the intervention works to create change in conversation. As well as identifying which ingredients have the potential to create shifts in specific mechanisms of change, these findings also indicate areas where the therapy programme has potential to be refined and improved. This discussion reviews the application

of the BCT taxonomy to Better Conversations with Aphasia, and considers its implications for the intervention's emerging theory of change, and for its future refinement.

8.8.1 Describing Better Conversations with Aphasia with BCTs

The process of coding the Better Conversations with Aphasia therapy materials has demonstrated that much intervention content is indeed directed towards behaviour change, and can be reliably described using BCTs.

The benefits of this are first and foremost that BCT coding enables improved reporting and specification of some of therapy's core procedures. Consistent description of core content has immediate implications for those wishing to replicate therapy in a clinical or research environment. In addition, identifying BCTs within Better Conversations with Aphasia enables links to be drawn between therapy content and theory, thereby furthering the potential for an explanatory account of how therapy produces change. Longer term, reporting therapy's BCTs also offers the possibility of examining the effectiveness of therapy procedures, for example by evaluating the differing impacts of BCTs, or by comparing the relative effectiveness of different methods and tools for delivering the same BCT.

It has not been possible to code all of the Better Conversations with Aphasia therapy content for BCTs. In particular, this exercise has highlighted that several of therapy's more complex activities may be under-specified within the current therapy materials. For example, much of the therapy content delivered by 'discussion' with the therapist, does not provide sufficient detail to identify the core function of the activity and code for BCT content. This means that for those wishing to replicate these aspects of therapy, currently, the relative balance and priority for encouragement, feedback, problem solving, instruction or persuasion occurring within these discussions is open to interpretation. Furthermore, it is unclear at present whether the underlying function of these discussions is to build skills, promote confidence, change perceptions, or plan specific uses of target behaviour. Under-reporting of active content is far from being an issue unique to BCA. However the amount of active therapy content that remains 'implicit' in any intervention will have consequences in terms of how consistently its core principles can be understood and replicated by others. Developing a clearer account of what components of therapy support what mechanism of change is therefore crucial for enabling the identification and dissemination of therapy's most effective components.

As much of the content occurring within the early sessions of Better Conversations with Aphasia was not focussed on specific conversational behaviours, it also could not be coded for BCT content. Consequently it is unclear how these more broadly-focussed "Education" components of therapy, which provide general information on aphasia and conversation,

contribute to the behavioural changes produced by therapy, or indeed to other outcomes. This thesis is concerned with conversational behaviour change. Nonetheless, it is acknowledged that the therapy may potentially address a wider range of issues than behaviour change, including for example an increased understanding and acceptance of the impact of aphasia, or reduced feelings of anxiety and frustration about communication. It is possible that these early sessions of therapy may be responsible only for these non-behavioural outcomes. However it also possible that the education about conversation included here may be responsible for shifts in the currently unexplained mechanisms of behavioural change: ***Changed Priorities for Conversation*** and ***Change in Conversational Support for PWA Strategies***. In summary, while BCT coding enables a focus on the essential function of many activities, it may still not be able to capture all relevant content. Furthermore, it is not an appropriate tool for investigating any non-behavioural outcomes produced by Better Conversations with Aphasia.

Finally, the reliable application of the BCT taxonomy to Better Conversations with Aphasia has been shown to encounter some challenges. These have been particularly noted when applying the taxonomy to therapy activities directed at collaborative conversational activity such as turn-taking, topic and repair. They have also been noted when applying concepts which are not familiar within Speech & Language Therapy such as 'action planning', or when applying concepts that are generally more interpretive such as 'salience of consequences'. While the latter issue may be a challenge for a coder from any background, the other issues suggest there are some specific challenges involved in applying the taxonomy to interactive behaviour, and indeed when using a coding system developed in a different field. Discussion of the limitations and potential future applications of the BCT taxonomy in Speech & Language Therapy continues in Chapter 11.

8.8.2 Building a Theory of Change

Exploring BCTs in relation to the theoretical domains they are broadly expected to target, and subsequently to the change mechanisms identified in Study 2, has suggested which of the reliably identified BCTs may have the potential to activate change in the therapy. In many instances, a coherent account has emerged about how specific therapy components produce shifts within particular mechanisms of conversational behaviour change. Crucially, the comparison of BCTs delivered to barriers and facilitators has confirmed the hypothesis, first suggested in Study 2, that change to barriers and change to facilitators is created via different processes. The BCTs used to target barriers and facilitators in Better Conversations with Aphasia differ both in number of BCTs, and in the range and nature of mechanisms involved in supporting change.

However, questions remain about how particular mechanisms such as ***Changed Priorities for Conversation*** and ***Change in Conversational Support for PWA Strategies*** are produced by therapy content, and also to what extent the BCTs associated with ***Changed Perception of Success in Conversation*** are relevant to newly-trained facilitative behaviour, as compared with pre-existing facilitators.

Following a qualitative investigation of therapy's active content in Study 4 (Chapter 9), a more detailed consideration of the intervention's likely active ingredients and 'theory of change' will be presented in Chapter 10.

8.8.3 Optimising Better Conversations with Aphasia

A key finding from this study for any future research and implementation of Better Conversations with Aphasia is that, in its current format, the content delivered to CPs and to PWA is not equivalent. PWA are not provided with the same level of detail about the behaviour changes they are being asked to make, and do not receive explicit support to regulate change in context. The possibility of rebalancing intervention content should therefore be considered, with a view to offering speakers with aphasia the same level of detailed instruction, demonstration and information as CPs.

This study has confirmed the existence of different pathways for barrier change and facilitator change within the Better Conversations with Aphasia programme. The effectiveness of these two pathways should be considered in relation to the outcomes reported in the literature (see Beeke, Beckley et al 2014; Beeke, Johnson et al 2014). Currently there is some indication that the therapy is regularly able to produce significant decreases in barrier use; however, its successes in increasing the use of facilitators are more mixed. While there may be numerous explanations for this, one area to consider is whether the current package of BCTs can be optimised to be more effective. Certainly, this study's findings already suggest that PWA may have the potential to be better supported by the content of the therapy, at the very least by ensuring that they receive equivalent BCTs to their partners. The final Discussion of this thesis, presented in Chapter 10, will continue to look at areas for optimising the content of therapy in more detail.

8.9 Conclusions

This chapter has identified BCTs contained within Better Conversations with Aphasia and developed proposals about how they may work to create conversational behaviour change. Key conclusions have been drawn about the therapy, specifically that it creates change to

barriers and facilitators in different ways, and that the therapy content delivered to CPs and PWA is not equivalent.

The tools and theories of behaviour change used in this chapter have continued to generate useful insights into the Better Conversations with Aphasia therapy programme. However, gaps have been identified in the analysis of how therapy's BCTs affect its hypothesised mechanisms of change. Moreover, some challenges have been noted for establishing a substantial level of IRR for BCT coding. These issues suggest it may be important to consider other sources of evidence regarding the active ingredients of therapy. The final analysis chapter in this thesis (Study 4, presented in Chapter 9) seeks to address some of the gaps within the current study, as well as triangulate some of the findings discussed here, by returning to participants' accounts of therapy and examining their perspectives on therapy content and active ingredients.

9 Study 4: Participant Perspectives on Therapy Content

This final analysis chapter seeks to supplement and extend the findings of Study 3 by analysing therapy content from the perspective of the participants in BCA, using the qualitative data and methods described in Chapter 5. This analysis seeks to identify ingredients perceived by participants to be beneficial, and therefore potentially active in producing change, as well as any aspects of BCA perceived to be less supportive of change.

The study contributes converging evidence for some of the BCTs already identified. In addition, it uncovers therapeutic ingredients not reliably captured during BCT coding but considered relevant by participants. The use of qualitative data therefore adds to the evidence for key therapy content developed across Study 3, as well as compensating for outstanding queries about the reliability of BCT coding. In addition, the qualitative data generated from participant accounts enable a more detailed examination of how therapy ingredients work to trigger the shifts in OPPORTUNITY, CAPABILITY and MOTIVATION identified in Study 2 as potential mechanisms of change. Interpreting these data in the context of behaviour change theory and the mechanisms identified in Study 2 therefore furthers the account emerging in this thesis of how the BCA therapy programme produces change to conversation.

Participants' feedback about the aspects of therapy hindering their potential to benefit is included here, not only to provide a balanced picture of the therapy, but also to contribute to the development of recommendations about how BCA could be optimised.

The research objectives for this study are to:

- Identify the ingredients of the BCA therapy programme perceived to support or hinder change, as reported by participants
- Link participant-reported therapy ingredients to previous findings regarding therapy's BCTs and mechanisms of change.

In this study, Better Conversations with Aphasia will be referred to by its acronym BCA, except in the discussions focussed on comparing the findings of this chapter to the therapy's BCTs. This is to avoid confusion between acronyms.

The chapter starts with a brief recap of the methods specific to the study, in Section 9.1. Findings relating to beneficial ingredients in BCA are presented in Section 9.2, which includes a discussion of how these findings can be interpreted in relation to the therapy's BCTs and mechanisms of change (Section 9.2.7). The analysis of data relating to less helpful aspects of therapy is presented in Section 9.3. The study's discussion, in Section 9.4, will outline how this

analysis contributes to the identification of BCA's active ingredients, and to its emerging theory of change. Implications for optimising therapy will also be considered. Final conclusions for the chapter are presented in Section 9.5.

9.1 Methods & Structure of Chapter

This study is based on data from the post-therapy interviews, as captured by the coding categories Therapy Ingredients Supporting Change and Therapeutic Barriers to Change (see Section 5.6, p90). Details on the procedure for the post-therapy interviews are provided in Section 5.4.3 (p87).

Therapy Ingredients Supporting Change were coded when participants mentioned any component of BCA therapy relating to conversational behaviour that they found particularly useful, or to which they attributed their change process. Therapeutic Barriers to Change were coded when participants commented on any aspect of therapy content that they perceived as potentially limiting their potential to benefit from therapy. Data were analysed according to the principles of Framework Analysis (see Sections 5.5, p87 and 5.6, p90 for more information on this method).

As previously, themes and hierarchies of themes were developed to describe the key features of the data. Findings from the analysis of Therapy Ingredients Supporting Change are presented in Section 9.2, whilst Therapeutic Barriers to Change are presented in Section 9.3. The source data for each analytic theme are referenced according to the conventions used in Studies 1 and 2 (please refer to Section 6.1, p100 for details) and are discussed within subsections.

9.2 Therapy Ingredients Supporting Change

Participants reported a wide range of Therapy Ingredients Supporting Change relating to BCA content or format. However, most data originate from the reports of CPs, who inevitably were able to provide more detail about their experience of therapy.

The analytic hierarchy developed to represent the data is summarised in Figure 21. There are five key themes, each of which represents an ingredient of therapy identified by participants as beneficial, and therefore potentially active in conversational behaviour change. Three of these themes contain a further layer of subthemes which characterise different functions reported for that therapy ingredient. References to the speaker from whom the coded data originate are provided in brackets after the subthemes. Data are provided for reference in Appendix 11.

Figure 21. Analytic Themes Representing Therapy Ingredients Supporting Change

Participant Perspectives on Therapy Content:

A Hierarchy of Analytic Themes to Represent the Data Captured by

Therapy Ingredients Supporting Change

Involvement of the CP [PWA 4; CPs 1, 3, 4]

Practice Conversations

- *Trying out strategies* [CPs 2, 3, 4, 6]
- *Making time for conversations* [CPs 2, 6, 7]

Analysing Conversation [PWA6; CPs 1, 3, 7]

Therapist Advice

- *Feedback on the impact of behaviour* [CPs 3, 5, 7]
- *Direction on what to do* [CPs 1, 2, 3,5, 6]

Video

- *Feedback on the impact of behaviour* [PWA 2; CPs 1, 2, 4, 5, 6, 7]
- *Making therapy more memorable* [PWA 6]
- *Identifying problems and solutions* [CPs 1, 2, 6]

Below, Section 9.2.1 presents and discusses data relating to the theme **Involvement of the CP**; Section 9.2.2 presents **Practice Conversations**; Section 9.2.3 presents **Analysing Conversation**; Section 9.2.4 presents **Therapist Advice** and finally Section 9.2.5 presents **Video**. A summary of findings is discussed alongside key issues in the data in Section 9.2.6. This is followed by one further section of analysis in Section 9.2.7, which examines how the participant-reported Therapy Ingredients Supporting Change can be interpreted in the context of theory, and how they fit with the findings of Study 2 and 3 about mechanisms of change and BCTs.

9.2.1 Involvement of the CP

A number of speakers reported that having the CP directly involved in therapy had a positive impact on helping to establish PWA change. CPs talked about their role in carrying over the work done in therapy sessions into everyday life (CP1, CP4), and in getting a better outcome from therapy (CP3). One PWA also reported that working together with his partner helped make a difference (PWA4). The below quote illustrates how CP involvement was perceived to be of benefit:

> *Yeah for me, it felt valuable in that I was helping and it was helping us both. Whereas all the other therapy you've had has been very one sided. It's been you sitting in a room*

with a speech therapist. So you don't really feel part of that therapy, and it's difficult to know how best to support it. Whereas this I definitely felt very much part of the process. And helping hopefully to get a better solution at the end of it.

Post Therapy: CP3

[Appendix 11,* Involvement of the CP*]

The finding that participants view the involvement of CPs as supportive of PWA change echoes the Study 2 finding that change in PWA strategy use may partly be a product of the increased support, prompts and requests provided by CPs after therapy (see Section 7.3.1.1, p150). The possibility that the involvement of the CP in therapy is in itself an active ingredient for change was not identified during Study 3's analysis of BCTs, and indeed no reliably identified BCTs were found to link back to the proposed mechanism ***Change in Conversational Support for PWA Strategies***. The evidence discussed here therefore offers a potential explanation for how therapy creates this shift, which was not reached by coding therapy content for BCTs. This is discussed in more detail in Section 9.2.7 (p232).

9.2.2 Practice Conversations

CPs talked about therapy's regular practice conversations as being a key ingredient for successful change, and in particular the homework practices. Homework practices had two different functions for participants, as represented by the following two subthemes:

- *Trying out strategies* [CPs 2, 3, 4, 6]
- *Making time for conversations* [CPs 2, 6, 7]

9.2.2.1 Trying Out Strategies

Trialling the use of facilitative strategies in real-life conversations is identified as beneficial by many CPs (CPs 2, 3, 4 & 6). This activity is perceived to be helpful both for deciding which strategies would be useful, and for consolidating their ongoing use.

The below extract illustrates the value of practice conversations for experimenting with strategies:

So there were quite a few different techniques like that, that we tried to employ, to see what would be helpful in moving our conversation forward. Sometimes I would get frustrated because I couldn't understand what you were saying. You'd get frustrated, because you couldn't get across what you wanted to say, so there were lots of different ways we could try, and see if it would help us have a conversation more easily.

Post Therapy: CP3

[Appendix 11,* Practice Conversations:** *Trying out strategies**]

Here, in order to decide which strategies will be helpful for minimising frustration, CP3 reports trying out different facilitators and evaluating them. This illustrates how practice conversations can play a role in establishing new, positive beliefs about the benefits of strategies.

Having identified what might work through initial experimentation, there is also evidence that *repeatedly* trying out strategies contributes to change, but via a different mechanism. The below quote shows how regular practice was associated with a process of improvement and consolidation:

> *CP: We always had things to do. Try and remember to do them in the conversation like writing down or interjecting with a uh-huh*
>
> *R: How did you find remembering to do those things?*
>
> *CP: Hard at first. I don't think it took long.*
>
> ***Post Therapy: CP2***
>
> ***[Appendix 11,* Practice Conversations:** *Trying out strategies**]***

Here, repeated practice appears to lead to an increased ease for using facilitators in everyday conversation. This is particularly in regards to the diminishing cognitive effort involved in trying to remember to do something differently.

In summary, *Trying out strategies* during therapy appears to contribute to two different mechanisms of change in order to support long term facilitator use. These are the MOTIVATION mechanism ***Changed Expectation of Behaviour's Impact***: ***Benefits*** and the CAPABILITY mechanism ***Increased Ease at Implementing Strategies***. The dual function of *Trying out strategies* in practice conversations will be further discussed in Section 9.2.7.

9.2.2.2 Making Time for Conversations

Carrying out the homework practices required by BCA led to a focus on conversation among dyads that in itself was seen as new and beneficial. A number of participants reflected that having to regularly video themselves in conversation "forced" them to make time for conversations with each other, and that this in itself was perceived to carry a therapeutic benefit (CPs 2, 6 & 7), as illustrated in the quote below:

> *I think almost being forced to sit down and do the filming is quite a good thing. Because it allowed us to have time to talk to each other.*
>
> ***Post Therapy: CP2***
>
> ***[Appendix 11,* Practice Conversations:** *Making time for conversations**]***

While this activity was seen as broadly beneficial, it was not linked to change. For example, there is no evidence from participants that they continued to make extra time for conversations after the end of therapy. If anything, participants reported that allocated time for conversation is something they missed about the therapy process, as afterwards other priorities took over.

However one account from CP6 suggests that making extra time for conversation helped her and her partner recognise their potential for successful conversation despite aphasia:

> *R: Tell me a bit more about the whole experience of doing the videos, watching the videos, learning from the videos.*
>
> *CP: Well, it made us have a conversation. We wouldn't have gone so deep. We knew we had this ten minutes quarter of an hour. [...] It sort of forced us to learn and make us communicate. And it made us realise that we could have a conversation. Using all the tools and the gestures, hands, pen, y'know getting hold of objects. Whereas maybe we wouldn't have persevered so much. And it made us do that.*
>
> ***Post Therapy: CP6***
>
> ***[Appendix 11,* Practice Conversations:** *Making time for conversations**]***

In this instance, having to video conversations for therapy made the participants try out their strategies, and persevere in the face of difficulties. This activity appears to have brought about new realisations about their own potential for communication, suggesting that practice conversations may have a role in establishing the ***Changed Perception of Success in Conversation*** identified in Study 2 (Section 7.3.3.3, p163). This quote indicates a potential link between practice conversations, enhanced perceptions of success and using *new* strategies that was not obvious in Study 2, where relevant data emphasised changes in CP perception of *existing* behaviours or of PWA behaviour (p163). Nonetheless, it should be noted that in this quote, CP6's perception of conversational success is still based on her partner's use of strategies, not her own. Consequently, the evidence to suggest that ***Changed Perception of Success in Conversation*** operates as a mechanism supporting the deliberate adoption of new behaviour remains ambiguous. The role of this queried mechanism will be further discussed in Section 9.2.7 (p232).

9.2.3 Analysing Conversation

Participants reported finding the process of 'analysing' their conversational behaviour useful during therapy, with both PWA and CPs talking about the amount of 'thinking' they did in relation both to the videos they saw, and the practices they did (CP1, CP3 CP7; PWA6). The below extract illustrates how analysing conversation was perceived to be beneficial:

So these were some little home activity sessions. So we had to actually tell [the SLT]*, when we had a problematic conversation. And we sort of got to a stumbling block. We had to say which strategy we'd used. [...] it worked really well [...] So they helped really. When you actually analyse things.*

Post Therapy: CP1

[Appendix 11,* Analysing Conversation*]

It remains unclear across these data exactly how **Analysing Conversation** is perceived to contribute to change, and it is therefore difficult to hypothesise what mechanism might be associated with this activity. However, these data do suggest that the process of analysing conversation with the SLT consists of identifying a problematic event within conversation, and identifying something that had been done to resolve it. This at least confirms the presence and perceived usefulness of the potential new BCTs: ***Identify opportunity to use target behaviour*** and ***Match behavioural solution to problem event*** (see Section 8.4.3.4, p201).

A further point about these data is *where* in BCA **Analysing Conversation** is perceived to take place. The therapy activities mentioned in the data for this theme include discussion of homework practices (CP1), and discussion with the SLT (CP3). Discussion-based activities proved difficult to code in Study 3 due to lack of detail within the session plans about their intended focus (see Section 8.4.2.7, p195). Therefore, these qualitative data supplement Study 3's analysis of therapy content, by indicating what the focus of discussion-based activities was perceived to be.

9.2.4 Therapist Advice

The advice provided by the SLT was credited by many CPs as an active ingredient for change. The function of this advice can be characterised as follows:

- *Feedback on the impact of behaviour* [CPs 3, 5, 7]
- *Direction on what to do* [CPs 1, 2, 3,5, 6]

9.2.4.1 Feedback on the Impact of Behaviour

CPs accorded a key role to the feedback provided by the SLT about the impact of their behaviours on conversation (CPs 3, 5, & 7). In one instance this feedback emphasised the benefits of an existing facilitative behaviour (CP7), suggesting that this activity has the potential to contribute to enhancing positive perceptions of pre-existing behaviour, and to one's own existing skills and successes in conversation. However, most examples of this kind of feedback related to the unhelpful impacts of barrier behaviours, as illustrated below:

CP: [The SLT] *pointed out some things, some strategies that I was using, that maybe weren't helping very much*

R: What sort of things?

CP: Well, when my mum got stuck on a word, I would vocalise it for her, rather than having the patience just to, to sit with her and let her get there on her own. Maybe that's due to my impatience a bit. So bringing that to my attention helped.

Post Therapy CP5

[Appendix 11,* Therapist Advice*:** *Feedback on the impact of behaviour**]

Here, CP5 describes that the feedback he received about how his behaviour limited his mother's participation in conversation, and provided a basis for change. It is not entirely clear from these data how such feedback is delivered to participants, i.e. whether by video, handout or during discussion with the SLT. However, given that participants perceive it to be a function of therapist advice, this ingredient may well occur during the discussions that followed practices and videos, which were hard to code in Study 3.

Participants' perception that feedback on the impact of their behaviour is an active component of therapist advice corresponds to ***2.7 Feedback on outcome(s) of behaviour***. This BCT was only identified once in the coding of therapy, and was linked to video feedback about existing facilitators (see Section 8.4.2.2, p193). These data therefore suggest that this BCT may occur more widely throughout therapy than indicated by BCT coding, and furthermore that plays a key role in barrier change.

9.2.4.2 Direction on What to Do

Many CPs reported that they received useful advice from the SLT about helpful behaviours to try out (CPs 1, 2, 3, 5 & 6), as illustrated by the below quote:

Some of the things [the SLT] *said, we were like oh, that really makes sense. Things you perhaps wouldn't have thought about yourself, she was able to say that's what might help, and this is why that might be happening.*

Post Therapy: CP3

[Appendix 11,* Therapist Advice:** *Direction on what to do**]

CPs also reported receiving advice on what to avoid (CP3, CP5). Again it is not clear where this advice is generated during BCA, nor the extent to which it constitutes feedback, or direct instruction. Nonetheless, among participants, there is the perception that they receive objective recommendations from the SLT during therapy about behaviours to try and

behaviours to avoid. This may be hypothesised to contribute to establishing their basic knowledge about what specific behaviour changes to target in conversation.

9.2.5 Video

Video clips of participants' own conversations are regularly used throughout the BCA programme. In these data, speakers confirm the contribution made by this tool to their process of behavioural change. However, the data highlight that video performs a variety of different functions in support of change. Speakers report a role for video in:

- *Feedback on the impact of behaviour* [PWA 2; CPs 1, 2, 4, 5, 6, 7]
- *Making therapy more memorable* [PWA 6]
- *Identifying problems and solutions* [CPs 1, 2, 6]

9.2.5.1 Feedback on the Impact of Behaviour

Video feedback was reported to influence the speakers' perceptions of both facilitator (CP5, CP7) and barrier (CPs 1, 2, 4, 5 & 6; PWA2) behaviour.

The quote below illustrates how video was perceived to provide positive feedback about the impact of facilitators:

> *When we sat down and did the videos – obviously sometimes it was quite difficult but other times it was quite natural wasn't it?*
>
> *(PWA: Yup)*
>
> *And it just showed. We were doing some things that were right. We worked our way round it. The communication problems.*
>
> ***Post Therapy: CP7***
>
> ***[Appendix 11,* Video*:** *Feedback on the impact of behaviour**]***

Here, video feedback serves the purpose of demonstrating to CP7 how behaviours already in use can be successful. This feedback not only builds a positive perception that such behaviours are 'right' and effective for managing communication problems, but it also strengthens the general perception of success in conversation. So in this example, video feedback about the positive impact of facilitative behaviour has the potential to promote speaker confidence and commitment for the continued and strategic use of these behaviours, via the mechanisms of ***Changed Expectation of Behaviour's Impact***, and ***Changed Perception of Success in Conversation***.

For barriers, video feedback has a different effect. Observing barrier behaviour on video appears to trigger key realisations among many CPs, as well as one PWA, about the negative

impact of these behaviours on the conversation, or on their partner (CPs 1, 2, 4, 5 & 6; PWA2), as demonstrated here:

> *I used to say 'I don't understand what you're saying' and then I saw the video back and realised the impact of what that actually means when you say to someone 'I don't understand'. When he actually knows what he's saying and you're going 'I don't understand'. It's a good way of winding someone up or causing upset.*
>
> ***Post Therapy: CP4***
>
> ***[Appendix 11,* Video:** *Feedback on the impact of behaviour**]***

This quote clearly demonstrates the perceived power of video for producing a change in beliefs about barrier behaviour and its consequences, which subsequently leads to a change in behaviour. The direct link drawn here between the experience of watching a video and abandoning a particular behaviour suggests that this form of video feedback has the potential to operate as a very immediate trigger for change.

Video feedback on the impact of behaviours is shown in these data to have a role in promoting existing facilitators, and triggering direct change to barriers. This ingredient appears to function similarly to **Therapist Advice**: *Feedback on the impact of behaviour*, and suggests that ***2.7 Feedback on the outcome(s) of behaviour*** may have a central role in therapy, and be present across a number of different activities.

In Study 3, the presence of this BCT within video feedback activities was not reliably identified, indicating that at present, this core process is not sufficiently clear within the BCA therapy materials. The implications of this are discussed more fully in Section 9.4 (p243) of this chapter.

9.2.5.2 Making Therapy More Memorable

The relative power of video as a tool in conversation therapy is suggested by one PWA, who reported that BCA's video-based content held a lasting resonance for him:

> *R: Thinking about the therapy again, was it what you expected it to be?*
>
> *PWA: No. no.*
>
> *R: Something different to what you expected.*
>
> *PWA: Yes.*
>
> *R: Can you tell me a bit about that?*
>
> *PWA:* [drawing/writing answer]... *Yeah?*

R: So if I can just check I've understood.

Before. With other therapy. It was kind of – yep, done.

But with the video therapy – [there's] *something about 'later'?*

PWA: Yes

R: It sticks around,

PWA: Yes yes

R: It stays with you?

PWA: Yes, yes.

SLT: Ok. Is that right?

PWA: Yes

Post Therapy: PWA6

***[Appendix 11,* Video:** *Making therapy more memorable]*

The implication here is that video has the potential to make the intervention content it delivers more powerful for some speakers. Furthermore, this may enable these speakers to remember and retain aspects of therapy after intervention has finished. This raises the interesting possibility that the use of video may have the potential to enhance the impact and retention of therapy's key messages, and add to the effectiveness of therapy. A discussion of this in relation to BCTs and mechanisms of change continues in Section 9.2.7 (p232).

9.2.5.3 Identifying Problems and Solutions

CPs report that video also functions to support the analysis of conversation. Speakers recall analysing video clips of problematic conversations, in order to identify moments where they could use a strategic facilitator (CPs 1, 2, & 6):

It was sometimes quite interesting to watch the video back and realise how much you interrupted. And [the SLT] *was so lovely saying 'what would happen if you'd done this?' and it was like 'yeah...I know'.*

Post Therapy: CP2

[Appendix 11,* Video*:** *Identifying problems and solutions**]

These data again suggest that the process of identifying specific problems and solutions within conversations - identified in Section 9.2.3 (p224) to be the core component of **Analysing Conversation** - is perceived to be beneficial during BCA. The finding that video is used as a tool

in analysing conversation corresponds to the activity described in Study 3 as Video Problem Solving. However given that the data discussed in Section 9.2.3 suggests that the process of **Analysing Conversation** is also a component of discussion-based activities such as the review of home practices indicates that the same essential ingredients may be delivered multiple times in therapy, in a variety of formats.

The data here provide more detail on how the process of identifying specific problems and solutions may contribute to conversational behaviour change than previously available. Much of the data for this theme suggest that the 'problems' presented on video are often CP barrier behaviours, as in CP2's example of interrupting, above. In these instances, video is still operating as ***2.7 Feedback on the outcome(s) of behaviour.*** However, the barrier behaviours observed on video are additionally identified as conversational opportunities to use a facilitator as an alternative. This process is therefore also represents ***8.2 Behaviour Substitution*** and contributes directly to the mechanism of ***Replacing Barriers with Facilitators***.

However, this activity does not always focus on barrier behaviour. In some instances the 'problems' presented on video may be broader, as suggested in the below quote:

> *Yeah it was ok. Yeah. Cause she'd bring back instances when we say – you were looking back and saying look at a conversation, what do you notice about this? So we'd play it back and discuss maybe what would have been of benefit.*
>
> ***Post Therapy: CP1***
>
> ***[Appendix 11,* Video*:** *Identifying problems and solutions**]***

Where the problems presented on video may be more general – for example the issue of long silences in conversation reported in Beeke et al (2011) – these video clips do not perform the function of motivating and supporting the termination of barriers. Instead, they act to illustrate opportunities in conversation in which the strategic use of a facilitator may be beneficial. This is where the new BCTs - ***Identify opportunity to use target behaviour*** and ***Match behavioural solution to problem event*** have a potential role. By supporting speakers to focus on specific moments within conversation where strategy use may be appropriate, it seems plausible that these ingredients may support some aspects of the self-regulation required to use new strategic behaviours in context. This discussion continues in Section 9.2.7 (p232).

9.2.6 Summary: Therapy Ingredients Supporting Conversational Behaviour Change

The analysis of Therapy Ingredients Supporting Conversational Behaviour Change has shown that participants view five key ingredients within BCA as being beneficial and supportive of conversational behaviour change. These are: **Involvement of the CP**; **Practice Conversations**; **Analysing Conversation**; **Therapist Advice** and **Video**. Closer analysis of the data within these

themes reveals that these activities may contain a number of different active ingredients, and that they may function in different ways to produce different effects. So for example, **Practice Conversations** may support habit and skill when carried out repeatedly; however, when practice is combined with self-monitoring and evaluation, they play a role in helping dyads identify the benefits of facilitative behaviours in their own conversations. Analysis also indicates that the same essential ingredient may be delivered via a range of activities. For example *Feedback about the impact of behaviour* has been identified as a component of both **Therapist Advice** and **Video**, and the process of *Identifying problems and solutions* has been identified as a function of **Analysing Conversation** and of **Video.** The relative effectiveness of different methods to deliver the same content is not known. However there is some indication in these data that video may have a unique value for enhancing the impact of intervention, and content delivered by video may be remembered for a long time afterwards.

This qualitative analysis has extended the findings of Study 3 by highlighting specific ingredients of BCA which were not captured by BCT coding, and yet appear to directly support change in conversational behaviour. The first of these is the **Involvement of the CP***,* which is shown to be a potentially important ingredient of therapy for supporting PWA change (Section 9.2.1, p221). The second is *Feedback about the impact of behaviour*, identified within **Therapist Advice** and **Video** (Sections 9.2.4.1, p225 and 9.2.5.1, p227), and perceived to have an especially powerful role for changing barriers.

The use of data from participants has also offered new insights into the perceived content of video and discussion-based activities, which were difficult to reliably code for BCTs in Study 3, on the basis that their descriptions lacked detail. **Video** has been shown to perform a wide range of functions in therapy, whilst discussion with the therapist may incorporate **Analysing Conversation***, Feedback about the impact of behaviour,* or *Direction on what to do.* The qualitative detail in these data has also suggested new insights. For example, these data highlight that while therapy targets barrier behaviours using **Video:** *Identifying Problems and Solutions,* this activity may also address more general conversational problems. Furthermore, more detail has emerged about the therapy activities involved in promoting a ***Changed Perception of Success in Conversation***. Not only is the mechanism influenced by positive *Feedback about the impact of behaviour* (Sections 9.2.4.1, p225 and 9.2.5.1, p227) but also potentially by **Practice Conversations** (Section 9.2.2, p222)**.** There is still no data linking this mechanism to the self-initiated adoption of newly-introduced behaviour however.

It should also be noted that there are limitations to these data. Firstly, there are few PWA accounts. This is likely to be partly due to the inherent difficulty for someone with aphasia to reflect on the specifics of therapy content. However, there are other factors which may be

contributing to the lack of PWA data. For example, we know that PWA had more difficulty accessing and implementing deliberate behaviour change during therapy (see Section 7.2.2, p137), and that as a group they had more mixed outcomes from therapy than their partners (see Table 2, p32). This may mean that therapy ingredients were less likely to be viewed as beneficial among these speakers. In addition, few PWA targeted change to barriers. This means that they had a narrower range of ingredients and therapeutic processes to report back on.

A second issue for this analysis is that much of the data generated from the participants is somewhat impressionistic, and often difficult to link back to specific components of the therapy programme, or to specific behavioural changes. So for example, while there is a perception that **Therapist Advice** is beneficial, it is not clear when this occurs in therapy or what activity is used to deliver this advice (see Section 9.2.4, p225). Furthermore, while the therapy ingredients reported here are all perceived to be broadly helpful, it is not always clear from the data exactly *what* they are helpful for. Although there are some clear examples of ingredients that are perceived to directly trigger the behavioural changes on which this thesis is focussed (as in the case of *Feedback about the impact of behaviour*, see Section 9.2.5.1, p227), many accounts are more general. So for example, although an activity such as **Analysing Conversation** is perceived favourably (Section 9.2.3, p224), it is not clear whether this is because it is felt to be broadly interesting and useful for understanding conversation, or whether this is because it actually directly supports conversational behavioural change.

In order to more clearly consider the potential contribution of these reported ingredients to conversational behaviour change, this analysis now turns to examine the links between these data and the BCTs, mechanisms of change, and theoretical concepts discussed in previous studies within this thesis.

9.2.7 Participant Reported Ingredients and Behaviour Change

During the analysis of Therapy Ingredients Supporting Conversational Behaviour Change a number of possible links were highlighted between participant-reported therapy ingredients, BCTs and mechanisms of change. This section aims to present and discuss these links in more detail.

A number of participant-reported ingredients appear to correspond with BCTs reliably identified to be present in Better Conversations with Aphasia during Study 3. In addition, some reported ingredients may represent BCTs which were not reliably agreed during Study 3. A further group of ingredients reported in this analysis do not clearly correspond to any BCT, but may still make a plausible contribution to one of therapy's mechanisms of change, or to a broad theoretical domain from the TDF (Cane et al 2012). Table 32 below, presents

participant-reported ingredients, alongside the type of therapy activity they are associated with, and suggests how these ingredients correspond to specific BCTs. Suggestions for how they contribute to the therapy's change mechanisms are also included. Associated theoretical domains are noted, to make clear the links with previous chapters. Where an ingredient lacks sufficient data to clearly match it to any of these areas, this is highlighted.

Figure 20 on p208 may provide a useful reference point for examining this table, and during the following discussion, as it summarises all previous findings regarding how therapy's BCTs are proposed to link with change mechanisms and theoretical domains. Definitions of BCTs can be found in Table 26 (p197) unless otherwise stated. Definitions and examples of all BCTs can be found in Appendix 9.

The discussion of Table 32 is organised according to the components of the COM-B model (Michie, van Stralen & West 2011) to aid coherence with previous chapters. Ingredients associated with OPPORTUNITY are discussed in Section 9.2.7.1, those with CAPABILITY are discussed in Section 9.2.7.2, and MOTIVATION in Section 9.2.7.3. A summary of this discussion is presented in Section 9.2.7.4.

Table 32: Therapy Ingredients Supporting Conversational Behaviour Change Mapped to Better Conversations with Aphasia's BCTs and Mechanisms of Change

Reported Trigger for Change	Associated with what BCA Activity	Maps onto BCT (see Appendix 9 for definitions)	Change Mechanism Targeted (see Figure 18, p168 and Figure 20, p208)	Associated Theoretical Domain (Cane et al 2012; Figure 4, p54)
Involvement of the CP (Section 9.2.1)	*Whole therapy programme*	***3.1 Social support (unspecified)*** ***3.2 Social support (practical)*** ***12.2 Restructuring the social environment***	***Change in Conversational Support for PWA Strategies***	**OPPORTUNITY**: *SOCIAL INFLUENCES; ENVIRONMENTAL CONTEXT & RESOURCES*
Practice Conversations - *Trying out strategies* (Section 9.2.2.1)	*Homework Practices* (Section 8.4.2.6, p195)	***2.4 Self-monitoring of outcome(s) of behaviour*** ***8.1 Behavioural practice/rehearsal*** ***8.3 Habit formation***	***Changed Expectation of Behaviour's Impact***	**MOTIVATION**: *BELIEFS ABOUT CONSEQUENCES*
			Increased Ease at Implementing Strategies	**CAPABILITY**: *SKILLS*; *MEMORY, ATTENTION & DECISION PROCESSES*
Practice Conversations - *Making time for conversation* (Section 9.2.2.2)	*Homework Practices* (Section 8.4.2.6, p195)	***2.4 Self-monitoring of outcome(s) of behaviour*** ***8.1 Behavioural practice/rehearsal***	***Changed Perception of Success in Conversation***	**MOTIVATION**: *BELIEFS ABOUT CAPABILITIES*
Analysing Conversation (Section 9.2.3)	*Discussion of Homework Practices* (Section 8.4.2.7, p195)	***New BCT: Identify opportunity to use behaviour*** ***New BCT: Match behavioural solution to problem event***	No clear match	No clear match
Therapist Advice - *Feedback on the impact of behaviour* (Section 9.2.4.1)	*Education* (Section 8.4.2.1, p192)	***2.7 Feedback on the outcome(s) of behaviour*** ***5.3 Information about social and environmental consequences*** ***5.6 Information about emotional consequences***	***Changed Expectation of Behaviour's Impact***	**MOTIVATION**: *BELIEFS ABOUT CONSEQUENCES*
Therapist Advice - *Direction on what to do* (Section 9.2.4.2)	*Education* (Section 8.4.2.1, p192)		No clear match	No clear match
Video - *Feedback on the impact of behaviour* (Section 9.2.5.1)	*Video Feedback* (Section 8.4.2.2, p193)	***2.7 Feedback on the outcome(s) of behaviour*** (+ ***5.2 Salience of consequences,*** see below)	***Changed Expectation of Behaviour's Impact*** ***Changed Perception of Success in Conversation***	**MOTIVATION**: *BELIEFS ABOUT CONSEQUENCES; BELIEFS ABOUT CAPABILITIES*

Reported Trigger for Change	Associated with what BCA Activity	Maps onto BCT (see Appendix 9 for definitions)	Change Mechanism Targeted (see Figure 18, p168 and Figure 20, p208)	Associated Theoretical Domain (Cane et al 2012; Figure 4, p54)
Video - *Making therapy more memorable* (Section 9.2.5.2)	*All Video* (Section 8.4.2.2, p193 and Section 8.4.2.5, p194)	***5.2 Salience of consequences*** (but only when video is used to deliver ***2.7 Feedback on the outcome(s) of behaviour***)	No clear match (For mechanisms/domains associated with ***5.2 Salience of consequences*** *see* **Video**: *Feedback on the impact of behaviour)*	No clear match
Video - *Identifying problems and solutions* (Section 9.2.5.3)	*Video Problem Solving* (Section 8.4.2.5, p194)	***2.7 Feedback on the outcome(s) of behaviour*** ***8.2 Behaviour Substitution*** (when problem identified is a barrier behaviour)	***Changed Expectation of Behaviour's Impact***	**MOTIVATION**: *BELIEFS ABOUT CONSEQUENCES*
			Replacing Barriers with Facilitators	**CAPABILITY**: *BEHAVIOURAL REGULATION*
		New BCT: Identify opportunity to use behaviour ***New BCT: Matching behavioural solution to problem event*** (when problem identified is a broad issue in conversation)	No clear match	No clear match

9.2.7.1 *Ingredients Associated with* OPPORTUNITY

The mechanism identified in Study 2 as being associated with a change in OPPORTUNITY for strategy use was ***Change in Conversational Support for PWA Strategies*** (see Section 7.3.1.1, p150). No BCTs were identified in Study 3 that could account for how therapy content created this change. However Study 4 has identified that participants view the **Involvement of the CP in Therapy** as supportive of PWA change (Section 9.2.1, p221), thereby suggesting how this mechanism of change may be addressed by the format of Better Conversations with Aphasia. This qualitative finding therefore offers new explanatory detail about how the format of therapy supports change – and suggests that the active ingredient affecting this mechanism is located in the joint mode of delivering the therapy, rather than in individual activities. This suggests that future BCT coding processes would need to examine the broader aims and practices of therapy as well as the details of individual activities.

Involvement of the CP in Therapy may potentially incorporate BCTs such as ***3.1 Social support (unspecified), 3.2 Social support (practical)*** and/or ***12.2 Restructuring the social environment*** (see Appendix 9 for BCT definitions), which relate to targeting behaviour change via introducing support into the social environment.

9.2.7.2 *Ingredients Associated with* CAPABILITY

The mechanisms associated with changing CAPABILITY in Study 2 are ***Increased Awareness of Own Behaviour***, ***Replacing Barriers with Facilitators***, and ***Increased Ease at Implementing Strategies.*** BCTs related to these mechanisms are summarised in Figure 20, p208. The ingredients associated with changes to CAPABILITY in Table 32 are **Practice Conversations** and **Video:** *Identifying problems and solutions.*

The identification of **Practice Conversations** (Section 9.2.2, p222) in the qualitative data supplies converging evidence for the presence and active role of ***8.1 Behavioural practice/ rehearsal***. Analysis of the qualitative data confirms that this activity has the potential to contribute to different change mechanisms, depending on how and when it is used in therapy. For changes to CAPABILITY, the effect of repeatedly practicing strategies is reflected in the CP data, as an increased ease for remembering to use strategies in conversation (e.g. "Hard at first. I don't think it took long", p223). This supports the coding decision that the repeated use of ***8.1 Behavioural practice/rehearsal*** in Better Conversations with Aphasia represents ***8.3 Habit formation***. It also supports the interpretation that ***Increased Ease at Implementing Strategies*** may not just be a function of increased *SKILLS*, but also the decreased involvement of *MEMORY, ATTENTION & DECISION PROCESSES* when implementing new strategies.

Data associated with **Video:** *Identifying Problems and Solutions* (Section 9.2.5.3, p229) show that the activity of identifying problematic events in conversation and selecting strategies to resolve them can be targeted at barrier behaviour. In these instances, this activity appears to be supporting change via a process of feedback and substitution. For example, video feedback serves to highlight "how much you interrupted" whilst discussion with the SLT prompts consideration of "what would happen if you'd done this?" (p229). In terms of changing CAPABILITY, these data suggest that video is used in this instance to deliver ***8.2 Behaviour substitution.*** This is the key ingredient identified as targeting the mechanism ***Replacing Barriers with Facilitators,*** which is proposed to support speakers *BEHAVIOURAL REGULATION* of change in online conversation. Not only do these data confirm the likely presence of this BCT in therapy, they also indicate that it may occur during the discussion of videos when previously it had only been identified within Session 5's education-based handouts (see Section 8.4.2.1, p192).

Data for both **Analysing Conversation** (Section 9.2.3, p224) and **Video:** *Identifying Problems and Solutions* (Section 9.2.5.3, p229) suggest that not all conversational problems discussed in therapy will relate to specific barrier behaviours however. In the case of more general conversational problems, these data provide a converging pattern of evidence to confirm the presence of the two proposed new BCTs: (i) ***Identify opportunity to use behaviour*** and (ii) ***Match behavioural solution to problem event*** (see Section 8.4.3.4, p201). These new BCTs are not represented in the taxonomy. From the general comments in the data, it is not possible to conclude how they may contribute to Study 2's mechanisms of change, or to what theoretical domain they may be matched. However, their use in place of ***8.2 Behaviour substitution*** suggest that they too may support some aspect of *BEHAVIOURAL REGULATION*.

Finally, it seems plausible that **Therapist Advice**: *Direction on what to do* (Section 9.2.4.2, p226) may also be linked to some aspect of CAPABILITY – contributing for example to the *SKILLS* or the *KNOWLEDGE* needed for conversational behaviour change. However, the fairly general comments in these data mean the relative balance of feedback (i.e. about existing behaviour) or instruction (i.e. about new behaviours) within this activity is not possible to deduce. On the basis of this evidence, it is not possible to propose any links to theory or to Better Conversation with Aphasia's hypothesised mechanisms of change.

9.2.7.3 *Ingredients Associated with* MOTIVATION

Three mechanisms for changing MOTIVATION in Better Conversation with Aphasia have been identified in previous chapters: ***Changed Expectation of Behaviour's Impact***, ***Changed Priorities for Conversation*** and ***Changed Perception of Success in Conversation***. The BCTs associated with these mechanisms can be viewed in Figure 20, p208.

In this study, Table 32 proposes that the ingredients associated with MOTIVATION are **Practice Conversations, Therapist Advice:** *Feedback on the impact of behaviour* and **Video:** *Feedback on the impact of behaviour.*

Data for **Practice Conversations** (Section 9.2.2, p222) illustrate that combining structured attempts to use strategies with an evaluation of their impact on outcomes, such as "hav(ing) a conversation more easily" (see Section 9.2.2.1, p222), provides a basis for committing to further use. Here, the ***8.1 Behavioural practice/ rehearsal*** appears to be combined with self-evaluation BCTs such as ***2.4 Self-monitoring of outcome(s) of behaviour***, so that speakers identify the benefits of using strategies. The combination of practice and self-monitoring BCTs was identified as present in homework practices during Study 3 (see Section 8.4.2.6, p195). Consequently the data associated with **Practice Conversations** - which primarily relate to trying out strategies at home - provide converging evidence for the active content of homework practices, and for how they are likely to function for changing MOTIVATION. This package of BCTs is proposed to contribute to a ***Changed Expectation of Behaviour's Impact: Benefits*** which is expected to support speakers' motivation to practice and consolidate selected facilitators.

Perhaps a key finding in the current analysis relates to *Feedback about the impact of behaviour*, found in both **Therapist Advice** (Section 9.2.4.1, p225) and **Video** (Section 9.2.5.1, p227). In the context of **Therapist Advice**, it is possible that this perceived feedback reflects the use of education-based BCTs such as ***5.6 Information about emotional consequences*** and ***5.3 Information about social and environmental consequences,*** both of which were reliably identified within therapy. However, these data – particularly within the **Video** theme – strongly indicate the use of ***2.7 Feedback on outcome(s) of behaviour***. This BCT appears to be delivered across different activities, to both CPs and PWA, and in conjunction with both barriers and facilitators. Its use in emphasising the impact of behaviours on conversation, or on other speakers, can be expected to contribute to a ***Changed Expectation of Behaviour's Impact***. Such feedback may be particularly important in motivating speakers to abandon barrier behaviours. However it is has been shown to help emphasise the benefits of existing facilitators, potentially supporting speakers' commitment to further use. Where video is used to deliver ***2.7 Feedback on outcome(s) of behaviour***, this may also represent ***5.2 Salience of consequences*** as the data suggest that the use of video may be particularly memorable, and may therefore offer an especially salient medium for delivering this feedback.

This analysis offers some additional insights into the role of ***Changed Perception of Success in Conversation*** within Better Conversations with Aphasia. Combining the practice and monitoring of new strategies within **Practice Conversations** is shown to have the potential to

produce the realisation that successful conversation is accessible to the dyad, despite aphasia ("it made us realise that we could have a conversation. Using all the tools and the gestures, hands, pen, y'know", Section 9.2.2.2, p224). However this changed perception is linked to a CP's observations of PWA strategy use, and not to their own strategies. Meanwhile *Feedback on the impact of behaviour* is shown to contribute to a positive perception among speakers concerning the success of their pre-existing conversational facilitators ("it just showed. We were doing some things that were right", Section 9.2.5.1, p227). On the basis of these data, we are still only able to conclude that ***Changed Perception of Success in Conversation*** plays a role in promoting and sustaining speakers' commitment and confidence for *pre-existing* behaviours. While it seems plausible that **Practice Conversations** could produce a ***Changed Perception of Success in Conversation*** associated with one's own use of newly-trained strategies, this is not currently evident in the data.

Finally, it should be noted that this analysis has not suggested any new evidence about which aspects of therapy content may be responsible for creating ***Changed Priorities for Conversation***. Consequently, this proposed mechanism remains unaccounted for by the investigations of therapy content.

9.2.7.4 Summary: Linking Therapy Ingredients to BCTs and Mechanisms of Change

The use of qualitative data to supplement the BCT coding of Better Conversations with Aphasia has generated converging evidence for the perceived presence and active role of a number of reliably identified BCTs. These are, at a minimum: ***2.7 Feedback on the outcome(s) of behaviour****;* ***2.4 Self-monitoring of outcome(s) of behaviour****;* ***8.1 Behavioural practice/rehearsal; 8.3 Habit formation; 8.2 Behaviour substitution; 5.6 Information about emotional consequences*** and ***5.3 Information about social and environmental consequences.*** Interpreting the qualitative findings of this chapter in the context of previous findings about BCTs and mechanisms of change, suggests that these BCTs operate as "active ingredients" in Better Conversations with Aphasia. It is acknowledged that this is likely to be an incomplete list of ingredients. Only seven of the 16 BCTs reliably identified in Study 3 are included, and furthermore, these seven BCTs do not account for all of the mechanisms identified in Study 2.

Examining participant reports about perceived beneficial ingredients has provided further information about how the associated BCTs function to create change, and the variety of activities that may be used to deliver them. In particular this analysis has indicated a wider role within therapy for ***2.7 Feedback on the outcome(s) of behaviour*** than previously identified in Study 3. However it has also indicated the potential presence of a number of BCTs that were not previously reliably identified within the protocol, for example ***12.2 Restructuring the social environment*** and ***5.2 Salience of consequences***. In addition, it has supplied converging evidence

for the presence of the two new BCTs identified in Study 3: ***Identify opportunity to use behaviour*** and ***Match behavioural solution to problem event***. These findings suggest comparing the results of BCT coding with other sources of data may be beneficial for verifying aspects of therapy content, especially where the reliability of BCT coding has not met the relevant thresholds for agreement. Furthermore, the use of qualitative data may enable a deeper exploration of how specific BCTs function for change. However, the limitations of these data for generating specific information about therapy's active content in and of themselves (see Section 9.2.6, p230) suggest that a qualitative analysis of this kind may not be an appropriate approach to studying active ingredients in intervention if used in isolation.

Having fully considered the data relating to successful behaviour change via Better Conversations with Aphasia, this study now turns to Barriers to Conversational Behaviour Change. These data relate to aspects of therapy reported to potentially impede the change process for some participants.

9.3 Barriers to Conversational Behaviour Change

This final section of data analysis explores participant reports of the BCA components perceived to *hinder* the potential to benefit from the therapy process. Whilst Study 2, Section 7.2.1.1 (p134) showed that speakers' engagement with the change process intended by therapy was likely to be mediated by their level of ***Personal Investment in Therapy***, findings here show that speakers' engagement in therapy may also be mediated by how *accessible* they found the therapy content. This was not just an issue for the speakers with aphasia. Both PWA *and* CPs commented that they found the aims and content of therapy hard to engage with, with implied as well as explicitly reported consequences for being able to benefit.

Three themes were identified in the data, and are presented in Figure 22 below. No subthemes were identified. Source data is referenced as before, and is provided in Appendix 12.

Figure 22. Analytic Themes Representing Barriers to Conversational Behaviour Change

Participant Perspectives on Therapy Content: Analytic Themes Representing the Data Captured by Barriers to Conversational Behaviour Change
Difficulties Understanding Therapy Content and Aims [PWA 3, 4, 5, 7, 9]
Therapy Format Hard to Engage With [CPs 4, 9]
Value of Therapy Not Obvious [CPs 3, 4]

Section 9.3.1 presents data relating to **Difficulties Understanding Therapy Content and Aims.** Section 9.3.2 presents **Therapy Format Hard to Engage With**, and Section 9.3.3 presents **Value of Therapy Not Obvious**. A brief summary is provided in Section 9.3.4.

9.3.1 Difficulties Understanding Therapy Content and Aims

Data for this theme come only from the PWA. The challenges of understanding relevant information have already been highlighted as a barrier for some PWA, in terms of developing the required knowledge about behaviours targeted for change (see Section 7.2.2.1, p138). However there was potentially also a broader issue in developing an understanding of the aims of the therapy. A number of PWA reported they found it hard to understand what intervention was about (PWA 4, 7, & 9). Speakers also reported finding it difficult (PWA4, PWA5) or frustrating (PWA9). The below quote illustrates this perception:

CP: But it was different wasn't it.

PWA: Mm. Hard. And what??

CP: Yeah, what's it all about.

R: You found it quite hard to get your head round

PWA: Yeah yeah

Post Therapy: PWA4

[Appendix 12,* Difficulties Understanding Therapy Content and Aims*]

Finding therapy to be challenging is not necessarily a barrier to benefitting from intervention. However having a basic understanding of the aims and function of therapy activities provides a necessary foundation for deliberate change. So for example, in the case of PWA3, who thought the focus of intervention lay with the language assessments carried out before and after therapy, it seems unlikely that he successfully accessed therapy's intended processes of individual behavioural change.

9.3.2 Therapy Format Hard to Engage With

CPs did not report the same kinds of problems understanding the core aims of therapy; however, some speakers did report difficulties engaging with the therapy, due to its format and presentation. In some cases this related to the terminology and concepts used in therapy, which were perceived to be too theoretical, or to be professional jargon (CP4, CP9), as illustrated in the following quotes:

It felt like a training exercise for speech therapists more than for the lay person. Cos it was using wording like 'repair'... when I say something wrong, or even if I write

something wrong, I don't think I'm 'repairing' it. My brain doesn't go to repair. So Bob [PWA], you couldn't get it.

Post Therapy: CP9

[Appendix 12,* Therapy Format Hard to Engage With*]

It was a hell of a lot of theory and only a small amount of practice. Ok, it's a research thing, but our expectations were more practice and doing things - learning about what conversation is and the breakdown. It was obviously giving us insight into what conversation actually entails so you're learning through it. But from a value point of view the therapy bit was more important than the theory behind the conversation, and the different types of conversation.

Post Therapy: CP4

[Appendix 12,* Therapy Format Hard to Engage With*]

These data highlight specific aspects of the format of therapy which have the potential to be off-putting or lack meaning for some participants. It should be noted that CP9 and her partner dropped out of therapy, while CP4 perceived the early part of the programme to be too long, and less relevant.

9.3.3 Value of Therapy Not Obvious

Both CP3 and CP4 reported that it was not always obvious what the value of therapy was during the process, as illustrated by the quote below.

I just think from a therapy point of view, new people would have to understand it's quite a commitment, and I don't know if you necessarily see the value of it at the time.

Post Therapy: CP3

[Appendix 12,* Value of Therapy Not Obvious*]

The implication here is that it is not always clear what the purpose of therapy content is. CP4 reported that when it was hard to see what therapy was about, this had a negative impact on his 'attention span'. Similarly to PWA who reported it could be hard to understand what intervention was about, it appears the value and focus of therapy can risk being obscured for some CPs at some points.

9.3.4 Summary: Barriers to Conversational Behaviour Change

To maximise the benefit of BCA, both PWA and CPs need to be able to understand and engage with the content and format of therapy. However, the therapy can be hard for PWA to understand and follow. And among CPs, the terminology used in therapy has the potential to be off-putting, and the relevance of the less practical components of therapy may be unclear.

The therapy programme also risks being perceived as too long. There is some evidence within these data that barriers to change are particularly associated with the components of therapy focussed on the 'theory' of conversation, while the valuable components of therapy are perceived to lie with the practical components relating to their own conversational behaviour.

These data suggest that there may be work to do to ensure that the concepts and the core messages of therapy are as clear and meaningful to both participants as possible. This feedback also indicates the possibility of streamlining therapy, not only to make it shorter, but also to make its objectives as self-evident as possible, and ensure that the therapy activities included are clearly relevant to these objectives.

9.4 Discussion

This study has yielded some new insights into how Better Conversations with Aphasia works, and where it may need to be adapted or refined in order to maximise its impact. It has also shown that using qualitative data alongside BCT coding can serve to strengthen the evidence for the presence and active role of certain BCTs. This type of qualitative analysis can also be used to resolve certain queries or gaps within a developing account of how intervention works. However, participant reports alone may lack the detail and specificity required to examine the full range of potentially active ingredients in therapy. Therefore they may be best viewed as a method for triangulating and fleshing out the results of BCT coding, rather than an as a method for examining therapy content directly.

This discussion considers the implications of combining such qualitative data with BCT coding for identifying and describing active therapy content, and for optimising the therapy programme.

The existing conversation therapy literature has so far emphasised the role in intervention of education, practice, reflective discussion and feedback, often by video. Study 3 and Study 4 have illustrated that while these descriptions may represent the medium and tools of therapy, they offer little information on the essential function of these activities for producing change. Re-interpreting therapy content in terms of BCTs, and in reference to hypothesised mechanisms of change, enables an increased focus on the underlying processes for which these tools and activities are used. These analyses have highlighted how otherwise similar-looking procedures may in fact have different functions. The use of video is a key example of this. Although video is often viewed in and of itself as *the* characteristic 'ingredient' of this kind of therapy, this study has shown that video in fact offers a range of potentially active procedures, and can be used to target different mechanisms of behavioural change. So whilst the use of video *to identify problems* may support change by helping speakers recognise and

regulate when to do something differently in context, video *feedback* will target change by addressing perceptions about the impact of behaviour. The example of video illustrates how emphasising the medium for delivering therapeutic content can risk masking the fundamental role of this content for bringing about change.

The analyses of this study, and of Study 3, suggest that at present much of BCA's active therapy content is under-recognised and under-reported. The apparently central role of the process represented by ***2.7 Feedback on outcome(s) of behaviour*** remains implicit in the therapy materials, and is not emphasised in the current literature. Other procedures such as ***2.7 Self-monitoring of the outcome(s) of behaviour*** and ***8.2 Behaviour substitution*** are, on the basis of this analysis, hypothesised to be active ingredients which make a unique contribution to conversational behavioural change. However, the role and function of the processes represented by these BCTs are rarely discussed in the literature. In order for therapy's key active content to be replicated, it is therefore crucial that alongside the reporting of activity types, the conversation therapy literature also recognises and reports on the intended function of these tools for change.

Within BCA, a number of activities, particularly those that are delivered via a discussion with the therapist, were difficult to code for BCT content during Study 3. In Study 4, however, participants reported that the advice, feedback and direction perceived to occur during these discussions was beneficial. Again, at present the delivery of this potentially active key content remains dependent on the guesswork or discretion of those implementing therapy. For therapy to have the most replicable effects, the intended functions of activities should be transparent both to the person delivering therapy, and indeed to the person receiving it. As highlighted in Study 3, without identification and specification of the essential processes of discussion-based activities, the inclusion of active ingredients remains open to variability and omission.

In terms of optimising therapy, there is evidence more broadly that the value and the core aims of therapy are not always clear to participants, and that this is true amongst speakers with and without aphasia. This thesis proposes that BCA's essential process lies with supporting speakers to identify problems in their conversation, and providing them with the motivation and skills to make effective changes to the way they handle these problems. Based on some of the feedback from participants, it is important to question whether all of the therapy content is effectively targeting this central process. So where BCA risks being viewed as being too long, too theoretical and somewhat off-putting in terms of the vocabulary it uses, it may be valuable to review how many sessions, and how much detail on conversational theory needs to be included in order to support this essential process. It may also be valuable

to review whether the use of 'academic' terminology to describe conversation is justified, when it may be possible to establish a shared vocabulary that is driven by and accessible to the participants themselves. There may therefore be scope for flexibility in how clinicians and their clients describe and discuss problems in conversation with participants.

9.5 Conclusions

The essential validity of describing intervention with reference to BCTs is supported by the findings of this qualitative analysis. Participants' reports of beneficial therapy content are shown to correspond with a number of BCTs identified in Study 3. Combining the identification of BCTs within therapy with qualitative reports and reference to behavioural theory has enabled a richer interpretation of the function and priority of therapy's ingredients, and also suggested how specific BCTs may contribute to the overall changes produced by therapy. It has also described the perceived content of discussion-based activities that were not possible to code for BCTs. In addition, this analysis has yielded further insights into how specific mechanisms may support change for barriers and facilitators. The Discussion in Chapter 10 will explore links between BCTs, mechanisms of change and behavioural outcomes in more detail to develop a proposed 'theory of change' for the Better Conversations with Aphasia programme.

The coding of therapy, and the qualitative analysis of participants reports about the less beneficial aspects of the current therapy protocol, have highlighted areas where the design of the therapy programme could be improved, streamlined or communicated more clearly. The possibility of optimising therapy will also be considered further in the Discussion in Chapter 10.

Finally, some methodological issues have been raised by this chapter. Combining qualitative data with BCT coding has highlighted some gaps in the account of therapy provided by BCT coding. For example, BCT coding was not able to capture the contribution to change made by jointly delivering therapy to CPs and PWA, and was not able to describe activities directed at solving general problems in conversation, when those problems do not feature barrier behaviour. The qualitative data used in this study have also been shown to be insufficient for generating an account of active ingredients in therapy due to their impressionistic nature. However through combining two sources of data across Study 3 and Study 4 this thesis has been able to develop a description of therapy content that provides both detail about specific ingredients, and insight into how these ingredients potentially function to produce conversational behavioural change.

10 Discussion

The clinical utility, and the replicability of the evidence base for complex interventions risk being compromised where there is no explanatory model of change, or where the components of intervention expected to be responsible for change have not been identified (Wade 2005; Michie & Prestwich 2010; Campbell et al 2007; Craig et al 2008). The special problems for evaluating complex interventions in a meaningful and rigorous way have been recognised by the Medical Research Council (2000, 2008), who recommend combining existing theory with process-focussed research in order to develop hypotheses regarding an intervention's mechanisms of change and active ingredients.

This thesis has explored behaviour change in conversations where one person has aphasia, according to concepts from psychological theory. Study 1, Identifying Determinants of Conversation Behaviour (Chapter 6) examined the determining influences on conversational behaviour, and mapped findings to concepts, or 'domains' agreed to be shared across theories of behaviour (Cane et al 2012). Study 2, Accounts of Change (Chapter 7) explored evidence for which of these determining influences were involved in change during BCA. This included identifying factors that determined the success of making changes, in particular the involvement of extra cognitive effort when trying to do something differently. It also included tracing which determining influences of conversational behaviour underwent change as a result of exposure to therapy; analysis of these findings generated hypotheses regarding BCA's mechanisms of change. Study 3, Looking for Active Ingredients (Chapter 8) and Study 4, Participant Perspectives on Therapy Content (Chapter 9) examined the active ingredients of the BCA programme, first by coding therapy's content for Behaviour Change Techniques, and then by analysing evidence from participants. This strand of the analysis suggested which of BCA's activities contained potentially active ingredients, and identified which specific components of these activities would be key for change. By linking Behaviour Change Techniques to theoretical domains, and to the mechanisms of change indicated in Study 2, hypotheses were developed about how the identified procedures within BCA contribute to conversational behaviour change.

This Discussion summarises the key findings of this thesis for: understanding how, when and why CPs and PWA use conversational behaviours to manage aphasia (Section 10.1); the hypothesised mechanisms of change within the BCA therapy programme (Section 10.2); and its proposed active ingredients (Section 10.3). The implications of these findings are then considered in terms of a proposed theory of change for BCA (Section 10.4). In Section 10.5 the role of 'cognitive effort' in making changes is discussed in the context of psychology research,

as it is acknowledged that qualitative data may not be sufficient for exploring this potentially important area. Further implications of this thesis are then considered in terms of optimising the therapy programme (Section 10.6). Finally, Section 10.7 considers the overall successes and challenges of applying a behaviour change perspective to conversation therapy.

This chapter, and the Conclusions that follow in Chapter 11, will continue to refer to BCA by its acronym. However where the discussion turns to Behaviour Change Techniques, these will be referred to in full or as 'Techniques'. Again, this is to avoid confusion between the acronyms BCA and BCTs.

10.1 Key Findings: Conversational Behaviour

Investigation of the conversational behaviour used by CPs and PWA to manage aphasia has previously relied on a descriptive analysis of the nature and impact of behaviours in context, often through the use of CA (Beeke 2003; Beeke et al 2001, 2007, 2009; Goodwin 1995; Laakso & Klippi 1999; Oelschlaeger 1999; Oelschlaeger & Damico 1998a, 1998b; Wilkinson 1999). Although some authors have previously speculated on the reasons why speakers may or may not use certain behaviours (see for example Aaltonen & Laakso 2009; Booth & Swabey 1999), this thesis represents the first attempt at a systematic, data-driven analysis of conversational behaviour from the perspective of the speakers using these behaviours. Understanding the environmental and psychological influences which drive or constrain behaviour provides a basis for planning how those behaviours may be changed, as changes to the nature or strength of these influences have the potential to unlock behavioural change (Abraham et al 2008; Fishbein et al 2001; French et al 2012; McEachen et al 2010; Michie et al 2008).

In this thesis, Study 1 developed an account of the reasons and contexts that participants reported to affect their conversational behaviour (see Chapter 6), while Study 2 then focussed on the factors that affected their success in changing these behaviours (see Section 7.2 in Chapter 7, p132). The qualitative findings of these analyses were interpreted with reference to the COM-B model of behaviour (Michie, van Stralen & West 2011) and the TDF (Cane et al 2012) so that proposed determinants of conversational behaviour could be understood as aspects of OPPORTUNITY and CAPABILITY or MOTIVATION.

Speakers are shown to use behaviours that they are *able* to use and that they *believe* will be helpful in producing an outcome that they value. Such behaviours are often, but not always, identified by BCA as facilitative to conversation. The outcomes that CPs and PWA have been shown to value and therefore direct their conversational behaviour towards include: shared understanding between speakers; conversational flow; PWA participation, and minimising

frustration. CPs are additionally shown to direct their behaviour towards protecting the competence of the PWA, and promoting improvements in PWA communication.

Speakers do not use BCA-identified facilitators that they do not have the practical or cognitive skills to implement, or which they believe to be ineffective, or even detrimental to achieving a valued outcome. Speakers will also avoid using facilitators they otherwise believe to be effective and valuable, when they experience or perceive some constraint to doing so. Constraints to facilitators may be environmental and therefore external to the speaker, e.g. the location of the conversation, the behaviour of other speakers, or a lack of cues to prompt use. However, constraints may also be internal to the speaker, e.g. fluctuations in mood and emotion, or concerns about how others will perceive the strategy. In a therapy context, the use of trained facilitators may be constrained by other internal factors such as: the perceived effort required to use a strategy; a lack of skill at carrying out the strategy; a lack of fit between a target strategy and a speaker's identity; the belief that the strategy is not in fact adding value to conversation, and, in some cases, the belief that the strategy is actually detrimental to communication i.e. that using nonverbal strategies limits progress in language function.

Barrier behaviours are shown to be underpinned by a specific set of factors. Among CPs, these behaviours may sometimes be driven by feelings of impatience, and the belief that they will in some way promote or improve PWA communication. CPs have also been shown to use correcting or cueing behaviours on the basis that they want to protect their partner from making linguistic mistakes or losing a turn in conversation. However, like facilitators, barriers may also be used in the belief that they are effective at producing conversational outcomes such as shared understanding or PWA participation in conversation. There are few reports of PWA barrier behaviour in the data; however, in the one reported case (see data discussed in Section 7.3.3.1.1, p159, case also described in Beeke et al 2011), PWA2 appears to be using barrier behaviour out of a lack of insight into his own behaviour and how it affects the conversation.

Evidence discussed in this thesis shows that PWA report more difficulties practically carrying out their chosen strategies than CPs. They may also lack the skills to understand and remember strategies, or attend to and regulate their use during conversation. The involvement of increased cognitive effort for making changes during conversation has been shown to be relevant to the success of both speakers. This cognitive effort is reported to involve remembering to use strategies and also actively thinking about doing something differently at the right moment. Data from participants indicates that engaging this extra effort is hard, and can be inconsistent. The role of cognitive effort for change will be further explored in relation to the psychological literature in Section 10.5 of this chapter.

These findings about the nature of the determinants of conversational behaviour have some general implications for planning conversation therapy. Firstly, they suggest that in order to promote the use of facilitative behaviour in conversation, intervention will need to consider how to support speakers to remember and initiate changes despite the complex and multiple demands on their attention that are likely to co-occur during conversation. Secondly, maximal support for facilitator use may also need to include the identification of, and planning for, any environmental, social or emotional constraints to use. And finally, these findings suggest that in order to address barrier behaviours, intervention will need to understand and focus on the reasons why speakers are using them. The potential for further optimising the BCA programme based on these insights is discussed in Section 10.6.2.2 of this chapter.

Some questions remain about how conversational behaviour is determined. While qualitative analysis has enabled unique insights into the influences speakers perceive as important in shaping their behaviour, these findings are necessarily weighted towards factors that are more easily accessible to self report. So for example, while it is clear that speaker perceive some form of internal effort to be involved in making changes, it cannot be clear exactly what cognitive processes this 'effort' engages. Similarly, this investigation has generated little information about the potential influence of non-reflective aspects of motivation on behaviour, e.g. *OPTIMISM* and *REINFORCEMENT*. Furthermore, although the wider literature on communication skills point to a role for self efficacy in initiating and persevering with strategy use (Ammentorp et al 2007; Gulbrandsen et al 2013; Tinati et al 2012; Yang 1999), the evidence for self efficacy in these qualitative data is ambiguous. The absence of data on speakers' self confidence for managing aphasia in conversation may possibly be due to general difficulties accessing this information in self-reported data. Alternatively, it may simply be because this area was not discussed or probed for within the interactions that make up these datasets.

10.2 Key Findings: Mechanisms of Change

This thesis proposes that the most immediate change targeted by BCA is one of behaviour. Conversational behaviour change as a result of BCA is expected to be the active inhibition of barrier behaviours and/or the active adoption, or redirection, of facilitative behaviours in order to strategically manage the conversational problems caused by aphasia. Based on participant accounts of conversational behaviour change, Study 2 identified seven key mechanisms proposed to support change during BCA. These were: ***Change in Conversational Support for PWA Strategies, Increased Awareness of Own Behaviour***, ***Replacing Barriers with Facilitators***, ***Increased Ease at Implementing Strategies***, ***Changed Expectation of Behaviour's Impact*** (with

different effects for ***Costs*** and ***Benefits***), ***Changed Priorities for Conversation*** and ***Changed Perception of Success in Conversation.*** In addition, Study 3 suggested that BCA content actively targets speaker's *Intention to use trained strategies*, a factor identified as determining successful change in Study 2, Section 7.2.1.2 (p135). ***Forming an Intention to Use Strategies*** is therefore also proposed to be a mechanism engaged by BCA in the promotion of behavioural change.

One further change was identified in Study 2 which had the potential to operate as mechanisms of conversational behaviour change. However the associated data did not clearly show that ***Changed Emotions about Conversation*** were perceived to support behavioural change. Evidence for the role of this potential mechanism continued to be considered in Study 3, in relation to identifying therapy content associated with creating this shift. Consequently ***Changed Emotions about Conversation*** was ruled out as a mechanism for creating behavioural changes (see discussions in Section 7.3.3.4, p164, and Section 8.5, p206), and was instead proposed to be an additional outcome of therapy.

This thesis therefore concludes there are eight mechanisms on offer within the BCA programme with the potential to bring about conversational behaviour change. These mechanisms are presented in Table 33 below alongside the type of behaviour they are associated with in the data (i.e. barrier or facilitator).Where they have been shown to have a special relevance to one group of speaker (i.e. CP or PWA) this is also highlighted. For reference, Table 33 also notes which component of the COM-B model (Michie, van Stralen & West 2011) each mechanism is associated with.

Table 33. BCA's Mechanisms of Change

Mechanism	Barrier or Facilitator?	Special Relevance For:	Addresses:
Change in Conversational Support for PWA Strategies	Facilitator	PWA only	OPPORTUNITY
Increased Awareness of Own Behaviour	Both		CAPABILITY
Replacing Barriers with Facilitators	Both	CP only	CAPABILITY
Increased Ease at Implementing Strategies	Facilitator		CAPABILITY
Changed Expectation of Behaviour's Impact	***Costs:*** Barrier ***Benefits:*** Facilitator		MOTIVATION
Changed Priorities for Conversation	Barrier	CP only	MOTIVATION
Forming an Intention to Use Strategies	Facilitator		MOTIVATION
Changed Perception of Success in Conversation	Facilitator	CP only	MOTIVATION

Four mechanisms are associated with changing barriers. ***Increased Awareness of Own Behaviour***, ***Changed Expectation of Behaviour's Impact*** and ***Replacing Barriers with Facilitators*** are expected to have a generic relevance to barriers (and indeed to facilitators). ***Changed Priorities for Conversation*** is only associated in the data with a specific subset of CP behaviours used to cue and correct PWA verbal output.

Seven mechanisms are associated with changing facilitators. ***Change in Conversational Support for PWA Strategies*** is only relevant to PWA, while ***Replacing Barriers with Facilitators*** and ***Changed Perception of Success in Conversation*** are only represented in the CP data (though could still plausibly have relevance for PWA). Meanwhile, ***Increased Awareness of Own Behaviour*** and ***Changed Perception of Success in Conversation*** appear to have a special role for reinforcing the use of pre-existing facilitators. Although the literature on self efficacy suggests that we might expect the mechanism of ***Changed Perception of Success in Conversation*** to have a role in promoting the use of new behaviours as well (cf. Bandura 1997), the evidence for this is not clear in the data analysed here. ***Increased Ease at Implementing Strategies***, ***Changed Expectation of Behaviour's Impact*** and ***Forming an Intention to Use Strategies*** can be expected to be relevant to both pre-existing and newly-introduced facilitators.

While the findings of this qualitative analysis cannot suggest how many mechanisms need to be involved for change to occur, or which are the most influential, they nonetheless offer the first systematic, data-driven and theoretically-grounded account of how BCA may be creating conversational behaviour change. This greatly extends the explanations of change previously offered by interaction-focussed therapies, which rely on the proposal that "an overarching aim of intervention is to make one or more participants more conscious of their conversational behaviours in order that change can occur" (Wilkinson 2010, p58). While this thesis confirms that raising awareness of one's own conversational behaviour does indeed contribute to change, it is shown here to only be a partial account.

As well as highlighting the important distinction between the process for changing barriers and the process for changing facilitators, this investigation has also raised the possibility that there may be subtle differences in how BCA supports change to pre-existing facilitators as compared with newly-introduced facilitators. Understanding the different change processes for these two groups of facilitative behaviour will be an important area for future investigation, and can be expected not only to have ramifications for the design of therapy, but also for how change is evaluated. For example, if BCA's main focus is on introducing new behaviours, then measuring the frequency of these behaviours before and after therapy will be a relevant way of capturing change. However, if change in facilitator use also represents the newly *strategic*

or purposeful use of pre-existing behaviours, evaluation attempts will need to consider whether looking for an *increase* in the frequency of these behaviours is a true reflection of the intended change. The implications of this issue for future research are considered in Chapter 11, Section 11.4.1 (p289).

10.3 Key Findings: Active Ingredients

Study 3 and Study 4 approached the identification of BCA's active ingredients from two different perspectives.

Study 3 first identified a group of 16 Behaviour Change Techniques reliably agreed to be present in therapy (see Table 26, p197). These 16 Techniques were considered for how they mapped onto domains from behaviour change theory (see Table 29, p204) and consequently, how they potentially could trigger effects within BCA's proposed mechanisms of change. Figure 20 (p208) summarises the results of mapping these 16 Techniques to theory and to BCA. In addition, the IRR process identified but ultimately rejected a number of queried BCTs on the basis of lack of agreement between raters, whilst also identifying the possible existence of two new Behaviour Change Techniques not so far included on the taxonomy. These proposed Techniques - ***Identify opportunity to use behaviour*** and ***Match behavioural solution to problem event*** are not confirmed as truly distinctive from other Techniques on the taxonomy, and their role for influencing change within BCA's mechanisms is currently unclear.

Study 4 then looked at participants' perspectives on therapy content, and identified any ingredients perceived by them to be beneficial. While the information about therapy content generated here lacked the detail about specific procedures that had been previously produced by coding BCA using the taxonomy, it nonetheless offered a useful adjunct to coding. This qualitative analysis was able to generate supporting evidence for a core group of Techniques. Given that agreement between raters had been judged as 'moderate' using the kappa coefficient, and had just missed the threshold for establishing a good level of IRR using percentage agreement, this additional evidence for the presence of specific Behaviour Change Techniques is judged to be particularly useful. In addition, qualitative data offered a way of resolving outstanding queries and gaps in the account of therapy content developed in Study 3. For example it confirmed the presence and role of previously rejected Techniques (see Section 9.2.5.1, p227) and suggested ways that otherwise unaccounted-for mechanisms were addressed by BCA content (see Section 9.2.1, p221). Moreover, qualitative analysis enabled deeper insights into how specific Techniques may be functioning to bring about change, and provided details on the perceived content of discussion-based activities that had not been

possible to code in Study 3 due a lack of detail within BCA session plans about their intended focus.

This Discussion makes a final proposal for the active ingredients of BCA. This is based on Behaviour Change Techniques which have been shown to be present and active in therapy, via the coding of therapy content, and the analysis of participant reports. Additional Behaviour Change Techniques identified in Study 3 will be included in cases where the mapping of Techniques to theoretical domains and mechanisms of change (see Figure 20, p208) suggests that a particular Technique offers a unique account of how change within a specific mechanism is produced. Participant-reported ingredients from Study 4 which were not identified by Study 3's coding of BCA will only be included if they too offer a unique explanation of how an otherwise unaccounted-for mechanism is addressed by therapy content.

Techniques and participant-reported ingredients which do not meet these criteria will be excluded from this final proposal. The two newly proposed Techniques will also be excluded on the basis that their distinctiveness as behaviour-changing procedures is as yet unconfirmed. Excluded Techniques and ingredients are still considered to have the potential to create change in BCA. However the aim here is to identify those components of BCA whose function for changing conversational behaviour is most clearly supported by data and by theory. The rationale for the specific ingredients selected for inclusion is now outlined in further detail.

By cross referencing participant reports with coding results, Study 4 suggested that, at a minimum, the active ingredients of therapy will include: ***2.4 Self-monitoring of outcome(s) of behaviour; 2.7 Feedback on the outcome(s) of behaviour; 5.3 Information about social and environmental consequence; 5.6 Information about emotional consequence;s 8.1 Behavioural practice/rehearsal; 8.2 Behaviour substitution*** and ***8.3 Habit formation;*** (see Section 9.2.7.4, p239).

These seven Behaviour Change Techniques account for three of BCA's eight proposed mechanisms of change. The mechanism ***Changed Expectation of Behaviour's Impact*** is associated with: ***2.7 Feedback on the outcome(s) of behaviour***, proposed in Study 4 to be delivered via Video Feedback (see Section, p227); ***2.4 Self-monitoring of outcome(s) of behaviour***, a component of Homework Practices (Section 8.4.2.6, p195), and the handout-based Techniques: ***5.3 Information about social and environmental consequence*** and ***5.6 Information about emotional consequences*** (Section 8.4.2.1, p192). ***Increased Ease at Implementing Strategies*** is associated with ***8.1*** and ***8.3,*** delivered as part of Practice Conversations and Homework Practices (Sections 8.4.2.4, p193 and 8.4.2.6, p195). ***Replacing Barriers with Facilitators*** is associated with ***8.2 Behaviour substitution***, delivered within CP Education handouts (Section 8.4.2.1, p192), and as part of identifying problems and solutions on video (Section 9.2.5.3,

p229). Table 34 (p257) summarises these Techniques, how they are delivered and how they map onto these mechanisms of change.

Change mechanisms as yet unaccounted for by this list of Techniques are ***Change in Conversational Support for PWA Strategies, Forming an Intention to Use Trained Strategies***, ***Increased Awareness of Own Behaviour, Changed Perception of Success in Conversation*** and ***Changed Priorities for Conversation.*** Suggestions for how these mechanisms are addressed by therapy, derived from the analyses of Study 3 and Study 4, are now discussed.

Study 4 suggested that ***Change in Conversational Support for PWA Strategies*** is a product of the involvement of the CP in therapy, and may represent Techniques such as ***12.2 Restructuring the social environment*** or ***3.2 Social support (practical)*** (Section 9.2.1, p221). These BCTs were not identified during the coding of therapy materials in Study 3. However Beeke et al (2011) and Beeke, Beckley et al (2014), do suggest that BCA explicitly sets out to work with CPs as a direct means to changing the communicative environment of the PWA, and eliciting PWA strategy use. It is therefore clear that BCA intends for the involvement of the CP in therapy to lead to conversational support for a change in PWA behaviour. On this basis, ***12.2 Restructuring the social environment*** is proposed to represent the overall aims and practices of BCA, and to have the potential to operate as an active ingredient for PWA change.

Study 2 proposed that the data relating to mechanism ***Forming an Intention to Use Trained Strategies*** is linked to the theoretical domain *INTENTIONS* (see Figure 16, p147). Expert consensus links this domain to the use of ***1.1 Goal setting (behaviour)*** and ***1.8 Behavioural contract*** (see Figure 20, p208). These Behaviour Change Techniques – delivered via Goal Setting handout (Section 8.4.2.3, p193) - are therefore proposed to be the active ingredients for addressing this mechanism. Similarly, Study 3 showed that ***2.2 Feedback on behaviour,*** delivered via Video Feedback (Section 8.4.2.2, p193), and ***5.3 Information about social and environmental consequences***, delivered via Education handout (Section 8.4.2.1, p192), are linked to the domain *KNOWLEDGE.* This domain has been linked to ***Increased Awareness of Own Behaviour*** (Figure 20, p208). Consequently these Techniques are proposed to be BCA's active ingredients for targeting this particular mechanism.

In terms of ***Changed Perception of Success in Conversation***, Study 3 reported that expert consensus linked a group of Behaviour Change Techniques to the mechanism's associated theoretical domain, *BELIEFS ABOUT CAPABILITIES* (Figure 20, p208). These consisted of: ***2.2 Feedback on behaviour***; ***2.3 Self-monitoring of behaviour***; ***2.4 Self-monitoring of outcome(s) of behaviour*** and ***8.1 Behavioural practice/ rehearsal***. However, in the qualitative data discussed in Study 4, the mechanism's role for promoting an individual's own use of facilitators is primarily

linked to video feedback emphasising pre-existing facilitator behaviour (see Section 9.2.5.1, p227). On this basis, this mechanism is proposed to be most clearly associated with ***2.7 Feedback on the outcome(s) of behaviour.***

Finally, no Behaviour Change Techniques have been linked to ***Changed Priorities for Conversation*** in either Study 3 or 4. There is therefore no data-driven account of how this shift is created by BCA. It is hypothesised here that the early sessions focussed on learning about conversation and aphasia may contribute to a re-evaluation of priorities and attitudes towards conversation. However as this hypothesis is not derived from the data analysed for this thesis, evidence-based proposals for active ingredients cannot be suggested here. It is highlighted that this mechanism is only associated in the data with a specific subset of CP barrier behaviours, i.e. those directed at cueing and correcting the PWA – and therefore only appears to be relevant when these behaviours are being targeted. Not being able to provide an account of the active ingredients that target this mechanism is therefore perhaps less problematic than it would be if it had been shown to have a broad relevance across barriers and facilitators, and to both PWA and CP.

This review of findings has resulted in a final list of 11 Behaviour Change Techniques proposed to have a clear and active role in promoting change during BCA via specific associated mechanisms. These Techniques are presented in Table 34, on the next page, alongside their associated mechanism and the therapy activity used to deliver them.

Table 34. BCA's Proposed Active Ingredients

Active Ingredient	Targets Change Mechanism	Therapy Activity Delivered in
1.1 Goal setting (behaviour)	*Forming an Intention to Use Strategies*	Goal Setting Handout
1.8 Behavioural contract	*Forming an Intention to Use Strategies*	Goal Setting Handout
2.2 Feedback on behaviour	*Increased Awareness of Own Behaviour*	Video Feedback
2.4 Self-monitoring of outcome(s) of behaviour	*Changed Expectation of Behaviour's Impact*	Homework Practices
2.7 Feedback on the outcome(s) of behaviour	*Changed Expectation of Behaviour's Impact*	
	Changed Perception of Success in Conversation	
5.3 Information about social and environmental consequences	*Increased Awareness of Own Behaviour*	Education Handouts
	Changed Expectation of Behaviour's Impact	
5.6 Information about emotional consequences	*Changed Expectation of Behaviour's Impact*	Education Handouts
8.1 Behavioural practice/rehearsal	*Increased Ease at Implementing Strategies*	Practice Conversations Homework Practices
8.2 Behaviour substitution	*Replacing Barriers with Facilitators*	Education Handouts
8.3 Habit formation	*Increased Ease at Implementing Strategies*	Practice Conversations Homework Practices
12.2 Restructuring the social environment	*Change in Conversational Support for PWA Strategies*	Involvement of CP in Therapy

This list of active ingredients and associated mechanisms offers a useful starting point for any clinician interested in replicating the effects of BCA. However, it is not expected to be definitive. The coding exercise in Study 3 not only makes clear that there are other known Behaviour Change Techniques contained within BCA, but also that it may contain Techniques which are either not represented on the taxonomy (i.e. the new Behaviour Change Techniques), or not reliably agreed by raters. In addition, the potential contribution to change from any un-coded therapy content is not represented in this list. In particular, active ingredients responsible for creating ***Changed Priorities for Conversation*** are not represented here.

Moreover, a list of active ingredients does not convey how such procedures may be combined to produce different effects, or how they may have differing relevance for different speaker groups (i.e. CPs and PWA), or different types of behaviours (i.e. barriers and facilitators). In order to understand how these active ingredients coordinate to produce change, these findings must be synthesised into a theory of change for BCA. Section 10.4 offers a more detailed proposal for how these active ingredients can be expected to work together to create a change in management of aphasia within conversation.

10.4 Implications of Findings: A Theory of Change

The account of BCA emerging across the studies in this thesis indicates that therapy's central aim is to develop the deliberate use of facilitative behaviours in a responsive, and goal-directed manner, so that speakers strategically employ behaviours to manage problematic conversational events. These may be pre-existing behaviours, or newly-trained behaviours. An alternative to this self-initiated process of conversational behaviour change is offered to PWA whose use of strategic behaviour may need to rely on an increase in conversational scaffolding and support provided by CPs. For some speakers, especially CPs, BCA also aims to reduce the use of barrier behaviours that disrupt the flow of conversation or emphasise the aphasia-related difficulties of the PWA.

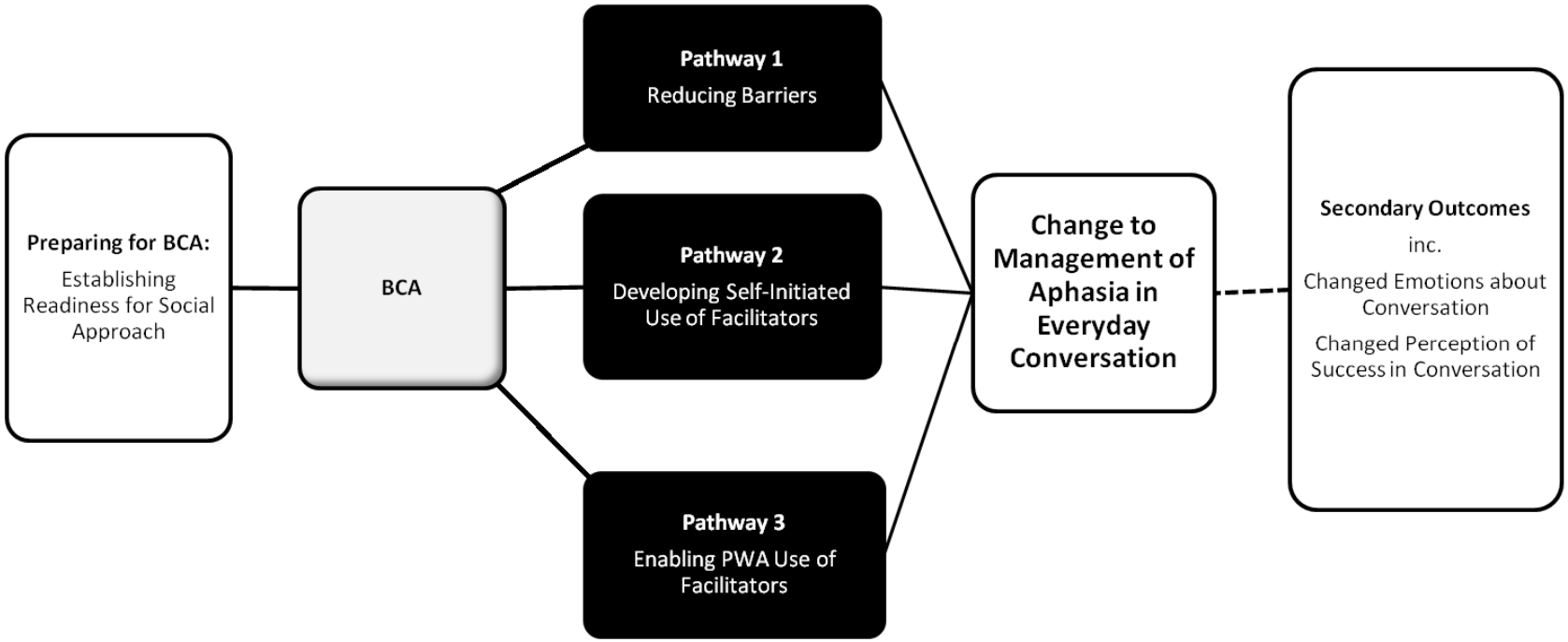
The previous theory of change offered by BCA and SPPARC is Kolb's theory of experiential learning (Kolb 1984; Kolb et al 2001; Kolb & Kolb 2005; 2008). This theory emphasises reflecting on experience and experimenting with new ideas in order to learn and develop new knowledge. Such principles have influenced the design of the BCA therapy programme, and consequently it includes activities that prompt speaker reflection on and analysis of conversation patterns; that encourage experimentation with new behaviour; and that structure reflection on these new experiences.

Section 3.3 (p46) of the literature review queried the relevance of this theory to the process of establishing behavioural change, on the basis that this theory defines itself as an account of knowledge creation (Kolb 1984; Kolb & Kolb 2008), and is primarily used to guide teaching in higher education or adult learning settings (Kolb & Kolb 2005). The model has little to say about how to engage the cognitive and practical skills required for change in everyday contexts and does not present itself as a way of accounting for the outcomes of any intervention. This thesis has argued that BCA should primarily be considered as a behaviour change intervention, whose success should ultimately be benchmarked against what speakers *do* in conversation, rather than what they *know* about conversation. Ultimately, it is concluded here that the Kolb model cannot offer an adequate account of how key changes are produced in BCA. Moreover, it is suggested that using a knowledge-based model to inform the design of BCA runs the risk of over emphasising learning and knowledge in the abstract sense, as opposed to developing the behaviourally-focussed knowledge that directly support a speaker's attempts to change. This problem may be reflected in participants' criticisms of BCA as too theoretical, reported in Section 9.3.2 (p241).

This thesis has demonstrated how behaviour change theory can be used to understand change in conversation. An alternative theory of change for BCA is presented below in Figure 23

(p260), and is based on the key findings of the theoretically-grounded analyses carried out across the thesis. Three potential routes to changing the management of aphasia in everyday conversation are proposed, each relying on some form of behaviour change. Pathway 1, Reducing Barrier Behaviour, represents the route to deliberately terminating barrier behaviour. Pathway 2, Developing Self-Initiated Use of Facilitators represents the route to developing the self-initiated, strategic use of facilitative behaviour to support conversation. Pathway 3, Enabling PWA Use of Facilitators, represents the alternative route to PWA use of facilitators, which relies on increased CP support for strategy use rather than on the speaker's own deliberate attempts to change.

Figure 23. A Theory of Change for BCA



As well as illustrating three different pathways to change in everyday conversation, Figure 23 demonstrates that a pre-therapy phase of establishing the likely readiness of participants to commit to the BCA approach will be necessary for successful change. This is included on the basis of evidence discussed in Study 2 (Section 7.2.1.1, p134) which indicated that speakers are only likely to engage with and benefit from therapy if BCA fits with their own personal rehabilitation goals and needs. Those whose rehab priorities lie with restoring language are unlikely to benefit. Establishing speaker priorities for rehabilitation prior to therapy will ensure that BCA is only offered to those who are ready and willing to fully commit and participate. This proposal also reflects the adult learning principle that people are most likely to engage and participate in therapeutic activities, when they are perceived to be well matched to the problems and goals that the learners themselves view as being a priority (Hopper & Holland, 2005; Sorin-Peters 2003, 2004).

Figure 23 also illustrates the possibility that the conversational changes produced by BCA have the potential to lead to *secondary* outcomes, such as the changed emotions about conversation and increased perceptions of success identified in Study 2, or other parameters of wellbeing and quality of life that may be derived from improved participation in conversation. However this link is conveyed by a dotted line as it is equally plausible that such outcomes are produced by other aspects of the BCA process, such as increasing knowledge about aphasia and conversation, or the therapeutic alliance, which are not represented within the central process of conversational behaviour change.

The relationship between conversational behaviour change, change in sequences of interaction and the more distal outcome of enhanced wellbeing, which may result from improved conversation, has tended to be assumed in previous research, rather than evidenced (Simmons-Mackie et al 2010). The model above shows that BCA can be seen as potentially creating a chain of effects, of which conversational behaviour change is the first and most immediate. Defining the full range of expected outcomes of conversation therapy, and examining the patterns of relationships between these outcomes represents a useful future direction in the field of conversation therapy. This will be further discussed in Section 11.4.1 (p289) of the Conclusions chapter.

The following subsections explore in more detail the three core pathways to conversational change within BCA. They suggest, for each pathway, which of BCA's activities contain the active ingredients identified in Section 10.3 above, and illustrate how these ingredients coordinate to create the shifts in individual mechanisms of change. These proposals are based on the final list of 11 Behaviour Change Techniques summarised in Table 34 (p 257).

Pathway 1 is presented in Section 10.4.1; Pathway 2 is presented in Section 10.4.2 and Pathway 3 is presented in 10.4.3. A summary of BCA's theory of change is provided in Section 10.4.4.

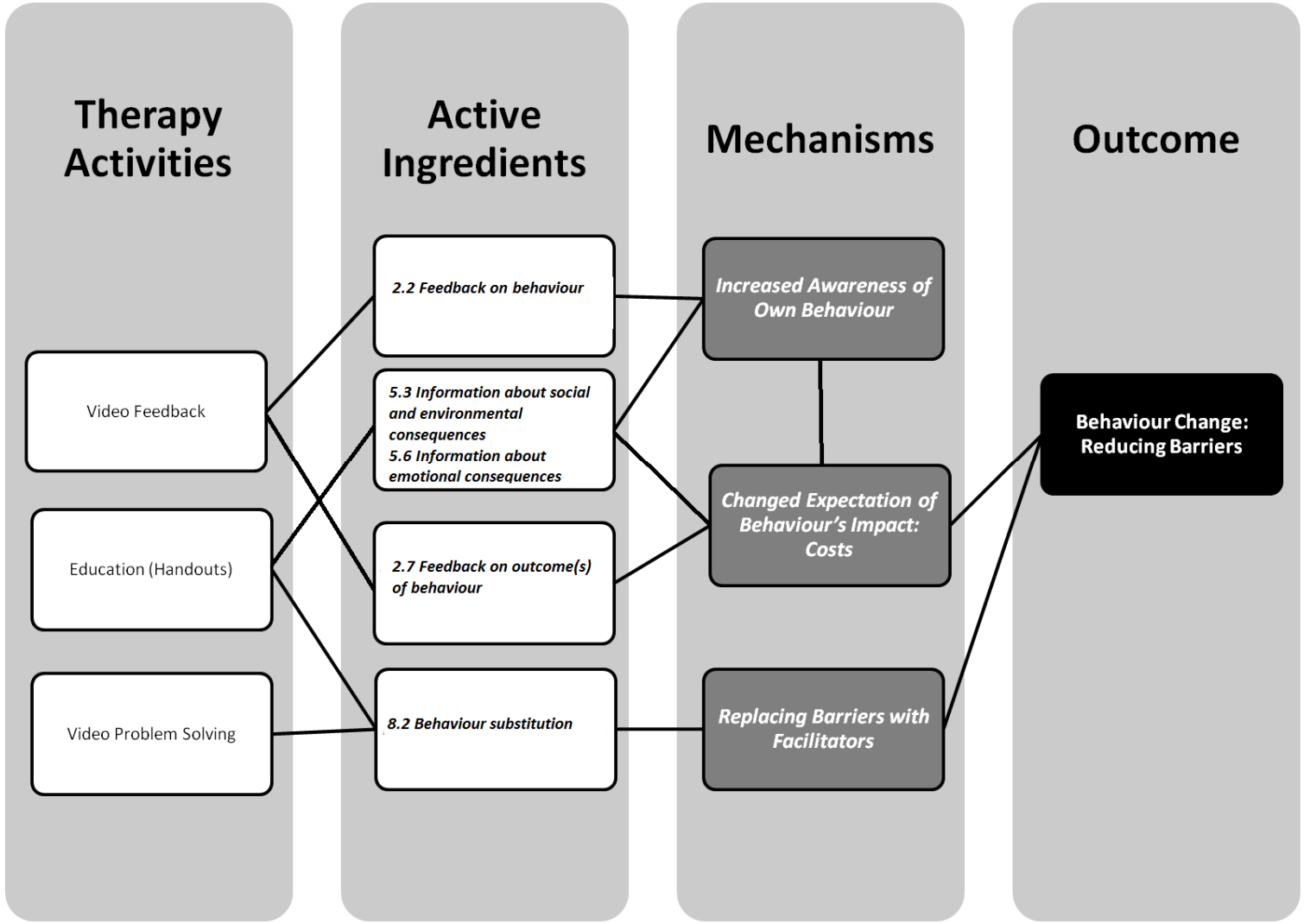
10.4.1 Pathway 1: Reducing Barriers

Figure 24 on p263 proposes that the pathway to changing barriers relies on just three key therapy activities containing five Behaviour Change Techniques. Therapy activities appear on the left of the figure, and are linked in the next column to the active ingredients - i.e. Behaviour Change Techniques - that they contain. These active ingredients are mapped to their associated mechanisms.

Figure 24 demonstrates that three core therapy activities are responsible for changing barriers: Video Feedback, Education and Video Problem Solving. The first two activities both contain multiple active ingredients, and are expected to influence several mechanisms simultaneously. Speakers' ***Increased Awareness of Own Behaviour*** is derived from ***2.2 Feedback on behaviour***, and ***5.3 Information about social and environmental consequences***, delivered within handouts and in videos of their own conversations. This mechanism is expected to support speakers' knowledge about the behaviour being targeted, and therefore their CAPABILITY to change it. However, while this awareness may be a necessary foundation for change, it may not in itself directly lead to behaviour change. These same activities of Video Feedback and Education also generate ***2.7 Feedback on the outcome(s) of behaviour*** and ***5.6 Information on emotional consequences,*** which, along with ***5.3 Information about social and environmental consequences*** and so at the same time prompt a re-appraisal of the impact of barrier behaviour, thereby producing an accompanying ***Changed Expectation of Behaviour's Impact***. In this way the mechanisms ***Increased Awareness of Own Behaviour*** and ***Changed Expectation of Behaviour's Impact: Costs*** combine (as indicated in Figure 2 by a line) to establish a reason - i.e. the MOTIVATION - to terminate barrier behaviour. Both these mechanisms are expected to be necessary for triggering change, however it is not known if all these ingredients are required to trigger the mechanisms, or whether fewer would be just as effective.

The activity of Video Problem Solving and the advice provided on Education Handouts may further support speakers to make changes, as they include ***8.2 Behaviour substitution*** associated with the mechanism ***Replacing Barriers with Facilitators***. This is suggested to promote speakers' CAPABILITY to regulate change in everyday conversation. It is not clear if this is a central mechanism for successful barrier change.

Figure 24. BCA Change Pathway 1: Reducing Barrier Behaviour

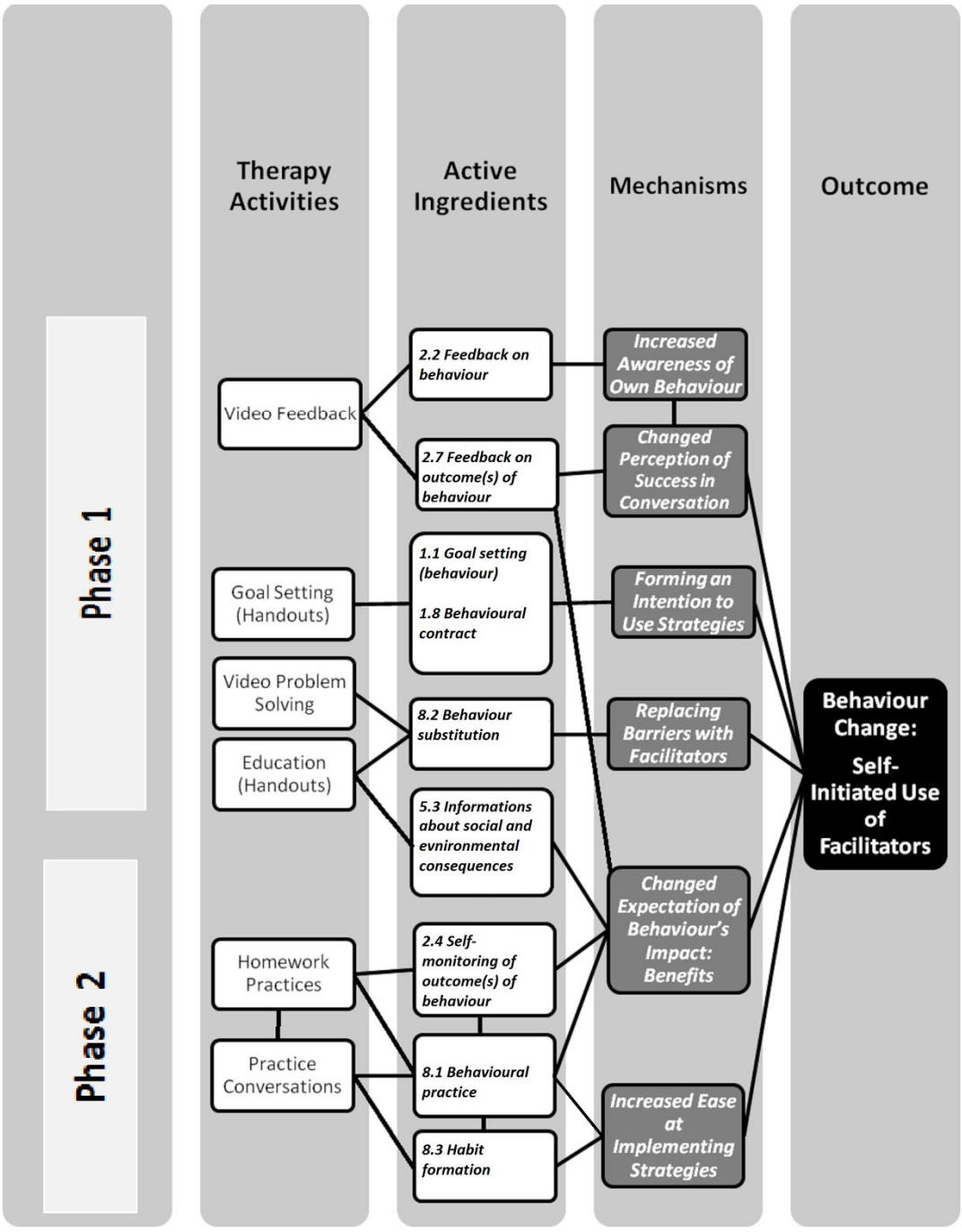


10.4.2 Pathway 2: Developing Self-Initiated Use of Facilitators

Change in the use of facilitators as a result of BCA appears to be generated via a more multifaceted process than for barriers. Figure 25 (p265) proposes that there may be two phases to establishing facilitators: an initial phase directed at trying out a strategy in the first instance (Phase 1), and a second directed at consolidating the use of strategies longer term (Phase 2). The figure does not make a distinction between newly-introduced behaviours, and pre-existing behaviours. This is on the basis that while the change process for each group of facilitators may potentially emphasise different mechanisms, it is not clear the extent to which they are truly distinct processes of change. Nonetheless the differing relevance of specific mechanisms to the two groups of facilitators will be discussed in the description of the figure that follows.

During Phase 1 of establishing self-initiated uses of facilitators in conversation, Video Feedback of speakers' conversation is proposed to help speakers develop ***Increased Awareness of Own Behaviour***, by supplying ***2.2 Feedback on behaviour***. At the same time, videos provide ***2.7 Feedback on the outcome(s) of behaviour,*** which, by highlighting the positive outcome of specific behaviours, is intended to stimulate a ***Changed Perception of Success in Conversation*** and ***Changed Expectation of Behaviour's Impact: Benefits***. This form of Video Feedback has a special function for highlighting facilitative behaviour already in use. As with barriers, simply increasing awareness of specific behaviours may not be sufficient to promote use. Therefore. Figure 25 shows with a line that this mechanism may need to be combined with a ***Changed Perception of Success in Conversation*** in order to produce the positive MOTIVATION to use pre-existing behaviours in newly strategic ways. Meanwhile, *new* facilitators are expected to be introduced via Education Handouts. In some cases these handouts emphasise the benefits of these strategies using ***5.3 Information on social and environmental consequences***, thereby targeting initial speaker MOTIVATION for strategy use via the mechanism of ***Changed Expectation of Behaviour's Impact: Benefits***. This mechanism is also targeted by activities in Phase 2.

Figure 25. BCA Change Pathway 2: Developing Self-Initiated Use of Facilitators



Having established an initial reason to try out using new *and* pre-existing facilitators strategically, BCA uses Goal Setting Handouts, containing ***1.1 Goal setting (behaviour)*** and ***1.8 Behavioural contract*** to support speakers in ***Forming an Intention to Use Strategies*** and direct their MOTIVATION towards making a specific change in conversation. It is not clear if both ingredients are necessary for this mechanism, or if there is a cumulative effect from combining them. As part of planning behavioural change at this stage, speakers working on barriers also benefit from ***8.2 Behaviour substitution*** which provides support for ***Replacing Barriers with Facilitators*** and the CAPABILITY to make changes, by making it easier to monitor and decide when to use facilitators in conversation. This ingredient is delivered via Education Handouts alongside ***5.3 Information on social and environmental consequences,*** but may also be delivered alone in Video Problem Solving, when speakers identify barrier behaviours used in conversation, and select alternatives.

Phase 1 therefore seeks to provide the foundation for attempting change by building up sufficient knowledge about target strategies, a reason to use them, and a plan for when to use them. Phase 2 focuses on building up the motivation and skill needed to continue strategy use long term. This phase relies on the therapy activities of Homework Practices, and within-session Practice Conversations. These activities are linked by a line in Figure 25 in order to demonstrate that they share the same essential ingredients.

The mechanism ***Changed Expectation of Behaviour's Impact: Benefits*** is again targeted in Phase 2. However the key activities for Phase 2 are based within the active practice of strategies in conversation, and the subsequent reflection on doing so. In Homework Practices, ***8.1 Behavioural practice/ rehearsal*** is combined with structured ***2.4 Self-monitoring of outcome(s) of behaviour***. The interaction between these two ingredients is represented in Figure 25 by a linking line, and is expected to be crucial in creating a ***Changed Expectation of Behaviour's Impact: Benefits.*** In-therapy Practice Conversations can also be described by ***8.1 Behavioural practice/ rehearsal***. These are followed by Video Feedback (shown in Figure 25 under Phase 1) which focuses on ***2.7 Feedback on the outcome(s) of behaviour.*** The combined influence on ***Changed Expectation of Behaviour's Impact: Benefits*** from these ingredients is illustrated in Figure 25 by the lines which link the mechanism to ***2.7 Feedback on the outcome(s) of behaviour*** and ***8.1 Behavioural practice/ rehearsal.*** Both Homework Practices and Practice Conversations share the function of generating concrete experiences of strategy use in conversation, which can then be explored for evidence of beneficial impact. This interaction between practice and reflection is expected to be integral to establishing the ongoing MOTIVATION to use target strategies. However the relative impact of self-monitoring compared with video as a tool for

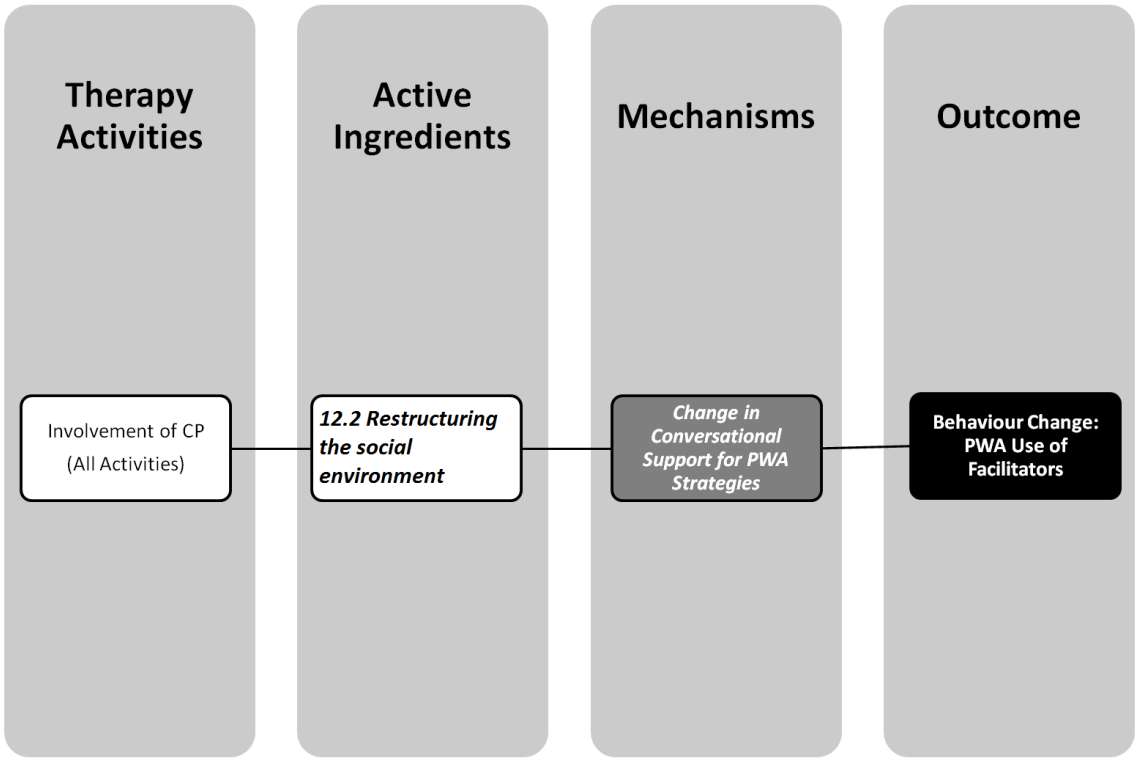
reflection is not known, nor are the relative merits of home-based practice as compared with in-therapy practice.

Finally, repeated practice of strategies via ***8.1 Behavioural practice/rehearsal*** within both Homework Practices and Practice Conversations leads to the opportunity for ***8.3 Habit formation*** (linked to ***8.1 Behavioural practice/rehearsal*** by a line in Figure 25). This particular BCT is proposed to help consolidate the habitual use of strategies, leading to an ***Increased Ease at Implementing Strategies*** in conversation, an aspect of change in CAPABILITY.

10.4.3 Pathway 3: Enabling PWA Use of Facilitators

The final pathway, presented in Figure 26 below, illustrates how the inclusion of CPs throughout therapy enables PWA use of facilitators.

Figure 26. BCA Change Pathway 3: Enabling PWA Use of Facilitators



CPs' involvement throughout therapy is proposed to reflect ***12.2 Restructuring the social environment,*** which in turn activates the mechanism for PWA change: ***Change in Conversational Support for PWA Strategies***. This process represents a change in OPPORTUNITY for PWA strategy use that facilitates change either as a complementary part of the process of self-initiated change among PWA, or as an alternative to it.

10.4.4 Summary: Theory of Change

Figure 23 (p260) shows how three routes to behavioural change can be expected to lead to the key outcome of changed management of aphasia in conversation, as well as a potential range

of secondary outcomes. Figure 24 (p263), Figure 25 (p265) and Figure 26 (p267) in the sections above illustrate how BCA therapy content can be expected to influence the conversational behaviours used to manage aphasia among both CPs and PWA. Taken together they represent this thesis's final formulation of BCA's theory of change.

The detail within these models of conversational behaviour change regarding therapy activities, active ingredients, change mechanisms and how they coordinate together, will enable clinicians to choose the most relevant procedures to use with a specific client. Discussion of the clinical uses of these models is continued in Conclusions (Chapter 11), Section 11.2 (p284). These models also provide a basis for future research to evaluate, compare, understand and refine the different components of BCA. This is further considered in the Conclusions (Chapter 11), Section 11.4 (p289).

Previous theories about how BCA might create change – i.e. through the creation of new knowledge about conversation, and raised awareness about one's own behaviour – have been shown to be insufficient. The full range of change mechanisms shown to be involved have been under-represented by these previous accounts, and the function and range of the active ingredients contained within the therapy have not previously been fully reported or recognised. The theory of change developed here offers a more systematic account of therapy, and one that is guided by concepts from behaviour change theory, and driven by data reflecting the behaviour-change specific content of BCA and the self-reported experiences of BCA participants.

Although this account provides a formulation of the change process encapsulated within the BCA programme, this does not equate with claims for the *effectiveness* of this process. The pathways detailed above do not necessarily represent the best way to change conversational behaviour; they only represent the best account of how BCA is currently expected to work. The possibility for enhancing the selection and impact of the therapy activities, ingredients and mechanisms represented within BCA's pathways to change forms part of the discussion in Section 10.6 (p271), which focuses on the implications of this research for optimising BCA. However prior to this discussion, Section 10.5 considers the role of cognitive effort in more detail.

10.5 Understanding Cognitive Effort: Implications from the Psychological Literature on Behaviour Change

Existing accounts of conversation therapies, including BCA, appear to underestimate the full range of active content and mechanisms operating with intervention. Content directed at

raising awareness, and establishing new knowledge about conversation and aphasia tends to be emphasised over the content directed at initiating and sustaining behavioural change in context. Developing this awareness may help speakers establish a *reason* to change; however, this may not be sufficient. A key meta-analysis of the relationships between people's intention to make changes and their actual behaviour has demonstrated that there is a significant gap between the intention to change, and actually making a change (Webb & Sheeran 2006). Consequently, BCA, and conversation therapy more generally also need to account for how speakers then translate their good intentions into action. The mediating role played by cognitive processes when making changes to conversational behaviour therefore warrant further discussion.

At present, this research has shown that participants refer to the need to remember to use strategies and think about doing something differently when using them. Furthermore they report that this extra cognitive effort can be variable and that sustaining this focus on behaviour after therapy ends can be difficult (Section 7.2.2.2, p140). It is also indicated that the process of replacing barriers with facilitators helps speakers to do something differently in context (Section 7.3.2.2, p155). However self-reported data of this kind are not considered able to provide reliable insights into specific cognitive processes (Nisbett & Wilson 1977). So to better understand the involvement of cognitive effort in behaviour change, and importantly, how this can be supported in therapy, it is therefore useful to consider the wider psychological literature.

Difficulties translating intentions into action are partly attributed to the challenges of remembering to act, noticing the right moment to act, and then initiating and persisting in action despite any competing motivational or environmental influences that may occur within that moment (Gollwitzer 1999; Gollwitzer & Sheeran 2006). The psychological literature therefore suggests that translating motivation into behavioural changes can be supported by forming a highly specific action plan about *when* a behavioural change will be carried out. These action plans are called 'implementation intentions' (Abraham et al 2008; Ajzen 2005; Gollwitzer 1999; Gollwitzer & Sheeran 2006) and link the intended performance of a target behaviour to a specific context, i.e.: 'if X happens then I will do Y'. The chosen cue for the behaviour can be environmental, but it can also be an internal state, such as a thought or feeling. Implementation intentions are thought to support the use of target behaviour by focussing the individual's attention on the cues in everyday situations, and by basing the initiation of the new behaviour on these cues rather than on the more variable process of reflective deliberation. A meta-analysis of both published and unpublished investigations (Gollwitzer & Sheeran 2006) has demonstrated that using implementation intentions have a

medium to large effect on enhancing the new use of intended behaviours. Furthermore, this effect size is even larger among populations with impaired self-regulation, including those with brain injuries.

Evidence discussed in this thesis has suggested that change to both barriers and facilitators benefit from the mechanism ***Replacing Barriers with Facilitators***, as prompted by ***8.2 Behavioural substitution***. This process can be proposed to represent a form of implementation intention, in which an old habit acts as an internal cognitive cue to initiate the use of a new strategy. It is also plausible that the proposed new Techniques - ***Identify opportunity to use behaviour*** and ***Match behavioural solution to problem event*** - could be used to support the development of an implementation intention around *when* to use a strategy. To do so, these Techniques would need to be linked to a specific plan about using the identified problem events to cue strategy use - the key active characteristic of forming an implementation intention. This does not currently appear to be how these Techniques are used. In order to further optimise BCA, video activities focussing on identifying problems and solutions should therefore be used as opportunities for forming specific plans with participants about when to use strategies.

In addition to the literature on implementation intentions, the literature on 'habits' also offers some useful insights into how the maintenance of new behaviour can be supported, and how the cognitive effort required to make changes may reduce as habits form. It also suggests how existing patterns of behaviour can be effectively disrupted, so that old behaviours are abandoned.

Habits are broadly defined as behaviour that frequently occurs as a stable response to an environmental context, or in service of a goal (Aarts & Dijksterhuis 2000; Bargh & Ferguson 2000; Gollwitzer & Sheeran 2006; Quinn, Pascoe, Wood & Neal 2010). Habits are characterised by 'automaticity' (Bargh & Ferguson 2000), meaning there is little conscious influence from an individual's attitudes and intentions on their performance of a behaviour, and little conscious engagement from processes of cognitive control and regulation. Automaticity in behaviour is a product of repeated performance, and so the formation of new behavioural habits therefore depends on building up frequent experiences of co-activating a behaviour in service of a specific goal, or in response to a specific situation. Sociocultural theories of learning also emphasise the role of repetition, not just for promoting automaticity in new skills, but also for the ability to use those skills flexibly and creatively in complex, interactive, tasks (cf. Hengst, Duff & Dettmer, 2010).

This literature reflects the finding of this thesis that after repeatedly practicing strategies in conversation during BCA, some participants report strategy use has become "second nature", or that they have less conscious awareness about how and when they use these behaviours. Habit formation through repeated use highlights that therapies for conversation not only need to support initial experiences of successful strategy use, but also create repeated opportunities for speakers to use new strategies in conversation.

In contrast, breaking habits relies on exerting cognitive control over unwanted behaviour. Inhibition of habitual behaviour has been shown to be supported by a self regulation strategy known as 'vigilant monitoring' (Quinn et al 2010). Vigilant monitoring represents the use of explicit self talk, for example actively telling oneself 'don't do X'. In common with forming implementation intentions to use new behaviour, this strategy is expected to work by heightening attentional focus on an opportunity for activating the target behaviour. However in this case, enhanced monitoring enables the exertion of increased cognitive control in order to prevent a behaviour from happening. This strategy has been shown to be significantly more effective than using other approaches such as distracting oneself, or using no cognitive strategy at all, when trying to disrupt strongly held habits (Quinn et al 2010).

Descriptions of vigilant monitoring echo the Study 2 finding that participants may use self talk when inhibiting barrier behaviours. This indicates that this form of focussed monitoring is likely to be relevant to the cognitive effort involved in stopping a conversational barrier. However, Simmons-Mackie et al (2005) suggest that increased monitoring may only be partially effective for communicative behaviour, and that success may be variable until speakers are provided with alternative behaviours to use in place of barriers.

Taken together, the literature discussed here suggests that the cognitive effort involved in regulating the use of new conversational behaviours and inhibiting old ones is likely to involve aspects of self-monitoring, heightened attention to behavioural cues, and active self-regulation of behaviour. This literature also supplies supporting evidence for the proposed role of ***Replacing Barriers with Facilitators*** in creating change. Moreover, it indicates that exploring Techniques to support the cognitive effort involved in conversational behaviour change is likely to be fruitful avenue for future research.

10.6 Implications of Findings: Optimising BCA

Findings from across Studies 1, 2, 3 and 4 indicate reasons to review the current BCA therapy programme and consider potential areas where it could be optimised. For example, Study 1 indicated a wide range of determinants relevant to conversational behaviour. Many of these

are not currently addressed by BCA, which raises the possibility that the therapy could be doing more to embed change successfully. Meanwhile Study 2 identified a range of cognitive and motivational issues that may limit speakers' success in making changes. This has implications for who best to target in order to ensure that BCA is effective. Finally Study 3 and Study 4 offered a close scrutiny of therapy content, and this process highlighted a number of issues within the current design and presentation of BCA that have the potential to limit therapy's effectiveness. This section of the Discussion aims to synthesise these findings: implications will be considered for how to target therapy in the most effective and appropriate way (Section 10.6.1); how to optimise the design of the therapy programme (Section 10.6.2); and how to improve the reporting and specification of the therapy content (Section 10.6.3).

10.6.1 Targeting Therapy Appropriately

For BCA to have the best chance of producing conversational behaviour change, the therapy needs to work with the most appropriate candidates, on the most appropriate conversational behaviours.

In order to make changes successfully, both CPs and PWA need to be willing to commit to a therapy approach with a social and adaptive focus, as opposed to focus on language function. It is therefore recommended that readiness for BCA is established before therapy starts in any future implementations (research or clinical) and candidates whose rehabilitation priorities lie strongly with language work, are excluded. Some form of preliminary goal setting prior to choosing a therapy approach is a standard part of clinical practice in the UK. However research projects seeking to recruit participants to a specific therapy approach may need to consider adopting inclusion/exclusion criteria around the rehab preferences of potential participants, as well as the standard criteria which relate to language and cognitive function, and time post onset.

In addition, Study 2 demonstrated that making changes in context engages cognitive skills potentially including memory, attention, self-monitoring and self-regulation. Consequently speakers with difficulties in these areas may struggle to establish the deliberate, independent behavioural changes intended by BCA. Furthermore, PWA with significant language comprehension difficulties may also struggle to understand therapy's aims, and what is required of them. It is therefore important to recognise that not all PWA will be able to access BCA's direct pathways to change successfully (i.e. Pathway 1 and 2), and that acknowledging this may help researchers and clinicians target BCA more appropriately. In particular this will mean identifying when it is better to emphasise Pathway 3 – the indirect route to PWA change – over the self-initiated process of change represented by Pathways 1 and 2.

Among PWA it will also be important target the facilitative behaviours with the best potential for effective strategic use in conversation. Currently, in keeping with the principles of patient-centred rehabilitation, BCA allows PWA to choose any strategies that interest them, including those that they do not have baseline skills for implementing (Beeke, Beckley et al 2014). Both the findings of Beeke, Beckley et al (2014) and data analysed for Study 2 (Section 7.2.2.3, p143) suggest that not having sufficient skills to implement a strategy effectively will continue to act as a barrier to use throughout the BCA process, and will not result in successful behavioural change. It is therefore recommended that, among PWA, the selection of strategies to develop in BCA should be guided and restricted by PWA's pre-existing skill set. So for example, if a PWA wishes to develop the conversational use of writing in BCA, this should only be supported if they have already shown some basic skills in written naming. In the absence of these functional skills, it is suggested that direct work on writing may be a more appropriate starting point for therapy than BCA.

This thesis has demonstrated that speakers' beliefs about the impact and function of the behaviours they use are a key determinant of use, and that identifying and working with these beliefs is likely to be a key component of barrier and facilitator change, among both groups of speakers. This suggests that in order to target therapy appropriately, pre-therapy assessment should aim to uncover not only regular problems in conversation, but also speakers' beliefs about what behaviours help, and why they think they help. Findings from such discussions should enable clinicians to select the most appropriate video clips and handouts to use in therapy. Identifying such beliefs will also help determine the focus of the many discussion-based activities occurring within BCA. Indeed, it is recommended that identifying the consequences of behaviours being targeted for change should form a consistent component of the video feedback, discussion and self-reflection that occurs throughout BCA.

10.6.2 Optimising the Design of the BCA Programme

In terms of optimising the design of BCA, Section 10.6.2.1 first considers the issue of the non-equivalent therapy content currently offered to CPs and PWA. Section 10.6.2.2 then considers how the use of facilitators may be maximally promoted, and Section 10.6.2.3 considers the format of therapy.

10.6.2.1 Equivalence of Therapy Content for CPs and PWA

A key finding regarding the current design of BCA is that the therapy content offered to CPs and PWA is not equivalent. First of all, CPs are routinely invited to target two types of behaviour change – barrier and facilitator - whilst PWA are only required to target facilitator change. Secondly, CPs receive more Behaviour Change Techniques than PWA do overall. As well as BCTs targeted at barriers, CPs receive extra Behaviour Change Techniques targeted at

facilitators, e.g. ***5.3 Information about social and environmental consequences,*** and ***6.1 Demonstration of the behaviour*** (see Table 30, p210). Equivalent support is not obviously offered to PWA.

In order to optimise therapy, and maximise its potential effectiveness for PWA, this thesis recommends that PWA should receive at least the same level of support to implement facilitative behaviours as their partners. In particular this means the inclusion of equivalent, highly concrete Behaviour Change Techniques such as ***5.3 Information about social and environmental consequences,*** and ***6.1 Demonstration of the behaviour*** as provided in the CP education handouts in Session 5 (Handouts 5.2(i) – (v), see Appendix 3)

Whether or not therapy should also be rebalanced to include the targeting of PWA barrier behaviour as a standard component is unclear. It is acknowledged that in many cases it may be inappropriate to seek out and focus on PWA barrier behaviours, especially when therapy is concerned with promoting perceptions of success and enjoyment in conversation. However, the focus on barrier behaviour amongst CPs is proposed to strengthen their motivation for using strategic facilitators, and – perhaps most importantly - to support them to recognise the opportunity to self-cue strategy use as a replacement. Not having access to the mechanism ***Replacing Barriers with Facilitators*** may in fact represent the major drawback from not targeting PWA barrier behaviour during BCA, as it means PWA miss out on the opportunity to form an implementation intention (see Section 10.5, p268) which could otherwise support them to self-cue the use of facilitators in conversation.

Currently BCA-identified PWA barriers to conversation include descriptions of how their turns in conversation are observed to be functioning e.g. 'incomplete turn' or 'unclear aim'. These labels cannot be comfortably be said to represent barrier 'behaviour', on the basis that while they describe an observers-eye view of how aphasia manifests itself in conversation, they do not obviously represent an action initiated by a PWA speaker in response to an event (see Section 5.1, p76 for a full discussion of how conversational behaviour is defined for this thesis). The analysts-eye view of these conversational events may lack salience for PWA. If these problem events are to be developed as cues to self-initiate strategy use they may be more productively linked to the speaker's own experience of what goes wrong, e.g. 'can't find the word' or 'feel frustrated', etc. A similar approach has previously been shown to be effective by Lustig & Tompkins (2002), who report successfully training a PWA to recognise his experience of articulatory struggle as a cue to initiate writing. By re-framing these difficulties in terms of PWA behaviour or experience, BCA may be able to offer PWA greater, and more equivalent, support to use strategies in conversation.

10.6.2.2 Promoting the Use of Facilitators

The analyses of Study 1 and 2 have indicated a wide range of potential constraints to implementing conversational behaviours which speakers would otherwise be motivated to use. These include obstacles to OPPORTUNITY such as location and the behaviour of untrained CPs. It also includes a range of competing influences on MOTIVATION that may occur in the moment of use, e.g. feelings of anxiety, fatigue, and concern for the perceptions of others. This raises the question of how BCA currently handles these potential obstacles to strategy use.

Based on the analysis of BCA content carried out in Studies 3 and 4, it does not seems that the therapy programme currently contains much content designed to help speakers anticipate and overcome these types of obstacles. This may be because the programme specifically limits itself to the interaction of two people in a close personal relationship, and the assessment of conversation is based on video recordings made in a quiet environment at a moment of the dyad's choosing. Consequently the assessment procedure may not fully uncover the variety of obstacles to strategy use in everyday conversation. It may therefore be useful to incorporate into the BCA programme more discussion about what participants perceive to be the obstacles to using strategies, and more time spent identifying ways of overcoming them. The indication in Study 1 that humour may help to negotiate the use of facilitators (Section 6.2.2, p102) offers just one example of the additional resources available to speakers that may help them persevere with strategy use when faced with constraints.

In addition, the role of self efficacy may be important to consider here. Self efficacy is widely reported – both in the generic literature on behaviour change, and in the communication-specific literature – to support people to initiate new behaviours, and to persevere in using those behaviours in the face of obstacles (Abraham & Kools 2012; Ammentorp et al 2007; Bandura 1977, 1997; Locke & Latham 2002; Tinati et al 2012; Yang 1999). Currently in BCA, it is suggested that viewing oneself on video using pre-existing facilitative behaviour successfully has the potential to lead to a ***Changed Perception of Success in Conversation***. Trying out strategies in conversation has also been shown to have a potential role. Both these activities may represent a form of 'mastery experience' - i.e. a successful and positive experience of carrying out a behaviour in context - which has been shown to be a powerful source of self efficacy (Bandura 1977, 1997). To further promote the use of facilitators, BCA may benefit from the inclusion of Techniques specifically targeted at promoting self efficacy (see for example, Abraham & Kools 2012; Bandura 1997; Jones et al 2009; http://www.bridges-stroke.org.uk/). Techniques that support speakers to reflect on their successes, and recognise their efforts towards change may be usefully incorporated into the discussion-based activities that follow videos and practice conversations. It should be highlighted that seeking to

strengthen self efficacy has the potential to be relevant for newly-trained strategies, as well as pre-existing ones. Indeed, addressing self efficacy may be particularly important when targeting the use of nonverbal strategies that are rare in non-disordered conversation, and therefore may require increased confidence and perseverance to implement.

In order to optimally support speakers to overcome both internal and external obstacles to strategy use, it is recommended that a review of BCA content seeks to identify additional procedures for promoting the use of facilitators in context. Such procedures should aim to support speakers to plan around any potential obstacles to strategy use, form implementation intentions, and actively strengthen their self efficacy for managing aphasia in conversation. In this instance, the taxonomy of Behaviour Change Techniques may provide a useful 'menu' of possible procedures to support this process.

10.6.2.3 Format of Therapy

Feedback from participants in Study 4 suggests that the current format of therapy risks being perceived as too long, too theoretical, and – for PWA – often hard to follow and understand (Section 9.3, p240). While this does not in itself indicate an immediate need to shorten therapy, or make it less challenging, it does suggest there may be a need to review the accessibility and value of some therapy content. In particular this will include considering how to discuss CA concepts such as 'repair' in ways that maximise their accessibility and relevance to participants.

The current format of therapy contains a large number of education-based activities, particularly in Sessions 1-3, that do not have a clear behavioural target. These activities could not be coded for Behaviour Change Techniques and consequently it is not clear how this content contributes to BCA's central intended process of behavioural change. While it is hypothesised that some of this content may contribute to ***Changed Priorities for Conversation***, it is also suggested that BCA's emphasis on learning about conversational sequences using CA terminology and concepts may be *optional* rather than essential to behaviour change, and may depend on participants learning preferences and interests.

10.6.3 Reporting and Specifying Therapy Content

The findings of Study 3 and Study 4 have shown that the BCA programme contains a wider range of potentially active content than is typically reported in the literature. Furthermore these investigations have shone a light on the function of previously under-specified activities.

So for example, although the literature recognises that the activities of 'Practice' and 'Video Feedback' are typical components of the therapy, the important way in which both of these activities are used to explore the consequences of conversational behaviour is not commonly

highlighted. Furthermore, a number of proposed active ingredients in BCA, including ***2.4 Self-monitoring of outcome(s) of behaviour*** and ***8.2 Behaviour substitution***, are simply not reflected in current reports of therapy content. The contribution of these important procedures needs to be better recognised and more consistently reported on in order to ensure replication of their potentially key effects in future implementations of BCA.

Future descriptions of BCA in the literatures should aim to detail the full range of potentially active content contained within the programme, so that key procedures such as providing feedback, and supporting the self-monitoring of the outcome of behaviour are reported alongside components such as education, video, and practice. Furthermore, the therapy materials themselves may benefit from further detail about the intended focus of video feedback and discussion-based activities, where it is currently unclear.

10.7 Reflections on Applying Behaviour Change Perspectives to Communication

A key question facing this thesis has been whether or not the concepts of behaviour, and behaviour change, are relevant and valid to apply to conversation therapy for aphasia. It has been argued from the outset that these concepts have a face validity on the basis that most authors reporting on conversation therapies have described their interventions as aiming to change behaviour. In addition, findings from this thesis suggest that the participants in BCA perceive the behaviour change components of therapy as the core of intervention, and usually perceive their key outcomes to be their use of (or failure to use) strategies, or their termination of barriers.

The validity of using behaviour change theory to explore conversational behaviour, and the process of change in conversation therapy, is also supported by the extent to which the findings of this thesis are able to provide a credible – if perhaps only partial - account of change via therapy. The usefulness of the theoretical concepts presented in the COM-B model (Michie, van Stralen & West 2011) and the TDF (Cane et al 2012) to conversational behaviour is reflected in their power to interpret and organise qualitative data into a coherent and explanatory account of conversational behaviour, and of change via therapy. The credibility of this theoretical perspective is also upheld but its ability to generate a number of immediately useful clinical insights.

However, the question of reliability – in the statistical sense – of applying behaviour change concepts to conversation therapy materials represents a different issue with additional challenges. This research just failed to reach the acceptable level of agreement laid out in the

literature (80%) when using the taxonomy of Behaviour Change Techniques to code the BCA therapy programme, and produced a moderate, rather than substantial level of agreement between raters using the kappa coefficient. One reason for this may be common to any investigation of the taxonomy's IRR, namely that different raters will make different decisions about what can reasonably be interpreted from a basic description of an intervention activity. However other challenges encountered in Study 3 may be more specific to SLT users of the taxonomy, and indeed to conversation therapy itself. For example, SLTs are perhaps more likely to produce discrepancies in coding than health psychologists due to the inherent challenges of working with unfamiliar terminology and concepts. In addition, CA-derived conversation therapy and behaviour change theory are proposed to have certain conceptual emphases which stand at odds with each other. This issue will now be explored in detail.

Applying the concepts of behaviour and behaviour change to conversation therapy represents an attempt to align the study of *individual* action, as emphasised by research into behaviour, with the study of *jointly-produced* action emphasised by conversation research. Research into conversation, particularly within the field of CA, has always emphasised the collaborative and interdependent nature of the turns produced by individual speakers. Furthermore it has actively avoided considering the agency of individual speakers in producing these turns. However the focus of behaviour change research is very much on individual behaviour, which is understood to be produced responsively and shaped by a range of unseen cognitive skills and attitudes. This represents something of a conceptual culture clash in terms of what it is important to describe, analyse and understand, and means that links between otherwise similar concepts can be obscured.

To illustrate how this difference in emphasis can affect both the usefulness and reliability of applying behaviour change concepts to conversation therapy, some specific issues are outlined here. Firstly, when coding BCA with the taxonomy of Behaviour Change Techniques, raters found it particularly difficult to locate individual target behaviours within therapy activities directed at inherently collaborative conversational sequences, such as topic or repair. This led to different decisions regarding whether or not it was possible to code for Techniques, which ultimately compromised the measures of IRR. Secondly, raters had difficulty capturing BCA's focus on changing problematic conversational *sequences* during coding. While both raters agreed that the activity of Video Problem Solving was targeted at the use of facilitators (see Section 8.4.2.5, p194) neither could identify any Techniques that adequately described this procedure. Qualitative data described in Study 4 suggested that this activity could be coded for Behaviour Change Techniques only when the problem shown on video represented an individual barrier behaviour, but not when it represented a problematic conversational

sequence (see Section 9.2.5.3, p229). The difficulty in describing BCA's treatment of conversational sequences with existing Techniques led to the proposal of two new Behaviour Change Techniques (Section 8.4.3.4, p201).

Beyond the specific application of the taxonomy, this research also faced a broader challenge in delineating what could be analysed as 'conversational behaviour' (see Section 5.2, p77 for a full discussion). The preference in CA to describe conversational turns in terms only of what is observable to the outsider, means that some of the barriers and facilitators targeted in therapy are couched in terms of their evaluated contribution to turn-taking. The deliberate lack of agency in these descriptions therefore made them difficult to analyse and interpret in a way that would cohere with behaviour change theory and its emphasis on individual action. Consequently a number of BCA-identified conversational barriers were exempted from this analysis, even though they were viewed as parameters of change for BCA. This means that the explanations developed for conversational behaviour change in the current thesis do not neatly dovetail with ACM outcome measures such as the completeness of PWA turns. Nor do they map directly onto measures such as the length of repair sequences. This is not to say that any change on such conversational measures would not be due to individual behaviour change, but rather that the different conceptual emphases that currently exist between the two fields make it hard to investigate this in a reliable and meaningful way.

For those who are used to investigating interaction and the sequentially-bound context in which conversational behaviour is produced, shifting focus onto individual behaviour may seem to be a simplistic approach to thinking about conversation. However, the aims of the current research lie with understanding *intervention* for interaction, rather than the mechanics of interaction itself. For research that is concerned with developing and evaluating effective conversation therapy, this work has shown that there is a strong need to better understand and account for individual change. In particular, further research is needed into the cognitive and attitudinal determinants that support or constrain conversational behaviour and its change. Although so far, research into conversation has meticulously avoided references to speakers' inner worlds and intentions, this thesis has demonstrated that in order to design maximally effective and well-justified intervention for conversation skills, it will be crucial to understand and engage with these factors.

Although this thesis consistently argues that behaviour change is the primary goal of intervention for conversation, it is recognised that conversation therapy is associated with a range of other outcomes, such as increased understanding and acceptance of PWA difficulties among CPs, increased understanding of stroke, increased positivity about self and partner, and an increased sense of hope (Lock 2005; Sorin-Peters 2003, 2004). These are clearly important

outcomes, and it is recognised that this thesis is not fully able to account for them. There are significant sections of BCA intervention content that this thesis has not been able describe using tools from behaviour change research which may well be relevant for some of these outcomes. In addition there are likely to be general effects on wellbeing produced by the therapeutic relationship that this analysis has not captured.

To conclude, although a focus on behaviour change may leave certain aspects of conversation therapy and conversation unexplored and unaccounted for, this perspective has nonetheless been able to generate a useful working model of how BCA's primary intended changes are produced. This model supplies testable hypotheses about BCA's mechanisms and active ingredients, and recommendations for those implementing conversation therapies clinically. The final chapter of this thesis will consider in more detail the clinical implications of this work, and identify areas for future research. Limitations to the work carried out here will also be discussed.

11 Conclusions

The key focus of this thesis has been to address an important question facing conversation therapy research: what works in intervention, and how? Based on qualitative data, and guided by theories of behaviour change, this work has developed a detailed proposal about how BCA therapy delivers its key change processes.

In line with the protocol recommended by the MRC (2000, 2008) for developing complex interventions, this attempt to develop the theory underpinning BCA has advanced the study of intervention research in Speech & Language Therapy. It has demonstrated the potential of using theory and evidence from behaviour change research to examine therapies for functional and social aspects of communication. It has also identified some challenges in transferring concepts across disciplines. In the attempt to systematically explore change-relevant parameters of BCA content and process, this thesis has also generated more broadly useful insights into the influences shaping the conversational behaviours speakers use to manage aphasia, which may support the planning and effective targeting of any strategy-focussed therapy for communication.

Section 11.1 of the concluding chapter of this thesis will review the key contributions and findings of the work carried out here. Section 11.2 considers the broad clinical implications of the work, while the methodological limitations of the research carried out here are discussed in Section 11.3. Areas for future research are considered in Section 11.4 followed by final concluding remarks in Section 11.5.

11.1 Key Contributions and Findings

The key findings of this thesis will be reviewed in relation to its original aims, reproduced below, which were to:

I. Identify and characterise the factors that determine and shape the conversational behaviours used by speakers to manage aphasia
II. Identify possible mechanisms by which BCA creates change
III. Consider similarities and differences in how change is achieved amongst different types of speaker (CP and PWA) and for different types of behaviour (barrier and facilitator)
IV. Identify a core group of 'active ingredients' within the BCA programme and explore how they may be delivered
V. Synthesise findings into an explanatory 'theory of change' for the BCA programme
VI. Identify aspects of the BCA programme which have potential to be further optimised

VII. Explore the suitability of using tools and concepts from behaviour change research to describe interventions targeted at changing social communication

Objective I, which concerned the determinants of conversational behaviour, was primarily addressed in Study 1 via the analysis of participants' own accounts about the factors that influence the behaviours they use. Study 2 generated additional insights into the range of skills determining conversational behaviour via the analysis of factors that determine success when making behavioural changes. Interpreting these findings in the context of the COM-B model (Michie, van Stralen & West 2011) has enabled a theoretically grounded understanding of CP and PWA conversational behaviour used to manage aphasia. Conversational behaviour has been shown to be motivated by speakers' goals, and their beliefs about which behaviours best serve those goals. However, this thesis has also shown that producing the right behaviour at the right time relies on the speaker's physical, cognitive and social skills, and furthermore, that this may be constrained by range of social, environmental and emotional obstacles. The Discussion chapter summarised these findings and considered their implications for optimising the content of BCA to increase the support offered for making changes in context.

Objective II, which concerned the mechanisms by which BCA creates change, has been addressed by the analysis of participant reports in Study 2, and further strengthened by the analysis of therapy content in Studies 3 and 4. These analyses have supported the identification of the determinants of conversational behaviour which undergo some form of change as a result of participating in BCA, and which are therefore likely to be involved in prompting a change in behaviour. The ongoing comparison of data associated with different types of behaviours across Study 1, 2 and 3 - linked to Objective III – has indicated that BCA creates change to barriers and facilitators via different pathways. Change to the use of barrier behaviours (Pathway 1, see Figure 24, p263) relies on re-evaluating the impact of existing conversational behaviours for valued goals. Making changes in context is supported by replacing barrier behaviour with new facilitative strategies. Change to facilitators (Pathway 2, Figure 25, p265) appears to be produced via a more complex process. A first phase is directed at supporting speakers to make an initial attempt to use facilitative behaviour strategically in conversation. This includes raising awareness of existing behaviour and its successful impact on conversation, and providing information about the beneficial impacts of new behaviours. Speakers' intention to use chosen facilitators in conversation is established through goal setting. Those who are also working on reducing barriers are encouraged to initiate strategy use as an alternative. Creating these initial experiences of strategy use is proposed to be important for establishing positive expectations about the behaviour's usefulness. A second phase is directed at consolidating speakers' motivation and skills to use their chosen

facilitators. Here repeated practice serves to strengthen speaker's perception of the strategies as beneficial, and to contribute to an increase in skills and automaticity for their long-term use in everyday conversation.

Objective III was also addressed through a comparison of CPs and PWA across Studies 1, 2 and 3. There is no evidence to suggest that the process of deliberate behavioural change would operate in a fundamentally different way between speakers. However, the analysis has shown that some PWA will have difficulty accessing self-initiated change via Pathway 2 due to difficulties understanding, remembering or regulating the use of target strategies. For those PWA who are unable to initiate deliberate behaviour change, there is evidence that BCA can still enable the use of their strategies in conversation, by changing the level of conversational support provided by CPs for these behaviours (Pathway 3, see Figure 26, p267).

The analyses of Study 3 and Study 4 contributed to Objective IV, which concerns the active ingredients of intervention, by investigating the content of BCA. Study 3 coded the BCA programme using the taxonomy of Behaviour Change Techniques (Michie et al 2013), whilst Study 4 compared these findings against components of BCA reported by participants to be beneficial. A proposal regarding the active ingredients of BCA was finalised in the Discussion (Section 10.3, Table 34, p257). This drew on the converging evidence emerging across Study 3 and Study 4, and considered which Techniques fitted best with the theoretical domains and mechanisms of change identified as relevant elsewhere in the thesis. A group of 11 Techniques were proposed to represent the active ingredients with a key role in promoting conversational behaviour change during BCA.

Objective V concerns synthesising findings into a theory of change for BCA. A proposal for an overall theory of change for BCA was presented in the Discussion (Figure 23, p260). This proposal integrated the three pathways for producing behavioural change via BCA and illustrated how successful change to conversation may also rely on establishing an adequate commitment to therapy and its goals prior to starting. It also highlighted that BCA may produce a range of secondary outcomes such as reduced negative emotions about conversation, and an enhanced perception of success in conversation. These may be a consequence of BCA's behaviour change pathways, or they may be the product of other processes occurring in BCA that have not been investigated here. The figures presenting each pathway to change (see Figure 24, p263; Figure 25, p265 and Figure 26, p267), show how specific therapy activities contain active ingredients with the potential to trigger the mechanisms that eventually lead to conversational behavioural change.

In terms of Objective VI, which concerned the potential to optimise the current BCA therapy programme, a key finding was that BCA offers more support to CPs for changing behaviour than to PWA. By bringing to the surface this previously unidentified issue, the thesis demonstrates the benefits of reviewing the role and function of BCA content according to behaviour change theory, and with reference to the taxonomy of Behaviour Change Techniques. It has been recommend that BCA be revised to ensure CPs and PWA receive the same level of support to change behaviour. Further recommendations have been made regarding how to maximise support for facilitator change for both speakers. Based on findings discussed in Study 4 about the barriers to change within BCA, the need to review therapy content for its accessibility and value to participants has also been highlighted. A final recommendation is made for enhancing the detail of discussion-based activities within BCA. Descriptions of these activities within the session plans should aim to make their intended focus clear, and provide sufficient information to enable the consistent replication of key processes.

Finally, a key innovation of this thesis was the use of theory and tools from the field of behaviour change. The validity, benefits and challenges of applying this method to communicative behaviour and change have been examined and discussed throughout this thesis, as per Objective VII. It is concluded firstly, that behaviour change *is* a relevant way to talk about the process of change which lies at the heart of BCA, and secondly that the use of behaviour change theory enables new and powerful insights into the nature of this change. However it has also been acknowledged that behaviour change may not account for all the active processes occurring within therapy, nor explain all its outcomes. Other theoretical perspectives may therefore be required to develop the fullest account of the range of relevant changes produced by BCA. Furthermore a number of challenges have been identified when attempting to combine and compare concepts, terminology and theoretical emphases from two different fields of research. Further work is needed to build links between the two fields, and to provide a foundation for the successful and mutually acceptable application of relevant behaviour change tools in the future.

11.2 Clinical Implications

Clinicians frequently need to adapt evaluated therapy programmes, either out of necessity due to local constraints on time and resources, or in order to tailor therapy programmes to the needs of a specific client. In doing this there is always the risk of diminishing the overall effectiveness of therapy, by omitting key content or by adapting it in such a way that therapy no longer functions in the intended way. The focus within this thesis is on the essential change

processes of therapy and the core procedures that serve them. This approach helps to streamline the description of an intervention and put the spotlight on the core content and fundamental mechanisms that will need to be replicated in order to have the best chance of recreating therapy's behavioural outcomes.

In order to adapt BCA while remaining faithful to its essential process of change, clinicians may first need to select which of the three potential pathways will serve the needs of a dyad. Based on the assessment of a dyad's conversation, and on the conversational problems and needs identified by the dyads themselves, clinicians can decide whether to target change to barriers, facilitators, or both. An understanding of the language and cognitive function of the PWA will also enable clinicians to hypothesise whether individual speakers will be able to access self-initiated change, or whether PWA strategy use should be targeted via CP support. With this in mind, the existing therapy programme can be adapted and delivered with a tighter focus on its target outcomes in order to create change with the best efficiency. While each pathway contains active ingredients which should be replicated, it has been suggested that it may be possible to vary the delivery and presentation of the CA-based education about conversation according to need and preference without compromising the effectiveness of the essential behaviour change process.

The shift of emphasis in Study 3 away from the specific activities and materials used to deliver therapy, and onto the essential function of procedures for producing change, suggests there is a certain flexibility for clinicians in terms of how they deliver BCA's active ingredients. As long as the core Behaviour Change Techniques are delivered in a way that serves therapy's proposed mechanisms of change, it is suggested that clinicians will be able to adapt the way in which these active ingredients are delivered according to local constraints or client need. So for example, in situations where clinicians do not have access to video equipment, or where clients have not consented to be filmed, alternative therapy activities should be explored in order to still be able to deliver ***2.7 Feedback about the outcome(s) of behaviour*** and the other active ingredients currently delivered by video (see Table 34, p257). For example, these could include discussion, or handout-based activities. Currently, the relative impact of different methods for delivering therapy's active ingredients is unknown, and we do not have evidence as to whether one method is more effective than another for delivering a specific Behaviour Change Technique. While video may particularly resonate with participants, it is not currently possible to conclude that this results in increased effectiveness for BCA's outcomes. As it stands, for those wishing to replicate therapy, the most important aim is to activate the chosen pathways to change using the key active ingredients.

11.3 Methodological Limitations

This thesis has used two different methodologies to explore conversational behaviour change. A qualitative method – Framework Analysis – has been applied retrospectively to a dataset comprising of pre-therapy assessment, during-therapy videos, and post-therapy interviews. The limitations of these datasets and of self-reported data in general are discussed in Section 11.3.1. Study 3 applied the taxonomy of Behaviour Change Techniques to BCA therapy materials. The limitations of this tool are discussed in Section 11.3.2.

11.3.1 Limitations of the Qualitative Dataset

A potential issue for this work is that it has been based on the retrospective analysis of pre-collected data, rather than a data collection procedure that was guided by its own specific research objectives. This means that the discussions analysed here were not consistently focused towards areas of interest for this work, and that when relevant themes were referenced by participants, further information was not always sought. The information within this pre-collected dataset clearly contained much that was relevant to the research aims and objectives of this thesis. However, the findings reported here are likely to lack some of the information that would have been generated from a data collection plan focused on the process of behaviour change. For example, despite the known relevance of self efficacy to strategy use and communicative behaviour change (Ammentorp et al 2007; Gulbrandsen et al 2013; Tinati et al 2012; Yang 1999) the current investigation has not yielded much data relating to this area. This example illustrates how the conclusions drawn by this thesis are unlikely to represent a comprehensive or final account of conversational behaviour change via BCA.

Further compromises to the quality of the data come from the difficulties of ensuring PWA contributions truly represent their own opinions and points of view. The presence of the CP during most of the data collection inevitably meant a risk of the CP providing their version of what they believed the PWA's experiences and perspectives were. Whilst the post-therapy interview was carried out with specific regard to the Luck & Rose (2007) recommendations for eliciting information from speakers with aphasia, and where possible the PWA was interviewed separately, the pre-therapy CAPPA interview and especially the during-therapy discussions aimed instead to elicit the joint views of the dyad. The during-therapy dataset was especially variable in terms of the quality, quantity and consistency of the data generated from dyad to dyad. Many of the PWA contributions within this dataset had to be excluded from analysis due to the extent to which the turns of the other speakers risked influencing PWA responses. As a consequence, this thesis has generated less information about the PWA experience of changing behaviour than it has about the CP experience. This said, it needs to be

taken into account that CPs appear to engage in a wider variety of change processes than PWA, and are targeted by more Behaviour Change Techniques. Furthermore, the outcome data available so far from the main BCA project indicates that behaviour change among CPs appears to be more successful than behaviour change among PWA (Table 2, p32). If this is the case, then it should be noted that CPs would be expected to have more to report about the experience of change in BCA than their partners.

While qualitative methodologies are a recommended and valuable approach to understanding the mechanisms and processes of intervention, it should also be recognised that self report has its limitations. Psychologists warn about the limits of self knowledge, i.e. that we may not always truly know why we behave the way we do (Paulhus & Vazire 2007) and, furthermore, that higher order cognitive processes, including those concerning the regulation and initiation of behaviour, may not be accessible to conscious reflection (Nisbett & Wilson 1977).

The key implications of these concerns relate to some of the interpretations made by this thesis about the involvement of internal cognitive processes when making changes. It is certainly true that where participants describe the experience of 'ease', 'effort', 'thinking' or 'awareness' it is not at all clear that these terms are being used in the same way to describe the same thing. It is also not clear what cognitive processes such terms represent. Consequently, the conclusions drawn here about the function of specific cognitive skills in changing conversational behaviour should be treated cautiously. Nonetheless, in defence of these analyses, the data discussed here act as an important signpost that the broad experience of cognitive effort is a key component of conversational behaviour change, and is highly relevant to these participants. It is also clear that the demands of increased cognitive effort can be a barrier to making changes successfully. While these data may not be able to represent exactly what type of cognitive activity is engaged when making changes, simply identifying that this area has a key role to play in conversational behaviour change represents an important new insight for conversation therapy. Efforts have been made in the Discussion to link findings to wider theory and experimental evidence (Section 10.5, p268). This literature is able to offer some support to the validity of the conclusions drawn in this work about the relevance and role of cognitive processes in conversational behaviour change, and in particular suggests techniques to enhance speaker self-regulation and automatic use of new strategies, as well as ways to help disrupt old habits.

In addition to these general points about the limitations of self-reported data, this work has noted some specific limitations to self report for meeting the research objectives of this thesis. In particular, these qualitative data have not been able to generate significant insights into unconscious influences on behaviour such as *IDENTITY*, or *OPTIMISM*. Nor have they been able to

suggest much detail about the content and impact of specific activities in BCA. It is therefore concluded that while self report is able to offer unique and rich insights into participants' beliefs about conversational behaviour and their experience of changing it, it may only be able to generate a partial account. And in addition, self report would be insufficient - when used in isolation from a tool such as the taxonomy of Behaviour Change Techniques - for identifying specific therapy ingredients.

11.3.2 Limitations to the Uses of the Taxonomy of Behaviour Change Techniques

Issues regarding the validity and reliability of using behaviour change tools and theory to understand conversation therapy have been addressed throughout this thesis, and form the basis of the Discussion in Section 10.7 (p277). The current section explores the key limitations to Version 1.1 of the taxonomy of Behaviour Change Techniques (Michie et al 2013) – as streamlined for use with BCA – and in particular notes challenges when applying it to Speech & Language Therapy interventions.

Following initial training, applying the taxonomy to BCA required two waves of coding, and a discussion between raters about their decision-making. This discussion included resolving queries about how to apply the taxonomy effectively, and how specific concepts and terminology from the taxonomy should be understood. This indicates that Behaviour Change Technique coding among SLTs is likely to continue to be a specialist process. Reliable coding requires a good understanding of the concepts involved, and it should be acknowledged that despite clear definitions in the taxonomy, coding by SLTs will be shaped by different professional experiences, knowledge and vocabulary than those in health psychology. Reliable application of the taxonomy among SLTs may therefore be difficult to achieve without added training and support to develop an increased familiarity with the behaviour change concepts and literature on which the taxonomy is based.

It is also important to acknowledge that the reliability of applying the taxonomy faces challenges even among users experienced in behaviour change theory. The individual IRR for the identification of a large number of Behaviour Change Techniques remains as yet unconfirmed (Michie et al 2013), representing a key limitation for any application of the taxonomy. In this work the findings of coding benefitted from comparison with qualitative data from participants about perceived beneficial content. This comparison was able confirm the presence and likely role of a number of Techniques, and resolve some outstanding queries and gaps in the account of therapy content that resulted from coding. Drawing on evidence from other sources may continue to be a useful adjunct to any future applications of the taxonomy whilst it is still under development. This may be particularly necessary in cases where the IRR for coding a specific intervention has not met key thresholds of agreement.

11.4 Areas for Future Research

This work has generated a basis for future research from a number of different perspectives. Firstly it has identified some new issues which will be relevant to future evaluations of BCA's effectiveness for producing change. These are discussed below in Section 11.4.1. Secondly, the exploratory nature of this work means that BCA's proposed theory of change should be taken as preliminary. Section 11.4.2 therefore considers options for testing key aspects of this theory. Finally, this work provides a basis for extending and enhancing the application of the taxonomy of Behaviour Change Techniques to Speech & Language Therapy intervention research. Options for developing the use of the taxonomy in Speech & Language Therapy are therefore considered in Section 11.4.3.

11.4.1 Effectiveness of Therapy

The current work has identified that BCA targets barrier behaviour and facilitator behaviour differently, and also targets CP and PWA differently. Evaluation research should aim to establish whether these differences in intervention design correspond to differences in outcomes for the different types of behaviour, and the different speaker groups. These comparisons will be useful for indicating current strengths of the therapy design, as well as identifying areas where the programme may need to be reviewed and optimised.

In addition to these comparisons, it will be valuable to establish whether outcomes are different between pre-existing facilitators, and newly-introduced facilitators. Findings from this comparison may suggest that BCA is more effective for one type of facilitator change than another. However it may also highlight difficulties in capturing the subtle change represented by an extension of, or a change in perception of, pre-existing behaviours. The problem of establishing an objective measure of change for therapy that reinforces and encourages existing behaviour has previously been acknowledged in the conversation therapy literature (Booth & Swabey 1999; Turner & Whitworth 2006a). This thesis has suggested a link between targeting positive perceptions of pre-existing facilitator behaviour, and changing speakers' perception of their success in conversation. Consequently, it may be that a measure of self efficacy could act as a proxy for capturing the change underpinning the new uses of these existing behaviours. Such a measure could be adapted and tailored for communication from existing self efficacy scales (see Jones, Partridge & Reid 2008 for an example developed for stroke).

As well as thinking about the nature of the behavioural changes created by BCA, this work has also proposed a number of candidacy requirements for being able to benefit from therapy. These include a willingness to commit to a social approach to aphasia, and sufficient language and cognitive skills to be able to understand therapy, and implement the target changes. In the

case of PWA, correlations between change outcomes and measures of language comprehension and cognition may suggest minimum thresholds of ability for being able to access BCA's pathways to self-initiated change. And in the case of both speakers, future evaluations may wish to consider using speakers' individual priorities for rehab as inclusion/exclusion criteria for participation.

Finally, an interesting query raised by the investigation of therapy content concerns the relative effectiveness of the type of therapy activities used to deliver Behaviour Change Techniques. Further research is needed to evaluate the impact of different methods for delivering therapy's active ingredients. For example the effects of video feedback about the consequences of a barrier behaviour could be compared against the effects of written feedback (i.e. in a handout), and verbal feedback (i.e. in a discussion with an SLT). Evaluation here should seek not only to compare the relative impact of these different kinds of feedback on behaviour, but also on changing speakers' beliefs about the impact of behaviour – as this represents the proposed intervening mechanism that feedback needs to influence in order to produce behavioural change. Investigations of this kind would support the development of a theoretically and empirically-driven evidence base for the selection of methods to deliver intervention.

11.4.2 Testing BCA's Theory of Change

The theory of change for BCA developed in this thesis contains predictions about the mechanisms involved in creating change, and the therapy ingredients expected to be responsible. A range of experimental designs are available for further exploring such predictions. The MRC guidelines (2000, 2008) suggest considering N-of-1 research designs in which individuals act as their own control, as well as statistical methods designed to investigate causal relationships. These include structural equation modelling (as recommended by the MRC, 2008); hierarchical linear analysis (see Harachi et al 1999); and mediational analysis (see Hanbury, Wallace & Clark 2011; MacKinnon, Fairchild & Fritz 2007). Common to these methods is the need to measure change not only in the final intended outcomes of an intervention- i.e. behaviour - but also in the 'mediating variable' – i.e. the mechanism hypothesised to cause and predict behaviour change. This enables closer exploration of the pattern of relationships between therapy content, mechanisms and outcomes. Simmons-Mackie et al's Recognition Training (2005) is an existing example of a conversation therapy evaluation which not only measured change to behaviour, but also to 'recognition' – the proposed mechanism for changing behaviour, and was consequently able to draw specific conclusions about therapy's effects.

In preparation for any future evaluation of BCA's theory of change, a necessary first step is therefore to identify or to develop tools for measuring the determining influences on behaviour that BCA is proposed to create change to. For example, this would be likely to include a measure of speakers' beliefs about the function of their behaviours (i.e. expected impact). Questionnaires are a typical choice of measurement tools for attitudes and beliefs, and, indeed, measures of speakers' beliefs about conversational strategies already exist (cf. Rautakoski 2011) and may be usefully adapted for BCA.

Measuring such beliefs about behaviours would firstly enable an analysis of the strength of the relationship between this determinant, and speakers' actual behaviour. It would also enable an evaluation of the extent to which these beliefs undergo change via BCA, and how well this pattern of change relates to the pattern of behaviour change. An evaluation of BCA's proposed mediating variables would not only provide the opportunity to confirm or reject the hypotheses developed here about therapy's mechanisms, but also enable a comparison between mechanisms. This may suggest which are more central to BCA's pathways to change, and which are more peripheral.

As well as looking to develop the evidence for BCA's change mechanisms, a further area of interest for conversational behaviour change more generally is the role of cognitive effort. Existing research has shown that cognitive flexibility and executive function have a predictive role in the successful use of strategies in conversation by PWA (Frankel et al 2007; Penn et al 2010; Purdy & Koch 2006). Measures of cognition may therefore be useful for exploring candidacy thresholds in BCA – i.e. to identify what level of cognitive flexibility is required in order to benefit. However it would not be appropriate to treat these skills as mediating variables as they are not expected to actually undergo change themselves as a result of BCA. Future research may therefore more fruitfully focus on evaluating the impact of techniques for harnessing cognitive control over strategy use during intervention. Techniques such as implementation intentions (Gollwitzer & Sheeran 2006) and vigilant monitoring (Quinn et al 2010) have been identified as having the potential to support cognitive effort for change in BCA. To further explore the effects of these techniques it may be useful to compare the outcomes produced by a version of BCA that includes focussed support for cognitive effort against a version that does not.

A final question about BCA's overall process of change relates to the therapy content not captured by the taxonomy coding. It is not currently clear how the un-coded therapy content fits into BCA's change process, or what outcomes it supports. The effects of the education portions of therapy, focused on understanding aphasia and conversation, may be better understood if evaluated using tools to measure changes in attitudes, knowledge or wellbeing.

This may help to broaden and add detail to the theory of how BCA produces change, and reveal how the intervention interacts not only with behaviour, but with a range of other outcomes, especially those associated with knowledge about aphasia, and overall wellbeing.

11.4.3 Extending the Use of the Taxonomy

This thesis has suggested that there may be potential for formally adapting the taxonomy of Behaviour Change Techniques for use in Speech & Language Therapy intervention research. Such a tool could be useful for any clinician or researcher designing or reporting on interventions where outcomes are expected to feature some aspect of behaviour change. Furthermore it could be expected to have benefits for evaluating the fidelity of delivering an intervention's active ingredients.

Methods here should follow the process for developing the original taxonomy (Michie, Hyder et al 2011; Michie et al 2013).This would include identifying and extracting procedures used from Speech & Language Therapy interventions targeted at behaviour change. These would be expected to include a range of interventions targeting the use of communication strategies, but could conceivably be extended to any Speech & Language Therapy intervention with behaviour change as its focus, e.g. diet modification for dysphagia, and the training of other professionals. Any potential new Techniques identified by this process which are not already included in Version 1.1 taxonomy would need to be developed by formal consensus process such as the Delphi (cf. Jones & Hunter 1995) into a conceptually distinct Technique with an agreed definition. A transparent process for eliminating Techniques not judged to be relevant to Speech & Language Therapy intervention would also need to be agreed.

11.5 Final Conclusions

This research offers a complementary evidence base to the outcomes that have so far been reported for BCA. It has demonstrated how a behaviour change perspective can be used to develop an explanatory account of how BCA produces change to conversation. It has also revealed that 'change' is multifaceted, and different behavioural changes may be activated by different aspects of therapy. A systematic analysis of conversational behaviour change and of BCA has not only suggested how the therapy may be achieving its successes, but also where it may need to be optimised in order to maximise effectiveness. The conclusions of this work offer clinicians concrete guidance on the pathways to achieving change when using BCA, the procedures that may be most active in producing change, and parameters for adapting BCA where appropriate or necessary. Above all, this thesis acts to emphasise the importance of systematically investigating therapy processes alongside evaluating therapy outcomes.

As well as adding to BCA-specific research, this thesis has demonstrated the potential and the value of behaviour change theory and tools for exploring intervention across Speech & Language Therapy. Behaviour change is proposed to be a central, or at least supporting, component of many interventions used by the profession. This thesis has demonstrated not only that a Speech & Language Therapy intervention can be usefully described and analysed in terms of its component Behaviour Change Techniques, but also that the systematic use of behaviour change theory can lead to important new insights into what intervention needs to target, and how it can be expected to create change. Such an approach is expected to have wide-ranging benefits, both for researchers seeking to develop and evaluate well-justified interventions, and for working SLTs, among whom designing therapy intervention is the cornerstone of clinical practice.

References

Aaltonen, T., & Laakso, M. (2009). Halting aphasic interaction: creation of intersubjectivity and spousal relationship in situ. *Communication & Medicine*, *7*(2), 95–106.

Aarts, H., & Dijksterhuis, A. (2000). Habits as knowledge structures: automaticity in goal-directed behavior. *Journal of Personality and Social Psychology*, *78*(1), 53.

Abraham, C., Conner, M., Jones, F., O'Connor, D., & O'Connor, D. (2008). *Health Psychology: Topics in Applied Psychology*. Hachette UK.

Abraham, C., Kok, G., Schaalma, H. P., & Luszczynska, A. (2011). Health Promotion. *In* P. Martin, F. Cheung, M. Knowles, M. Kyrios, J. B. Overmeier & J. Prieto *(Eds.) IAAP Handbook of Applied Psychology* (pp. 83–111). Wiley-Blackwell.

Abraham, C., & Kools, M. (2012). *Writing Health Communication: An Evidence-based Guide*. Sage.

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, *50*(2), 179–211.

Ajzen, I. (2005). *Attitudes, personality, and behavior*. McGraw-Hill International.

Albarracín, D., Gillette, J. C., Earl, A. N., Glasman, L. R., Durantini, M. R., & Ho, M.-H. (2005). A test of major assumptions about behavior change: a comprehensive look at the effects of passive and active HIV-prevention interventions since the beginning of the epidemic. *Psychological Bulletin*, *131*(6), 856.

Ammentorp, J., Sabroe, S., Kofoed, P.-E., & Mainz, J. (2007). The effect of training in communication skills on medical doctors' and nurses' self efficacy. A randomized controlled trial. *Patient Education and Counseling*, *66*(3), 270.

Bandura, A. (1977). Self efficacy: toward a unifying theory of behavioral change. *Psychological Review*, *84*(2), 191.

Bandura, A. (1997). *Self efficacy: The exercise of control*. Macmillan.

Bargh, J. A., & Ferguson, M. J. (2000). Beyond behaviorism: on the automaticity of higher mental processes. *Psychological Bulletin*, *126*(6), 925.

Barnes, C. S., Dunning, J. L., & Rehfeldt, R. A. (2011). An evaluation of strategies for training staff to implement the picture exchange communication system. *Research in Autism Spectrum Disorders*, *5*(4), 1574–1583.

Beckley, F., Best, W., Johnson, F., Edwards, S., Maxim, J., & Beeke, S. (2013). Conversation therapy for agrammatism: exploring the therapeutic process of engagement and learning by a person with aphasia. *International Journal of Language & Communication Disorders*, *48(2),* 220-39.

Beeke, S. (2003). 'I suppose'as a resource for the construction of turns at talk in agrammatic aphasia. *Clinical Linguistics & Phonetics*, *17*(4-5), 291–298.

Beeke, S., Beckley, F., Best, W., Johnson, F., Edwards, S., & Maxim, J. (2013). Extended turn construction and test question sequences in the conversations of three speakers with agrammatic aphasia. *Clinical Linguistics & Phonetics*, *27*(10-11), 784–804.

Beeke, S., Beckley, F., Johnson, F., Heilemann, C., Edwards, S., Maxim, J., & Best, W. (2014). Conversation focused aphasia therapy: Investigating the adoption of strategies by people with agrammatism. *Aphasiology*, http://dx.doi.org/10.1080/02687038.2014.881459.

Beeke, S., Johnson, F., Beckley, F., Heilemann, C., Edwards, S., Maxim, J., & Best, W. (2014,) Enabling better conversations between a man with aphasia and his conversation partner: incorporating writing into turn-taking. *Research on Language and Social Interaction 47,* http://www.tandfonline.com/doi/full/10.1080/08351813.2014.925667.

Beeke, S., Maxim, J., Best, W., & Cooper, F. (2011). Redesigning therapy for agrammatism: Initial findings from the ongoing evaluation of a conversation-based intervention study. *Journal of Neurolinguistics*, *24*(2), 222–236.

Beeke, S., Maxim, J., & Wilkinson, R. (2007). Using conversation analysis to assess and treat people with aphasia. *Seminars in Speech & Language*, *28*(2), 136.

Beeke S, Sirman N, Beckley F, Maxim J, Edwards S, Swinburn K and Best W. (2013). Better Conversations with Aphasia: an e-learning resource. Available at: https://extend.ucl.ac.uk/

Beeke, S., Wilkinson, R., & Maxim, J. (2001). Context as a resource for the construction of turns at talk in aphasia. *Clinical Linguistics & Phonetics*, *15*(1-2), 79–83.

Beeke, S., Wilkinson, R., & Maxim, J. (2007). Grammar without sentence structure: A conversation analytic investigation of agrammatism. *Aphasiology*, *21*(3-4), 256–282.

Beeke, S., Wilkinson, R., & Maxim, J. (2009). Prosody as a compensatory strategy in the conversations of people with agrammatism. *Clinical Linguistics & Phonetics*, *23*(2), 133–155.

Bennett-Levy, J., Butler, G., Fennell, M., Hackmann, A., Mueller, M., & Westbrook, D. (2005). *Oxford guide to behavioural experiments in cognitive therapy*. Oxford University Press.

Blom Johansson, M., Carlsson, M., & Sonnander, K. (2012). Communication difficulties and the use of communication strategies: From the perspective of individuals with aphasia. *International Journal of Language & Communication Disorders*, *47*(2), 144–155.

Booth, S., & Perkins, L. (1999). The use of conversation analysis to guide individualized advice to carers and evaluate change in aphasia: A case study. *Aphasiology*, *13*(4-5), 283–303.

Booth, S., & Swabey, D. (1999). Group training in communication skills for carers of adults with aphasia. *International Journal of Language & Communication Disorders*, *34*(3), 291–309.

Britten, N. (1995). Qualitative interviews in medical research. *BMJ: British Medical Journal*, *311*(6999), 251.

Byng, S. (1995). What is aphasia therapy? *Treatment of Aphasia: From Theory to Practice*, 3–17.

Byng, S., & Black, M. (1995). What makes a therapy? Some parameters of therapeutic intervention in aphasia. *International Journal of Language & Communication Disorders*, *30*(3), 303–316.

Campbell, M., Fitzpatrick, R., Haines, A., Kinmonth, A. L., Sandercock, P., Spiegelhalter, D., & Tyrer, P. (2000). Framework for design and evaluation of complex interventions to improve health. *BMJ: British Medical Journal 321*(7262), 694.

Campbell, N. C., Murray, E., Darbyshire, J., Emery, J., Farmer, A., Griffiths, F., Guthrie, B., Lester, H., Wilson, P. & Kinmonth, A. L. (2007). Designing and evaluating complex interventions to improve health care. *BMJ: British Medical Journal*, *334*(7591), 455–459.

Cane, J., O'Connor, D., & Michie, S. (2012). Validation of the theoretical domains framework for use in behaviour change and implementation research. *Implementation Science*, *7*(1), 37.

Cane, J., Richardson, M., Johnston, M., Ladha, R., & Michie, S. (2014). From lists of behaviour change techniques (BCTs) to structured hierarchies: Comparison of two methods of developing a hierarchy of BCTs. *British Journal of Health Psychology*. Retrieved from http://onlinelibrary.wiley.com/doi/10.1111/bjhp.12102/full

Caute, A., Pring, T., Cocks, N., Cruice, M., Best, W., & Marshall, J. (2013). Enhancing communication through gesture and naming therapy. *Journal of Speech, Language, and Hearing Research*, *56*(1), 337–351.

Chapey, R., Duchan, J., Elman, R., Garcia, J., Kagan, A., Lyon, J. G., & Simmons-Mackie, N. (2001). Life participation approach to aphasia: A statement of values for the future. *Language Intervention Strategies in Aphasia and Related Neurogenic Communication Disorders*, 235.

Cherney, L. R., Patterson, J. P., & Raymer, A. M. (2011). Intensity of aphasia therapy: evidence and efficacy. *Current Neurology and Neuroscience Reports*, *11*(6), 560–569.

Clausen, N., & Besson, P. (2003). Conversational use of writing in severe aphasia: A group treatment approach. *Aphasiology*, *17*(6), 625–644.

Cohen, Jacob. (1960). A coefficient of agreement for nominal scales. *Educational and Psychological Measurement*, 20:37–46.

Craig, P., Dieppe, P., Macintyre, S., Michie, S., Nazareth, I., & Petticrew, M. (2008). Developing and evaluating complex interventions: the new Medical Research Council guidance. *BMJ: British Medical Journal*, *337*.

Croteau, C., & Le Dorze, G. (2001). Spouses' perceptions of persons with aphasia. *Aphasiology*, *15*(9), 811–825.

Croteau, C., & Le Dorze, G. (2006). Overprotection, 'speaking for', and conversational participation: a study of couples with aphasia. *Aphasiology*, *20*(2-4), 327–336.

Croteau, C., Vychytil, A.-M., Larfeuil, C., & Le Dorze, G. (2004). 'Speaking for' behaviours in spouses of people with aphasia: A descriptive study of six couples in an interview situation. *Aphasiology*, *18*(4), 291–312.

Cunningham, R., & Ward, C. (2003). Evaluation of a training programme to facilitate conversation between people with aphasia and their partners. *Aphasiology*, *17*(8), 687–707.

Daumüller, M., & Goldenberg, G. (2010). Therapy to improve gestural expression in aphasia: a controlled clinical trial. *Clinical Rehabilitation*, *24*(1), 55–65.

Davis, G. A. (2005). PACE revisited. *Aphasiology*, *19*(1), 21–38.

Dombrowski, S. U., Sniehotta, F. F., Avenell, A., Johnston, M., MacLennan, G., & Araújo-Soares, V. (2012). Identifying active ingredients in complex behavioural interventions for obese adults with obesity-related co-morbidities or additional risk factors for co-morbidities: a systematic review. *Health Psychology Review*, *6*(1), 7–32.

Fishbein, M., Triandis, H. C., Kanfer, F. H., Becker, M., Middlestadt, S. E., & Eichler, A (2001). Factors influencing behavior and behavior change. *In* A. Baum, T. Revenson & J. Singer (Eds.) *Handbook of Health Psychology (pp.* 3-17) Mahwah, NJ: Lawrence Erlbaum

Fitzpatrick, R., & Boulton, M. (1994). Qualitative methods for assessing health care. *Quality in Health Care*, *3*(2), 107.

Fox, S., Armstrong, E., & Boles, L. (2009). Conversational treatment in mild aphasia: a case study. *Aphasiology*, *23*(7-8), 951–964.

Frankel, T., Penn, C., & Ormond-Brown, D. (2007). Executive dysfunction as an explanatory basis for conversation symptoms of aphasia: a pilot study... 36th Clinical Aphasiology Conference, Ghent University, Ghent, Belgium, May 29th to June 2nd, 2006. *Aphasiology*, *21*(6-8), 814–828.

French, S. D., Green, S. E., O'Connor, D. A., McKenzie, J. E., Francis, J. J., Michie, S., Grimshaw, J. M. (2012). Developing theory-informed behaviour change interventions to implement evidence into practice: a systematic approach using the Theoretical Domains Framework. *Implementation Science*, *7*(1), 38.

Garrett, K., & Beukelman, D. R. (1995). Changes in the interaction patterns of an individual with severe aphasia given three types of partner support. *Clinical Aphasiology*, *23*, 237–251.

Gillespie, A., Murphy, J., & Place, M. (2010). Divergences of perspective between people with aphasia and their family caregivers. *Aphasiology*, *24*(12), 1559–1575.

Goffman, E. (1959) The presentation of self in everyday life. New York: Doubleday Anchor

Goffman, E. (1964) Stigma: Notes on the management of spoiled identity. New York: Simon and Schuster Inc.

Gollwitzer, P. M. (1999). Implementation intentions: strong effects of simple plans. *American Psychologist*, *54*(7), 493.

Gollwitzer, P. M., & Sheeran, P. (2006). Implementation intentions and goal achievement: A meta-analysis of effects and processes. *Advances in Experimental Social Psychology*, *38*, 69–119.

Goodwin, C. (1995). Co-constructing meaning in conversations with an aphasic man. *Research on Language and Social Interaction*, *28*(3), 233–260.

Gulbrandsen, P., Jensen, B. F., Finset, A., & Blanch-Hartigan, D. (2013). Long-term effect of communication training on the relationship between physicians' self efficacy and performance. *Patient Education and Counseling*.

Hammersley, M. (2010). Can we re-use qualitative data via secondary analysis? Notes on some terminological and substantive issues. *Sociological Research Online*, *15*(1), 5.

Hanbury, A., Wallace, L. M., & Clark, M. (2011). Multiple outcome measures and mixed methods for evaluating the effectiveness of theory-based behaviour-change interventions: A case study targeting health professionals' adoption of a national suicide prevention guideline. *Psychology, Health & Medicine*, *16*(3), 291–303.

Harachi, T. W., Abbott, R. D., Catalano, R. F., Haggerty, K. P., & Fleming, C. B. (1999). Opening the black box: Using process evaluation measures to assess implementation and theory building. *American Journal of Community Psychology*, *27*(5), 711–731.

Hardeman, W., Sutton, S., Griffin, S., Johnston, M., White, A., Wareham, N. J., & Kinmonth, A. L. (2005). A causal modelling approach to the development of theory-based behaviour change programmes for trial evaluation. *Health Education Research*, *20*(6), 676.

Hartmann, D. P. (1977). Considerations in the choice of interobserver reliability estimates. *Journal of Applied Behavior Analysis*, *10*(1), 103–116.

Hayhow, R. (2011). Does it work? Why does it work? Reconciling difficult questions. *International Journal of Language & Communication Disorders*, *46*(2), 155–168.

Heilemann, C., Best, W., Johnson, F., Beckley, F., Edwards, S., Maxim, J. & Beeke, S. (2014) Investigating treatment fidelity in a conversation-based aphasia therapy. *Aphasia und verwandte Gebiete* 2 http://www.aphasie.org/pdfs--de/3-fachpersonen/3.1-fachzeitschriften/fachzeitschrift-no2-2014/art.-heilemann-et-al..pdf

Helm-Estabrooks, N., Fitzpatrick, P. M., & Barresi, B. (1982). Visual action therapy for global aphasia. *Journal of Speech and Hearing Disorders*, *47*(4), 385.

Hengst, J.A., Duff, M.C., Dettmer, A. (2010) Rethinking repetition in therapy: Repeated engagement as the social ground of learning. *Aphasiology 24*(6-8), 887-901.

Holland, A. L. (1991). Pragmatic aspects of intervention in aphasia. *Journal of Neurolinguistics*, *6*(2), 197–211.

Hopper, T. & Holland, A. (2005) Aphasia and learning in adults: Key concepts and considerations. *Topics in Geriatric Rehabilitation, 21*(4), 315-322.

Hopper, T., Holland, A., & Rewega, M. (2002). Conversational coaching: Treatment outcomes and future directions. *Aphasiology*, *16*(7), 745–761.

Horton, S. (2006). A framework for description and analysis of therapy for language impairment in aphasia. *Aphasiology*, *20*(6), 528–564.

Horton, S. (2008). Learning-in-interaction: Resourceful work by people with aphasia and therapists in the course of language impairment therapy. *Aphasiology*, *22*(9), 985–1014.

Horton, S., & Byng, S. (2000). Examining interaction in language therapy. *International Journal of Language & Communication Disorders*, *35*(3), 355–375.

Horton, S., Howell, A., Humby, K., & Ross, A. (2010). Engagement and learning: an exploratory study of situated practice in multi-disciplinary stroke rehabilitation. *Disability & Rehabilitation*, *33*(3), 270-279.

House of Lords Science and Technology Select Committee (2011) *Report on Behaviour Change* Retrieved from: http://www.publications.parliament.uk/pa/ld201012/ldselect/ldsctech/179/179.pdf *[Accessed 5 November 2013]*

Hripcsak, G., & Heitjan, D. F. (2002). Measuring agreement in medical informatics reliability studies. *Journal of Biomedical Informatics*, *35*(2), 99–110.

Hutchby, I., & Wooffitt, R. (2008). *Conversation analysis*. Polity Press.

Irwin, S., & Winterton, M. (2011). Debates in qualitative secondary analysis: Critical reflections. *Timescapes Working*. Retrieved from http://www.timescapes.leeds.ac.uk/assets/files/WP4-March-2011.pdf *[Accessed 27 February 2014]*

Islam, R., Tinmouth, A. T., Francis, J. J., Brehaut, J. C., Born, J., Stockton, C., Stanworth, S., Eccles, M., Cuthbertson, B., Hyde, C. & Grimshaw, J. (2012). A cross-country comparison of intensive care physicians' beliefs about their transfusion behaviour: a qualitative study using the theoretical domains framework. *Implementation Science*, *7*, 93.

Johnston, M. *(*1995*).* Health related behaviour change*. In* I. Sharpe *(Ed.), Cardiovascular prevention in primary care: The way forward. National Forum for Coronary Disease Prevention (pp. 37–47). London: King's Fund.*

Jones, F., Mandy, A., & Partridge, C. (2009). Changing self efficacy in individuals following a first time stroke: preliminary study of a novel self-management intervention. *Clinical Rehabilitation*, *23*(6), 522–533.

Jones, F., Partridge, C., & Reid, F. (2008). The Stroke Self efficacy Questionnaire: measuring individual confidence in functional performance after stroke. *Journal of Clinical Nursing*, *17*(7b), 244–252.

Jones, J., & Hunter, D. (1995). Qualitative research: consensus methods for medical and health services research. *Bmj*, *311*(7001), 376–380.

Jones, F., & Riazi, A. (2011). Self efficacy and self-management after stroke: a systematic review. *Disability and Rehabilitation*, *33*(10), 797–810.

Jordan, L., & Kaiser, W. (1996). *Aphasia: A social approach*. London: Chapman & Hall

Kagan, A. (1998). Supported conversation for adults with aphasia: Methods and resources for training conversation partners. *Aphasiology*, *12*(9), 816–830.

Kagan, A., Black, S. E., Duchan, F. J., Simmons-Mackie, N., & Square, P. (2001). Training volunteers as conversation partners using 'Supported Conversation for Adults with Aphasia' (SCA): a controlled trial. *Journal of Speech, Language, and Hearing Research: JSLHR*, *44*(3), 624–638.

Kagan, A., & Gailey, G. F. (1993). Functional is not enough: Training conversation partners for aphasic adults. *In* A. Holland & M. Forbes *Aphasia Treatment: World Perspectives*, 199–225. London: Chapman & Hall

Kagan, A., Simmons-Mackie, N., Gibson, J. B., Conklin, J., & Elman, R. J. (2010). Closing the evidence, research, and practice loop: Examples of knowledge transfer and exchange from the field of aphasia. *Aphasiology*, *24*(4), 535.

Kail, A., Lumley, T. (2012). Theory of change. *NPC*. Retrieved from https://www.thinknpc.org/publications/theory-of-change/ *[Accessed 5 November 2013]*

Kanfer, F. H., & Karoly, P. (1972). Self-control: A behavioristic excursion into the lion's den. *Behavior Therapy*, *3*(3), 398–416.

Kennedy, T., Regehr, G., Rosenfield, J., Roberts, S. W., & Lingard, L. (2004). Exploring the gap between knowledge and behavior: a qualitative study of clinician action following an educational intervention. *Academic Medicine*, *79*(5), 386–393.

Kersten, P., Ellis-Hill, C., McPherson, K. M., & Harrington, R. (2010). Beyond the RCT – understanding the relationship between interventions, individuals and outcome – the example of neurological rehabilitation. *Disability & Rehabilitation*, *32*(12), 1028–1034.

Kok, G., Schaalma, H., Ruiter, R. A., Van Empelen, P., & Brug, J. (2004). Intervention mapping: protocol for applying health psychology theory to prevention programmes. *Journal of Health Psychology*, *9*(1), 85–98.

Kolb, A. Y., & Kolb, D. A. (2005). Learning styles and learning spaces: Enhancing experiential learning in higher education. *Academy of Management Learning & Education*, *4*(2), 193–212.

Kolb, A. Y., & Kolb, D. A. (2008). The learning way: Meta-cognitive aspects of experiential learning. *Simulation & Gaming*.

Kolb, D. A. (1984). *Experiential learning: Experience as the source of learning and development* (Vol. 1). Englewood Cliffs, NJ: Prentice-Hall.

Kolb, D. A., Boyatzis, R. E., & Mainemelis, C. (2001). Experiential learning theory: Previous research and new directions. *Perspectives on Thinking, Learning, and Cognitive Styles*, *1*, 227–247.

Kolehmainen, N., & Francis, J. J. (2012). Specifying content and mechanisms of change in interventions to change professionals' practice: an illustration from the Good Goals study in occupational therapy. *Implementation Science*, *7*(1), 100.

Kraat, A. W. (1990). Augmentative and alternative communication: Does it have a future in aphasia rehabilitation? *Aphasiology*, *4*(4), 321–338.

Laakso, M., & Klippi, A. (1999). A closer look at the 'hint and guess' sequences in aphasic conversation. *Aphasiology*, *13*(4-5), 345–363.

Landis, J. R., & Koch, G. G. (1977). An application of hierarchical kappa-type statistics in the assessment of majority agreement among multiple observers. *Biometrics*, 363–374.

Lasker, J., & Bedrosian, J. (2001). Promoting acceptance of augmentative and alternative communication by adults with acquired communication disorders. *Augmentative and Alternative Communication*, *17*(3), 141–153.

Lasker, J. P., & Garrett, K. L. (2006). Using the Multimodal Communication Screening Test for Persons with Aphasia (MCST-A) to guide the selection of alternative communication strategies for people with aphasia. *Aphasiology*, *20*(02-04), 217–232.

Lawson, R., & Fawcus, M. (1999). Increasing effective communication using a total communication approach. *In* S. Byng, K. Swinburn, C. Pound *(Eds.) The Aphasia Therapy File*, *1*. Hove: Psychology Press

Lesser, R., & Algar, L. (1995). Towards combining the cognitive neuropsychological and the pragmatic in aphasia therapy. *Neuropsychological Rehabilitation*, *5*(1-2), 67–92.

Lipsey, M. W. (1993). Theory as method: Small theories of treatments. *New Directions for Program Evaluation*, *1993*(57), 5–38.

Llewelyn, S., & Hardy, G. (2001). Process research in understanding and applying psychological therapies. *British Journal of Clinical Psychology*, *40*(1), 1–21.

Lock, S. (2005). The psychosocial experiences of partners of people with aphasia: the evolution of an idiographic, qualitative methodology. Unpublished doctoral dissertation, University College London

Lock, S., Wilkinson, R., Bryan, K., Bruce, C., Edmundson, A., Maxim, J., & Moir, D. (2001). SPPARC: Supporting Partners of People with Aphasia in Relationships and Conversation. A Resource Pack. Bicester: Speechmark

Locke, E. A., & Latham, G. P. (2002). Building a practically useful theory of goal setting and task motivation: A 35-year odyssey. *American Psychologist*, *57*(9), 705.

Lorencatto, F., West, R., Seymour, N., & Michie, S. (2013). Developing a method for specifying the components of behavior change interventions in practice: The example of smoking cessation. *Journal of Consulting and Clinical Psychology*, *81*(3), 528.

Lorencatto, F., West, R., Christopherson, C., & Michie, S. (2013). Assessing fidelity of delivery of smoking cessation behavioural support in practice. *Implementation Science*, *8*(1), 40.

Luck, A., & Rose, M. (2007). Interviewing people with aphasia: insights into method adjustments from a pilot study. *Aphasiology*, *21*(2), 208–224.

Lustig, A. P., & Tompkins, C. A. (2002). A written communication strategy for a speaker with aphasia and apraxia of speech: Treatment outcomes and social validity. *Aphasiology*, *16*(4-6), 507–521.

Lyon, J. G. (1995). Drawing: Its value as a communication aid for adults with aphasia. *Aphasiology*, *9*(1), 33–50.

Lyon, J. G., Cariski, D., Keisler, L., Rosenbek, J., Levine, R., Kumpula, J., Rhyff, C., Coyne, S. & Blanc, M. (1997). Communication partners: Enhancing participation in life and communication for adults with aphasia in natural settings. *Aphasiology*, *11*(7), 693–708.

MacKinnon, D. P., Fairchild, A. J., & Fritz, M. S. (2007). Mediation analysis. *Annual Review of Psychology*, *58*, 593.

Marshall, J. (1995). The mapping hypothesis and aphasia therapy. *Aphasiology*, *9*(6), 517–539.

Marshall, J., Best, W., Cocks, N., Cruice, M., Pring, T., Bulcock, G., … others. (2012). Gesture and naming therapy for people with severe aphasia: A group study. *Journal of Speech, Language, and Hearing Research*, *55*(3), 726–738.

Mays, N., & Pope, C. (1995). Rigour and qualitative research. *BMJ: British Medical Journal*, *311*(6997), 109.

Mays, N., & Pope, C. (2000). Qualitative research in health care: Assessing quality in qualitative research. *BMJ: British Medical Journal*, *320*(7226), 50.

McEachan, R. R. C., Lawton, R. J., & Conner, M. (2010). Classifying health-related behaviours: Exploring similarities and differences amongst behaviours. *British Journal of Health Psychology*, *15*(2), 347–366.

McVicker, S., Parr, S., Pound, C., & Duchan, J. (2009). The Communication Partner Scheme: a project to develop long-term, low-cost access to conversation for people living with aphasia. *Aphasiology*, *23*(1), 52–71.

Medical Research Council (2008) Developing and evaluating complex interventions: New guidance. Retrieved from http://www.mrc.ac.uk/documents/pdf/developing-and-evaluating-complex-interventions/ *[Accessed 25 July 2014]*

Metcalfe, C., Lewin, R., Wisher, S., Perry, S., Bannigan, K., & Moffett, J. K. (2001). Barriers to Implementing the Evidence Base in Four NHS Therapies: Dietitians, occupational therapists, physiotherapists, speech and language therapists. *Physiotherapy*, *87*(8), 433–441.

Michie, S., Abraham, C., Eccles, M. P., Francis, J. J., Hardeman, W., & Johnston, M. (2011). Strengthening evaluation and implementation by specifying components of behaviour change interventions: a study protocol. *Implementation Science*, *6*(1), 10.

Michie, S., Ashford, S., Sniehotta, F. F., Dombrowski, S. U., Bishop, A., & French, D. P. (2011). A refined taxonomy of behaviour change techniques to help people change their physical activity and healthy eating behaviours: the CALO-RE taxonomy. *Psychology & Health*, *26*(11), 1479–1498.

Michie, S., Atkins, L., & West, R. (2014). The Behaviour Change Wheel: A Guide to Designing Interventions. UK: Silverback Publishing

Michie, S., Fixsen, D., Grimshaw, J. M., Eccles, & M. P. (2009). Specifying and reporting complex behaviour change interventions: the need for a scientific method. *Implementation Science*, *4*(1), 40.

Michie, S., Hyder, N., Walia, A., & West, R. (2011). Development of a taxonomy of behaviour change techniques used in individual behavioural support for smoking cessation. *Addictive Behaviors*, *36*(4), 315–319.

Michie, S., & Johnston, M. (2012). Theories and techniques of behaviour change: Developing a cumulative science of behaviour change. *Health Psychology Review*, *6*(1), 1–6.

Michie, S., Johnston, M., Abraham, C., Lawton, R., Parker, D., & Walker, A. (2005). Making psychological theory useful for implementing evidence based practice: a consensus approach. *Quality and Safety in Health Care*, *14*(1), 26.

Michie, S., Johnston, M., Francis, J., Hardeman, W., & Eccles, M. (2008). From theory to intervention: mapping theoretically derived behavioural determinants to behaviour change techniques. *Applied Psychology: An International Review*, *57*(4), 660–680.

Michie, S., & Prestwich, A. (2010). Are interventions theory-based? Development of a theory coding scheme. *Health Psychology*, *29*(1), 1.

Michie, S., Richardson, M., Johnston, M., Abraham, C., Francis, J., Hardeman, W., Eccles, M., Cane, J., Wood, C. E. (2013). The behavior change technique taxonomy (v1) of 93 hierarchically clustered techniques: Building an international consensus for the reporting of behavior change interventions. *Annals of Behavioral Medicine*, *46*(1), 81–95.

Michie, S., van Stralen, M. M., & West, R. (2011). The behaviour change wheel: A new method for characterising and designing behaviour change interventions. *Implementation Science*, *6*(1), 42.

Michie, S., & West, R. (2013). Behaviour change theory and evidence: a presentation to Government. *Health Psychology Review*, *7*(1), 1–22.

Moore, N. (2006). The contexts of context: Broadening perspectives in the (re) use of qualitative data. *Methodological Innovations Online*, *1*(2), 21–32.

Morgan, A. L., & Helm-Estabrooks, N. (1987). Back to the drawing board: a treatment program for nonverbal aphasic patients.

NICE. (2007). Behaviour change: the principles for effective interventions. *NICE*. Guidance/PUBLIC HEALTH. Retrieved from http://www.nice.org.uk/ *[Accessed 5 November 2013]*

Oakley, A., Strange, V., Stephenson, J., Forrest, S., & Monteiro, H. (2004). Evaluating Processes. *Evaluation*, *10*(4), 440.

Oelschlaeger, M. L. (1999). Participation of a conversation partner in the word searches of a person with aphasia. *American Journal of Speech-Language Pathology*, *8*(1), 62.

Oelschlaeger, M., & Damico, J. S. (1998a). Spontaneous verbal repetition: A social strategy in aphasic conversation. *Aphasiology*, *12*(11), 971–988.

Oelschlaeger, M. L., & Damico, J. S. (1998b). Joint productions as a conversational strategy in aphasia. *Clinical Linguistics & Phonetics*, *12*(6), 459–480.

Oelschlaeger, M. L., & Damico, J. S. (2000). Partnership in conversation: a study of word search strategies. *Journal of Communication Disorders*, *33*(3), 205–225.

Parr, S., Byng, S., Gilpin, S., & Ireland, C. (1997). *Talking About Aphasia.* Buckingham: Open University Press.

Penn, C., Frankel, T., Watermeyer, J., & Russell, N. (2010). Executive function and conversational strategies in bilingual aphasia. *Aphasiology*, *24*(2), 288–308.

Penn, L., Moffatt, S. M., & White, M. (2008). Participants' perspective on maintaining behaviour change: a qualitative study within the European Diabetes Prevention Study. *BMC Public Health*, *8*(1), 235.

Pope, C., van Royen, P., & Baker, R. (2002). Qualitative methods in research on healthcare quality. *Quality and Safety in Health Care*, *11*(2), 148–152.

Pope, C., Ziebland, S., & Mays, N. (2000). Analysing qualitative data. *BMJ*, *320*(7227), 114–116.

Pound, C., Parr, S., Lindsay, J., & Woolf, C. (2000a). Beyond aphasia: Therapies for living with communication disability. Bicester: Speechmark.

Purdy, M., & Koch, A. (2006). Prediction of strategy usage by adults with aphasia. *Aphasiology*, *20*(2-4), 337–348.

Quinn, J. M., Pascoe, A., Wood, W., & Neal, D. T. (2010). Can't control yourself? Monitor those bad habits. *Personality and Social Psychology Bulletin*, *36*(4), 499–511.

Ramsberger, G. (2005). Achieving conversational success in aphasia by focusing on non-linguistic cognitive skills: A potentially promising new approach. *Aphasiology*, *19*(10-11), 1066–1073.

Ramsberger, G., & Rende, B. (2002). Measuring transactional success in the conversation of people with aphasia. *Aphasiology*, *16*(3), 337–353.

Rautakoski, P. (2011). Training total communication. *Aphasiology*, *25*(3), 344–365.

Raymer, A. M., Beeson, P., Holland, A., Kendall, D., Maher, L. M., Martin, N., Gonzalez Rothi, L. J. (2008). Translational research in aphasia: from neuroscience to neurorehabilitation. *Journal of Speech, Language, and Hearing Research: JSLHR*, *51*(1), S259–275.

Redfern, J., McKevitt, C., & Wolfe, C. D. (2006). Development of Complex Interventions in Stroke Care A Systematic Review. *Stroke*, *37*(9), 2410–2419.

Reinders, M. E., Ryan, B. L., Blankenstein, A. H., van der Horst, H. E., Stewart, M. A., & van Marwijk, H. W. (2011). The effect of patient feedback on physicians' consultation skills: a systematic review. *Academic Medicine*, *86*(11), 1426–1436.

Ritchie, J., & Spencer, L. (1994). *Qualitative data analysis for applied policy research. In* A. Bryman, R.G. Burgess *(Eds.) Analyzing qualitative data,* (pp 173-194). London: Routledge

Robertson, I. H., & Murre, J. M. (1999). Rehabilitation of brain damage: Brain plasticity and principles of guided recovery. *Psychological Bulletin*, *125*(5), 544.

Robey, R. R., & Schultz, M. C. (1998). A model for conducting clinical-outcome research: An adaptation of the standard protocol for use in aphasiology. *Aphasiology*, *12*(9), 787–810.

Robinson, L., Francis, J., James, P., Tindle, N., Greenwell, K., & Rodgers, H. (2005). Caring for carers of people with stroke: developing a complex intervention following the Medical Research Council framework. *Clinical Rehabilitation*, *19*(5), 560–571.

Robson, J., Marshall, J., Chiat, S., & Pring, T. (2001). Enhancing communication in jargon aphasia: a small group study of writing therapy. *International Journal of Language & Communication Disorders*, *36*(4), 471–488.

Sacchett, C. (2002). Drawing in aphasia: moving towards the interactive. *International Journal of Human-Computer Studies*, *57*(4), 263–277.

Sacchett, C., Byng, S., Marshall, J., & Pound, C. (1999). Drawing together: evaluation of a therapy programme for severe aphasia. *International Journal of Language & Communication Disorders*, *34*(3), 265–289.

Sacchett, C., & Lindsay, J. (2007). Revealing competence and rethinking identity in severe aphasia using drawing and a communication book. *In* S. Byng, J. Duchan & C. Pound (Eds.) *The Aphasia Therapy File Volume 2* (pp. 163-180) Hove: Psychology Press

Saldert, C., Backman, E., & Hartelius, L. (2013). Conversation partner training with spouses of persons with aphasia: A pilot study using a protocol to trace relevant characteristics. *Aphasiology*, *27*(3), 271–292.

Schiffrin, D. (1988) Conversation analysis. *In* F.J. Newmeyer (Ed.) *Linguistics: The Cambridge Survey*. Cambridge: Cambridge University Press.

Scobbie, L., Dixon, D., & Wyke, S. (2011). Goal setting and action planning in the rehabilitation setting: development of a theoretically informed practice framework. *Clinical Rehabilitation*, *25*(5), 468–482.

Sheeran, P. (2002). Intention—behavior relations: A conceptual and empirical review. *European Review of Social Psychology*, *12*(1), 1–36.

Sidani, S., & Sechrest, L. (1999). Putting program theory into operation. *American Journal of Evaluation*, *20*(2), 227–238.

Siegert, R. J., & Taylor, W. J. (2004). Theoretical aspects of goal-setting and motivation in rehabilitation. *Disability & Rehabilitation*, *26*(1), 1–8.

Simmons-Mackie, N., Damico, J. S., & Damico, H. L. (1999). A qualitative study of feedback in aphasia treatment. *American Journal of Speech-Language Pathology*, *8*(3), 218–230.

Simmons-Mackie, N., & Kagan, A. (1999). Communication strategies used by 'good' versus 'poor' speaking partners of individuals with aphasia. *Aphasiology*, *13*(9-11), 807–820.

Simmons-Mackie, N., Kearns, K., & Potechin, G. (2005). Treatment of aphasia through family member training. *Aphasiology*, *19*(6), 583–593.

Simmons-Mackie, N. N., & Damico, J. S. (1997). Reformulating the definition of compensatory strategies in aphasia. *Aphasiology*, *11*(8), 761–781.

Simmons-Mackie, N., Raymer, A., Armstrong, E., Holland, A., & Cherney, L. R. (2010). Communication Partner Training in Aphasia: A Systematic Review. *Archives of Physical Medicine and Rehabilitation*, *91*(12), 1814–1837.

Simmons-Mackie, N., Savage, M., Worrall, L. (2014 in press) Conversation therapy for aphasia: A qualitative review of the literature. *International Journal of Language & Communications Disorders*

Skinner, B. F. (1963). Operant behavior. *American Psychologist*, *18*(8), 503.

Sorin-Peters, R. (2003). Viewing couples living with aphasia as adult learners: Implications for promoting quality of life. *Aphasiology*, *17*(4), 405–416.

Sorin-Peters, R. (2004). The evaluation of a learner-centred training programme for spouses of adults with chronic aphasia using qualitative case study methodology. *Aphasiology*, *18*(10), 951–975.

Srivastava, A., & Thomson, S. B. (2009). Framework analysis: a qualitative methodology for applied policy research. *JOAAG*, *4*(2), 72–9.

Taplin, D.H. & Clark, H. (2012) Theory of Change Basics: A primer on theory of change. Retrieved from http://www.theoryofchange.org/library/publications *[Accessed 5 November 2013]*

Tinati, T., Lawrence, W., Ntani, G., Black, C., Cradock, S., Jarman, M., Pease, A., Begum, R., Inskip, H., Cooper, C., Baird, J., & Barker, M. (2012). Implementation of new Healthy Conversation Skills to support lifestyle changes–what helps and what hinders? Experiences of Sure Start Children's Centre staff. *Health & Social Care in the Community*, *20*(4), 430–437.

Triandis, H. C. (1989). The self and social behavior in differing cultural contexts. *Psychological Review*, *96*(3), 506–520.

Turner, S., & Whitworth, A. (2006a). Conversational partner training programmes in aphasia: a review of key themes and participants' roles. *Aphasiology*, *20*(6), 483–510.

Turner, S., & Whitworth, A. (2006b). Clinician's perceptions of candidacy for conversation partner training in aphasia: how do we select candidate for therapy and do we get it right? *Aphasiology*, *20*(7), 616–643.

Wade, D. T. (2005). Describing rehabilitation interventions. *Clinical Rehabilitation*, *19*(8), 811–818.

Wade, D. T. (2009). Goal setting in rehabilitation: an overview of what, why and how. *Clinical Rehabilitation*, *23*(4), 291–295.

Wade, J., Mortley, J., & Enderby, P. (2003). Talk about IT: Views of people with aphasia and their partners on receiving remotely monitored computer-based word finding therapy. *Aphasiology*, *17*(11), 1031–1056.

Ward-Lonergan, J. M., & Nicholas, M. (1995). Drawing to communicate: A case report of an adult with global aphasia. *International Journal of Language & Communication Disorders*, *30*(4), 475–491.

Webb, T. L., & Sheeran, P. (2006). Does changing behavioral intentions engender behavior change? A meta-analysis of the experimental evidence. *Psychological Bulletin*, *132*(2), 249.

Weiner, B. (1986). *An attributional theory of motivation and emotion*. New York: Springer-Verlag

Weiss, C. H. (1995). Nothing as practical as good theory: Exploring theory-based evaluation for comprehensive community initiatives for children and families. *In* J.Connell, A.Kubisch, L. B.Schorr, & C. H.Weiss *(Eds.), New approaches to evaluating community initiatives. (pp. 65–92.)* New York*:* Aspen Institute.

Whitworth, A., Perkins, L., & Lesser, R. (1997). *Conversation analysis profile for people with aphasia*. London: Whurr.

Whitworth, A., Webster, J., & Howard, D. (2005). *A cognitive neuropsychological approach to assessment and intervention in aphasia: A clinician's guide*. Hove: Psychology Press

Whyte, J., & Hart, T. (2003). It's more than a black box; it's a Russian doll: defining rehabilitation treatments. *American Journal of Physical Medicine & Rehabilitation*, *82*(8), 639–652.

Wilkinson, R. (1999). Conversation Analysis and Aphasia: Introduction. *Aphasiology*, *13*(4-5), 251–258.

Wilkinson, R. (1999). Sequentiality as a problem and resource for intersubjectivity in aphasic conversation: analysis and implications for therapy. *Aphasiology*, *13*(4-5), 327–343.

Wilkinson, R. (2010). Interaction-focused intervention: A conversation analytic approach to aphasia therapy. *Journal of Interactional Research in Communication Disorders*, *1*(1), 45–68.

Wilkinson, R., Beeke, S., & Maxim, J. (2010). Formulating actions and events with limited linguistic resources: Enactment and iconicity in agrammatic aphasic talk. *Research on Language and Social Interaction*, *43*(1), 57–84.

Wilkinson, R., Bryan, K., Lock, S., Bayley, K., Maxim, J., Bruce, C., Moir, D. (1998). Therapy using conversation analysis: helping couples adapt to aphasia in conversation. *International Journal of Language & Communication Disorders*, *33*(S1), 144–149.

Wilkinson, R., Bryan, K., Lock, S., & Sage, K. (2010). Implementing and evaluating aphasia therapy targeted at couples' conversations: A single case study. *Aphasiology*, *24*(6), 869–886.

Wilkinson, R., Lock, S., Bryan, K., & Sage, K. (2011). Interaction-focused intervention for acquired language disorders: Facilitating mutual adaptation in couples where one partner has aphasia. *International Journal of Speech-Language Pathology*, *13*(1), 74–87.

Wilkinson, R., & Wielaert, S. (2012). Rehabilitation Targeted at Everyday Communication: Can We Change the Talk of People With Aphasia and Their Significant Others Within Conversation? *Archives of Physical Medicine and Rehabilitation*, *93*(1), S70–S76.

Wood, C.E., Richardson, M., Johnston, M., Abraham, C., Francis, J.J., Hardeman, W. & Michie, S. Applying the Behaviour Change Technique Taxonomy v1: A study of coder training. *Manuscript under review.*

World Health Organization, W. H. (2001). International classification of functioning disability and health (ICF). Retrieved from http://www.who.int/classifications/icf/en/ *[Accessed 23 July 2014]*

Yang, N.-D. (1999). The relationship between EFL learners' beliefs and learning strategy use. *System*, *27*(4), 515–535.

Zipoli Jr, R. P., & Kennedy, M. (2005). Evidence-based practice among speech-language pathologists: Attitudes, utilization, and barriers. *American Journal of Speech-Language Pathology*, *14*(3), 208.

Zraick, R. I., & Boone, D. R. (1991). Spouse attitudes toward the person with aphasia. *Journal of Speech, Language and Hearing Research*, *34*(1), 123.

Conversational Behaviour Targeted by BCA

Person with Aphasia	
Barriers	
Blank face during word finding	
Giving up	
'Bluffing' understanding	
Producing mime without sufficient context	
Facilitators	
Writing	Drawing
Gesture	Mime
Keyword/ Keyword + comment	Saying 'um' during pauses
Hand gesture to hold turn	'Thinking face' during pauses
Topic alerter – 'oh'/raising finger	Saying 'Wait' to hold topic
Topic fronting – saying keyword first	Using objects/props

Conversation Partner
Barriers
Asking too many questions
Asking test questions (i.e. where the answer is already known)
Overlapping/ Interrupting PWA mid turn
Correcting mistakes
Initiating correct production sequences (i.e. where PWA practices saying word)
Leading conversation/Taking control of topic
Telling PWA 'I don't understand what you're saying'
Fast rate of speech
Facilitators
Passing turns
Waiting/Leaving space
Checking what's happening during long pauses
Letting conversation continue after PWA error
Carrying on when you understand PWA
Paraphrasing
Commenting
Giving own opinion
Prompting PWA strategy use

Pilot Better Conversations with Aphasia Session Plans

Final versions of BCA session plans (i.e. those cleared for use by SLTs) are available in Topic 3 of the e-learning resource (https://extend.ucl.ac.uk). This Appendix contains the pilot versions i.e. those used to guide the delivery of BCA to participants in the original therapy study; these are the versions referred to during the thesis. See Section 2.2.2 (p28) for more information.

The pilot session plans refer to handouts used with participants – a sample of which are provided in Appendix 3. Where a pilot BCA handout is derived and adapted from an original handout in the SPPARC resource (Lock et al 2001), the code of the original handout is referenced in the format "C(number)". Numeric codes e.g. "Handout 1.2" refer to original BCA material. For reference, this Appendix reproduces the resource document that outlines SPPARC handouts referred to in the BCA resource.

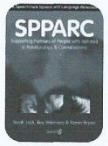
Contents of Appendix 2

Session	Title	Page No.
N/A	Outline of SPPARC Handouts referred to in the BCA Resource	310
Session 1	Introduction to conversation and agrammatism	306
Session 2	Turns, sequences and actions 1: Introduction	307
Session 3	Trouble and repair	308
Session 4	Turns, sequences and actions 2: Strategies for the person with aphasia	309
Session 5	Turns, sequences and actions 3: Strategies for the partner	310
Session 6	Topic and overall conversation	311
Session 7	Practising conversation: putting your strategies to use	312
Session 8	Reviewing and moving forward	312

Better Conversations with Aphasia

HANDOUTS FROM: SUPPORTING PARTNERS OF PEOPLE WITH APHASIA IN RELATIONSHIPS AND CONVERSATION (SPPARC) (LOCK, WILKINSON & BRYAN 2001)

OUTLINE OF SPPARC HANDOUTS REFERRED TO IN THE BCA RESOURCE



SPPARC HANDOUT	SYNOPSIS
C4 Why is Conversation Important?	Highlights the connection between conversation and friendships, relationships and the life roles people have.
C5 What Do We use Conversation For?	Lists potential purposes of conversation (e.g. *What may be; What we'd like to do*) with some examples.
C6 What Do *You* Talk About?	Lists 20 topics of conversation talked about in 1.5 hours by Jack, who has mild aphasia, and Judith. Encourages a couple to consider topics they talk about.
C7 So *What Is* Conversation?	Provides a definition of 'conversation' (sequence of turns, collaboration) and gives an overview of the roles each person can have: message sender or receiver.
C8 'Yes', 'No' & 'And': A Case of Hidden Ability!	Shows that these three words are sufficient for a person with aphasia to take part in a conversation, if a conversation partner knows how to help.
C9 Conversation and Aphasia	Highlights that having conversations is difficult with aphasia, and may lead to social isolation if friends find it embarrassing that they can't understand.
C10 Keeping Conversation Going: A Joint Effort	Highlights how keeping conversation going requires teamwork. Shows how a listener gives clues to a talker to keep going (e.g., uh huh, eye contact, nodding).
C11a/b Problems with Conversation	Gives an example of a 'good' conversation where the turns between sender and receiver are orderly. Then of a problem with turn taking caused by aphasia. Introduces the idea that dealing with a problem is *repair*.
C12 What Happens when Things Go Wrong in Conversation?	Shows three steps (of repair) that usually occur when there is a problem: 1) a problem happens, 2) somebody notices it, and 3) somebody solves it.
C13a-e Dealing with Problems: Step One	Gives information about the most common difficulties that might cause a problem in aphasic conversation such as word-finding difficulties, telegraphic speech etc.
C14a/b Dealing with Problems: Step Two	Gives detailed information about possible patterns when somebody notices a problem in conversation: e.g., the partner notices a problem with the PWA's turn.
C15a/b Dealing with Problems: Step Three	Gives detailed information about possible patterns when somebody solves a problem in conversation: e.g., the PWA solves a problem first noticed by the partner.
C27 About Turns: The rules of turn-taking	Outlines the characteristics of balanced conversations (e.g., turns are taken in an orderly way) and how aphasia can lead to turn-taking rules being broken.
C31a Why Are You Overlapping Your Partner with Aphasia's Turn?	Encourages the partner to think about possible reasons why he or she might speak before the PWA's turn is finished. Alternative strategies are introduced.
C34: Balancing Turns	Encourages reflection on the balance of turns (currently and prior to aphasia) and about what each is doing when taking a turn (e.g., asking lots of questions; correcting).
C35a/b Turn-Taking Patterns of Partners	The partner is asked to tick turn-taking patterns they recognise that they use (e.g., pattern of asking questions; asking test questions; using passing turns). Each pattern is illustrated with an example.
C36a-c Turn-Taking Patterns of People with Aphasia	The couple are asked to tick turn-taking patterns they recognise in the speaker with aphasia (e.g., pattern of minimal turns, gaps, stopping the conversation).
C37a/b Identifying Turn-Taking Patterns and Strategies of Partners	Encourages the partner to reflect on why they use certain turn-taking patterns (e.g., asking test questions). He or she is asked to think about other strategies (e.g., "*Try to cut [test questions] out when you are chatting*") or is referred to handouts for strategies to try instead.
C42a/b Strategies for Turn-Taking	Strategies such as make a comment, use a passing turn etc. are listed and illustrated with examples, to give the partner ideas to help the PWA take more turns.
C45 Topics of Conversation	Illustrates the influence on conversation of an interesting topic, and outlines difficulties with topic due to aphasia.
C46b-e 'On Top of Topic' Activity	A flow chart helps the couple to reflect on their topics of conversation. Encourages reflection on how they start topics and how they keep topics going.
C47a/b 'Follow the Conversation Leader' Activity	Gives written examples from real conversations with aphasia. The partner is asked to think of what to say next to help the PWA develop a topic of conversation.

Lock, S., Wilkinson, R., & Bryan, K. (2001). *SPPARC (Supporting Partners of People with Aphasia in Relationships and Conversation): A Resource Pack.* Bicester: Speechmark.

www.ucl.ac.uk/betterconversations/aphasia

Session 1: setting the scene – Introduction to conversation and agrammatism

Overview of therapy:
- Awareness of conversation,
- Identification of ways for PWA to build successful turns,
- Identification of ways that P can respond to turns of PWA,
- Providing tools to help you do this.
- Give and introduce therapy folder

- 1. Explanation of how conversation works:
  - *QUES: What does conversation mean to you, what do you think of when I say it?*
  - **Handout C7 'So what is conversation?'** (Turn taking, actions)
  - **Handout C5 'What do we use conversation for?'**
  - **Handout C4 'Why is conversation important?'** (link between conversation and relationships)
  - **Handout C6 'What do you talk about?'**
  - Building a turn
  - Grammar, people often don't talk in sentences

2. Initial discussion and exploration of how aphasia affects conversations:

(If relevant) ACTIVITY: **Handout C8 'Yes, No & and' A case of hidden ability'** follow on with activity for conversation partner.

- **Handout C9 'Conversation and Aphasia'**
- **Handout C10 'Keeping Conversation Going'**

Explanation of agrammatism:

Video Examples:

- **Handout 1.2 'So what is agrammatism?'**
- Summarising characteristics:
  - **words that are affected** (Little words: the, a , in, on, verbs)
  - **words that are spared** (Names people/objects, adjectives "lovely, fantastic")
  - PWA's **missing out words is not through choice**, it can be **frustrating for both of you**
- **Handout 1.3 'Conversations of people with agrammatic aphasia'**

Video Examples:
- May need to re-visit previous clips
- Roy Racing – WHAT DO YOU THINK ABOUT THIS CLIP?
  (Prompts: Words used by Roy/ What is conversation partner doing/turn type?)

Home activity: to reinforce ideas before session 2.

Activity and handout "About your conversations"

Encourage dyad to think of;
- 2 things that go well in conversation and
- 2 things that are often difficult when having conversations.

Use handouts to help reflections (can video/write their thoughts if easiest).

Better Conversations with Aphasia PILOT

Session 2: Turns, sequences and actions 1 – Introduction

Review:
- Review home activity
- 2 things you remember from session 1 about agrammatism and conversation

1. Discuss and explore turns and sequences
   - **Handout 2.1 'About turns' (C27)** and
   - **Handout 2.2 'Rules are made to be broken...' (C27)**

2. Discuss and explore aims (functions of talk)
   work through a basic set of actions accomplished by turns:
   - **Handout 2.3 'Aim of a turn'**
   - Questioning,
   - Answering,
   - Commenting,
   - Opinions,

   Use **video examples** from **conversation**.
   (Use two of these three video examples)

   ROY- Daughter works as nursery nurse. What type of turn is he taking here?

   Video Clips:
   Roy_interesting_actually

   CONNIE- sitting with friend.
   1. What types of turn does Connie take?
   2. Is there a repair in this conversation?
   3. Who notices the problem, who fixes it?

   Video Clips:
   Connie_ you_ xmas cake?

   - **Handout 3.4 'Building Turns'**

Donald- With friend and friend's mother
What type of turn does Donald take?

Video Clips:
Donald_paula_have a drink

- **Handout 2.4 'Building Turns'**

3. Explore turn building strategies PWA uses:

   - **Handout 2.5 Turn Building strategies:** Give to PWA to look through and mark any strategies they already use (SLT to facilitate)
   - Own video example (1= good). Play x1 then get PWA to identify strategies used in their turn.

Video Clip:

4. Reinforce P's effective turns in response to PWA turns

Play again, this time ask P what they are doing in response to PWA turns

Video Clip:

5. Introduce idea that both PWA and P will develop new strategies to use when building/responding to turns in therapy

6. Find out if they use a communication book or use any other external strategies for helping conversation.

Home activity: Turn taking exercise to reinforce ideas before session 3
(Video thoughts about activity)

Better Conversations with Aphasia PILOT

Session 3: Trouble and repair

Aim of session: Raise awareness of repair in general:

- Discuss and explore patterns of repair in conversation, i.e. self and other
- Correct production sequences (if relevant).

Review:

- 2 main things you remember from session 2 about how turn taking?

1. Link to home activity from session 1:
   a. Tell me about what happens when things go wrong in conversation. (Can keep this general and short)
   b. Who do you think sorts it out?

2. **Handout 3.1 Problems with conversation (C11)** (Introduce concept of repair)
3. **Handout 3.2 Dealing with problems (C12)**

Video Clip (example successful conversational repair):

(AVOID 'WH' words when talking about this stuff)

- 4. **Handout 3.3 Main Things to go wrong: Step 1? (C13a-e):** Choose trouble sources from- Ask Dyad to pick items
- **Handout 3.4 Who notices problem: Step 2? (C14a/b)**
- **Handout 3.5 How problems solved? (C15a/b)**

4. Here is a clip of you both, we'll watch it once, through.

Video Clip: (1 longer clip)

QUES 1. Let's watch it again, this time, something goes wrong goes wrong, can you tell me what it is?

QUES 2. (Let's watch it again), one of you notices the problem, is P or PWA?

QUES 3. (Let's watch it again), one of you solves the problem, is it you or you?

6. Here is another clip of you both, we'll watch it once, through.

Video Clip: (1 longer clip)

QUES 1. Let's watch it again, this time, something goes wrong goes wrong, can you tell me what it is?

Better Conversations with Aphasia PILOT

QUES 2. (Let's watch it again), one of you notices the problem, is P or PWA?

QUES 3. (Let's watch it again), one of you solves the problem, is it you or you?

Home activity: to reinforce ideas before session 3.

- Video/write thoughts to three questions:
  - Which main things go wrong in your conversations?
  - Who notices when there is a problem?
  - How are problems solved?

ASK COUPLE TO RECORD PROBE CONVERSATION 9

Better Conversations with Aphasia PILOT

Session 4: Turns, sequences and actions 2- Strategies for the person with aphasia

Review:
- Home activity.
- 2 key things you remember about turn taking and building turns.

1. Discuss and explore issues with turn taking in general:
   - **Handout 4.1 Balancing Act of Turns (C34)**

   Let's now think about the things that affect the balance....

   - **Handout 4.2 Common Problems with Turn taking in Agrammatism (C36a-c + new content)**

2. Strategies for PWA new & more of the same:

2 Video Clips:

1. Can pwa identify **what the problem** with turn-taking is?
2. Get out handout 4.3 strategy, **what else could they have done**?

- **Handout 4.3 Turn Building strategies for PWA** – PWA to pick three strategies to practice.

- A **practice conversation with SLT** (or CP if appropriate) **Video:**
  - SLT to offer choice of 3 pic, PWA choose one
  - PWA to initiate describing PIC to SLT
  - PWA to put a strategy into practice (SLT to coach as necessary).
  - **Discuss ease of strategy use**
  - Encourage PWA to take time to get an idea in his/her head before using words/gestures/aids etc to say it (i.e. encourage to frame/limit thoughts for language before beginning)

Better Conversations with Aphasia PILOT

Joint home activity:

Practice Conversations

- Video a practice conversation together this week where the PWA puts turn building strategies they choose today, into practice.
-
- Reflect on PWA's strategy use in using the homework **handout**
-
- Sign contract as to what will practice

Better Conversations with Aphasia PILOT

Session 5: Turns, sequences and actions 3: Strategies for Partner

Review:
- Home activity.
- 2 key things you remember about strategies for your partner with aphasia to build turns.

1. Discuss and explore P's responses to PWA's turn constructions (pick up from session 3):

- **Handout 5.1 Partners Turn taking (C35a)**

Watch this clip through once

Video Clip 1

We'll now watch it again. Can you tell me P, what are you doing in response to PWA in this clip?

Now watch this second clip:

Video Clip 2:

Now we'll watch it again, can you tell me what you are doing?

- **Handout 5.2___ (select from Handouts 5.2i-v: based on C37a/b, C31a + new content)**

Now we'll watch a third clip

Video Clip 3:

Now watch it again. What strategy are you using in response to PWA turn in this clip?

OK, and here is one more clip

Video Clip 4:

So let's watch it one more time, and again, what are you doing in your turn?

- **Handout 5.2___(select from Handouts 5.2i-v: based on C37a/b, C31a + new content)**
- **):**

2. Devise a list of good turn-taking strategies that can be used as a prompt by the partner. **Handout 5.4 (C42a/b + new content)**

4. A practice conversation with PWA:
- P to put strategy into practice (SLT to coach as necessary)
- **VIDEO** (if possible) and discuss

Joint home activity:

Practice Conversations

- Video a practice conversation together this week where the P tries to put strategies into practice that they choose to work on today.
-
- Reflect on P's strategy use in using the homework **handout**
-
- Sign contract as to what will practice

Better Conversations with Aphasia PILOT

Session 6: Topic and overall conversation

Review:
- Home activity.
- 2 key things you remember about response strategies for CP

1. Introduce topic, balance of contributions and emotions in conversation in general:

- **Handout 6.1 Topics of Conversation (C45) + Ques**

2. Further explore own patterns of topic and overall conversation:

"I've got some ques for you both to look at to investigate topic further..."

- **Handout 6.2 Starting a topic (C46b)**
  - FC fill out one with PWA
  - P fill out independently @ same time.
  - If not working try 2-way conversation

- Reinforce effective topic initiation by P/PWA and balance of contributions - video example:

Video Clip - watch this clip. Who starts this conversation? Is the conversation balanced?

Video Clip:

3. Possible Trouble Spots

- **Handout 6.3 Common Problems with topic in Agrammatism**

- discuss points on handout, PWA/P recognise any of these difficulties?

Watch this clip through once

Video Clip:

Now watch the clip again:

What happens in this clip? (refer to Handout 6.3)

What could you both do differently?

4. Explore strategies for change:

(Areas to develop:)
- **Handout 6.4 'Strategies for working together on topic' (C46c)**

- Possible strategies for PWA-
  - Topic alerters 'oh!', 'um...'
  - Increased information in first turn

- Possible strategies for P-
  - Give PWA space,
  - Use passing turns,
  - Paraphrase,
  - Make sense of PWA's turns by identifying what strategy PWA may be using to build a turn, and relating that to the particular action it may be conveying (e.g. adjective = opinion).

- **VIDEO** clips-
  - discuss video clip with positive strategy use, referring to strategies,

Video Clip:

  - discuss video clip of a good strategy used by another couple

Video Clip:

- **Handout 6.5 Follow the conversation Leader (Activity) (C47a-b)**
  - Practice conversation with each other - each to put strategy into practice. **VIDEO & DISCUSS with ref to strategy sheet (photo or magazine pic)**

Joint home activity:

Joining Forces

- Video a conversation together this week where you both try to put ALL your strategies into practice that you have chosen to work on during the past sessions.
-
- Reflect on your strategy usage – by either filling in the **handout** or **videoing your thoughts**

ASK COUPLE TO RECORD ANOTHER PROBE CONVERSATION 10

Better Conversations with Aphasia PILOT

Session 7: Practising conversation: putting your strategies to use

- Review home activity.
- 2 key things you remember about topic and overall conversation.

1. What do you remember about strategies: review of sessions 4 and 5
   - For PWA to build a turn- refer to handout session4 (4.3)?
   - For P to respond to PWA's turn- refer to handout session 5 (5.4)

Do you think you have been using these over the last few weeks in you daily conversations? If not, why not?

2. SLT to give:
   - **A5 Laminated prompt sheet of 3 strategies for PWA**
   - **A5 Laminated prompt sheet of 3 strategies for P**

3. Practising the use of strategies:

Play video clips (clips from pre therapy sessions) and discuss what each could have done differently, relating to strategies –

Video Clip 1:

Video Clip 2:

Video Clip 3:

   - A practice conversation together– each to put strategies into practice (SLT to coach as necessary). Video and discuss –with reference to prompt cards.
   - Have a conversation about X (news, TV, your day etc?)

A *joint* home activity to reinforce ideas before last session

- Monitor their use of strategies during the week using a handout. To include tick list of strategies used and comments on if successful/context.
- Dyad to make a video of one conversation (to talk through with the therapist in session 8, regarding what each of them is doing).

N/B: This conversation is also the second conversation sample during therapy.

Session 8: Reviewing and moving forward

2 key things you remember about last session.

1. DYADS VIDEO ACTIVITY
   - Dyad to talk SLT through video they made as home activity for session 7.
   - Use this exercise to review key points of therapy with help of handouts

(problem and repair; turn building; PWA strat; P strat; topic)

2. ADVICE SHEET
   - Make sure therapy folder is complete and that key strategy sheets are easily accessible.
   - Facilitate dyad making an advice sheet for use by other people they converse with.

3. FURTHER PRACTICE CONVERSATIONS AS NECESSARY

4. INTRODUCE RE-ASSESSMENT PHASE

Better Conversations with Aphasia PILOT

Pilot Better Conversations with Aphasia Therapy Handouts

Final versions of BCA handouts (those cleared for use by SLTs) are available in Topic 3 of the e-learning resource (https://extend.ucl.ac.uk). This Appendix contains the pilot versions i.e. those shared with the participants of the original therapy study; these are the versions referred to during the thesis. See Section 2.2.2 (p28) for more information.

Some of the handouts presented here are adapted from SPAARC handouts (Lock et al 2001). For reference, the contents table below highlights which handouts were created especially for BCA, and those which were adapted from SPAARC. Source SPPARC handouts are also referenced in the headers of the pilot handouts.

Contents of Appendix 3

	Pilot Handout Number	Pilot Handout Title	SPPARC-based or developed for BCA	Page No.
Session 2	2.1	About turns	SPPARC C27	319
	2.3	The aim of turns	BCA	320
	2.5	Strategies to help turn-building	BCA	321
Session 3	3.2	Dealing with problems	SPPARC C12	323
Session 4	4.1	Turn taking: A balancing act	SPPARC C34	324
	4.2	Common problems with turn-taking in agrammatism	C36a-c + new BCA content	325
	4.3	Turn –building strategies for the PWA	BCA	328
Session 5	5.1	Partners turn-taking	SPPARC C35a	329
	5.2i	Why are you asking questions/test questions?	SPPARC 37a	331
	5.2ii	Are you using passing turns?	SPPARC 37b	332
	5.2iii	Why are you stopping the conversation to solve problems?	SPPARC 37a	333
	5.2iv	Why are you overlapping?	SPPARC C31a	334
	5.2v	Are you leaving pauses?	BCA	335
	5.4	Good turn-taking strategies to use with your partner	SPPARC C42a/b + new BCA content	336
		Turn-taking in conversation: A chance to practice some strategies	BCA	338
Session 6	6.2	Starting a topic	SPPARC C46b	339

Session 2 Handout 2.1 (based on SPPARC C27)

About Turns

In conversation each person takes turns to be a speaker and a listener.

Conversation can be enjoyable.

But sometimes...

we can't get a word in edgeways,

or

our conversation partner just says 'mm'.

Adapted from SPPARC for Better Conversations with Aphasia

In conversations usually only one speaker speaks at a time.

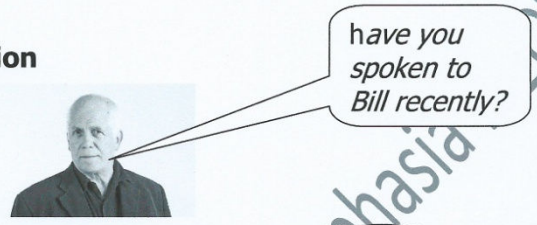
In less formal conversations it is common to 'overlap' or interrupt, e.g. with family.

In more formal conversations, with people we don't know, there is sometimes a gap between turns.

The Aim of Turns

Each turn in a conversation aims to do a job. Common aims of turns are:

1. Asking a question



2. Answering a question

3. Making a comment

4. Giving an opinion

Most of the time the aim of a turn is clear but, aphasia can make the aim of some turns hard to work out.

BetterCon

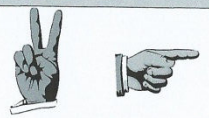
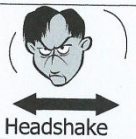
Session 2 Handout 2.5

Strategies to Help Turn Building

Below are some ways people can help each other build successful turns in conversation.

Have a look and tick the box if:

- You use any of these strategies when you talk with your partner?
- You use them in this way?

WHAT YOU USE	WHAT YOU DO WITH IT/AIM	✓
 Gesture	• Numbers 1, 2, 3...	
	• Pointing	
	• Asking	
Intonation	• Question?	
	• Disagree/Agree	
	• Feeling/mood	
	• Give opinion	
 Headshake	• Say "No"	
	• Disagree	

Better Conversations with Aphasia PILOT

Session 2 Handout 2.5

WHAT YOU USE	WHAT YOU DO WITH IT/AIM	✓
Mime	• Tell a story	
	• Comment	
	• Answer	
	• Describe event e.g going to the pub	
Eye Gaze	• Fed up/sarcasm	
	• Pointing	
	• Stop conversation	
Facial Expression	• Question?	
	• Disagree/Agree	
	• Show feeling/mood	
Automatic Phrases	• Show listening	
	• Answering	
	• Comment	
Writing/Drawing	• Help find a word	
	• Show where things are	

Better Conversations with Aphasia PILOT

WHAT YOU USE	WHAT YOU DO WITH IT/AIM	✓
Keyword + Comment	• Start a new topic	
	• Comment	
Describing word/Adjective	• Give an opinion e.g. "Brilliant" or "Rubbish".	

If there are any other strategies you use, please add them below:

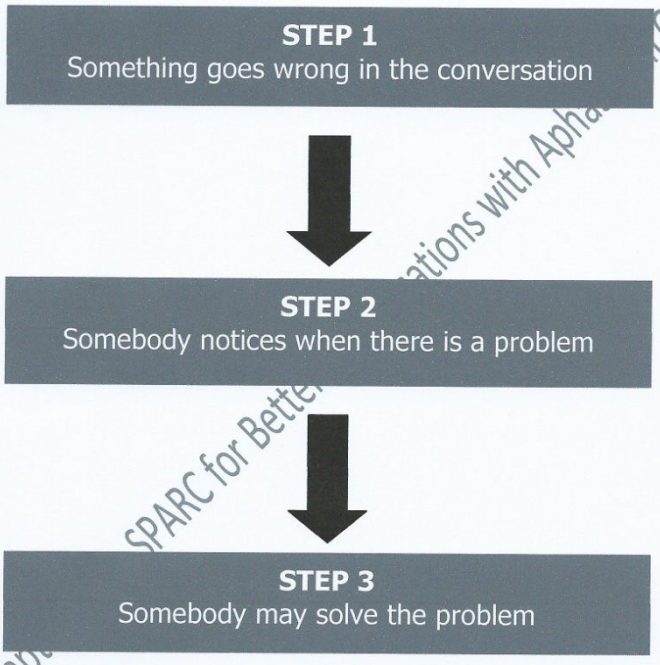
Better Conversations with Afasia PILOT

Session 3 Handout 3.2 (Based on SPPARC C12)

Dealing with problems

What happens when things go wrong in conversation?

There are three steps to dealing with problems in everyday conversation:



Although we have divided solving problems into three steps, all three of these steps often happen very quickly and sometimes all in one turn.

Sometimes problems do not get solved.

Turn-taking: A Balancing Act

Turn back the clock and think about turn-taking ***before*** aphasia.

1. Has the **'balance' changed** in the **amount** or **length** of your turns?

2. What are **you doing** when you take a turn?

   - Are you asking **lots** of **questions**?
   - Are you making minimal responses such as **'mm hm', 'yup', 'uh huh'**?

Adapted from SPPARC for Better Conversations with Aphasia PILOT

   - Are you **'hogging'** the conversation?
   - Are you **correcting** each other? **Who starts** this?
   - Are you asking **questions** you already **know the answer** to?
   - Are you **talking for** the **person** with aphasia?

Conversations are **rewarding** when they are **balanced**- when both people take turns at speaking and listening.

This balance can **change** when one speaker has **aphasia**.

from SPPARC for Better Conversations with Aphasia PILOT

Session 4

Handout 4.2 (Based on SPPARC C36a)

Common Problems with Turn Taking in Agrammatism

Problem	Example	Does this happen to you? YES ✓	NO ✗
Incomplete turns: The person with aphasia starts to build a turn but is unable to finish it.	*er Rosie...er...uh...no* / The cat, yeah, what? + Looks at the cat		

Adapted from SPPARC for ... sia PILOT

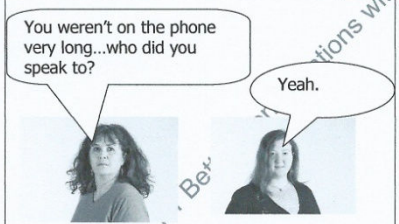
Session 4

Handout 4.2 (Based on SPPARC C36a)

Problem	Example	Does this happen to you? YES ✓	NO ✗
Aim is unclear The person with aphasia takes a turn, but it is hard to work out the aim of the turn.	*tea...you* / *Are you going to make it then?* + Points at woman		

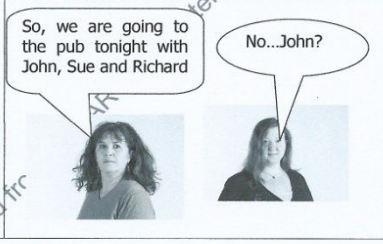
Adapted from SPPA... ...sations with ... PILOT

Session 4 Handout 4.2 (Based on SPPARC C36a)

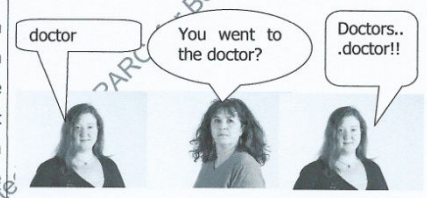
Problem	Example	Does this happen to you? YES ✓	NO X
Minimal turns People with agrammatisim sometimes use minimal turns because they cannot find the word.			

PILOT
Adapted from SPPARC

Session 4 Handout 4.2 (Based on SPPARC C36a)

Problem	Example	Does this happen to you? YES ✓	NO X
Automatic phrases The person with aphasia uses an automatic phrase e.g. swearing			
Stopping the conversation to solve a problem People with aphasia stop the conversation because they have noticed a problem			

Adapted fr

Problem	Example	Does this happen to you? YES ✓	NO X
Gaps or overlaps Gaps and overlaps can be common in the turns of people with aphasia.			
Repeating the same turn The partner notices a problem but the person with aphasia is unable to explain it a different way, and carries on repeating the same turn.			

Adapted from SPPARC for Better Conversations with Aphasia PILOT

Session 4 Handout 4.2 (Based on SPPARC C36a)

Adapted from SPPARC for Better Conversations with Aphasia PILOT

Session 4 Handout 4.3 PWA Strategy Tick List

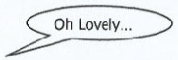
'Turn Building Strategies for the Person with Aphasia'

Choose a maximum of **three strategies** you would like to work on....

Turn Building Strategy	Like to Try...
Gesture	
Intonation	
Headshake	
Mime	
Eye Gaze	

Better Conversations with Aphasia PILOT

Session 4 Handout 4.3 PWA Strategy Tick List

Turn Building Strategy	Like to Try...
Facial Expression	
Automatic Phrases 	
Writing/Drawing	
Key word + Comment	
Describing word/Adjective	
Object/Prop	

Better Conversations with Aphasia PILOT

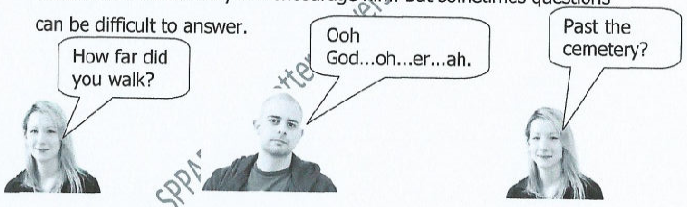
'Partners Turn-Taking'

Partners of people with aphasia often adapt how they take turns, or develop new turn-taking. Some of these changes help the person with aphasia but some cause the conversation to become unbalanced.

Tick the box next to any turn-taking you recognise in yourself.

1. Asking questions

Here, this woman is asking questions. She asks her partner questions because she thinks they will encourage him. But sometimes questions can be difficult to answer.



If you have a pattern of asking your partner questions tick this box ----------→ ☐

2. Asking *test* questions

'Test' questions are questions you know the answer to already. Teachers do this with pupils but this is not a part of normal conversation. It may make you both feel awkward.

Adapted from SPAARC for Better Conversations with Aphasia PILOT

If you use this pattern tick this box ----------→ ☐

3. Using passing turns

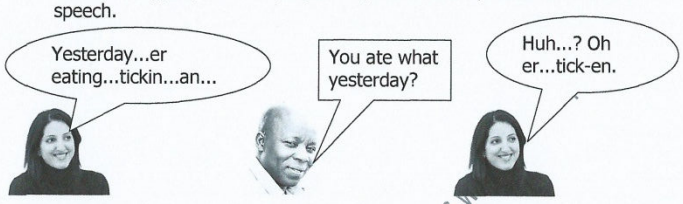
Passing turns like 'uhuh, yeah, mmm" encourage you to keep on talking. By using a passing turn, this woman lets her partner know that she is listening to him, that she is not going to say more and that he should continue to talk.

If you have a pattern of asking your partner test questions tick this box ----------→ ☐

Adapted from SPAARC for Better Conversations with Aphasia PILOT

4. Stopping the conversation to solve a problem

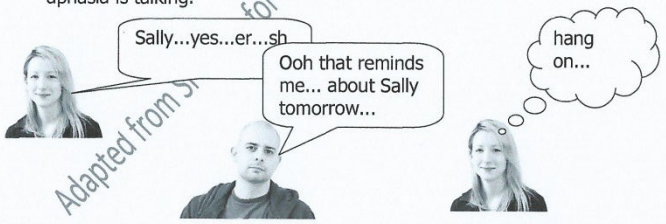
Some partners stop the conversation, because they notice a problem. This can happen, for example, if the person with aphasia has unclear speech.



If you have a pattern of stopping conversation to solve problems tick this box ----------> ☐

5. Overlaps

It can be quite common for partners to talk when the person with aphasia is talking.



If you have this pattern of overlapping your partner with aphasia's turn tick this box----------> ☐

Adapted from SPPARC for Better Conversations with Aphasia PILOT

Write down any other types of turn taking you use:

Adapted from SPPARC for Better Conversations with Aphasia PILOT

'Why are you asking questions/test questions?'

Do you do this because they do not speak otherwise?

Is this because you think it helps your partner?

Think about how your partner feels when you ask them questions during conversation, and how they respond to your questions.

Ask them if they are happy that you use a lot of questions and/or 'test' questions.

If they are not, try to:

- Cut down the number of questions you ask
- Alter the *type* questions.
- Conversations are not really the 'place' for test questions. Try to cut them out when you are chatting.

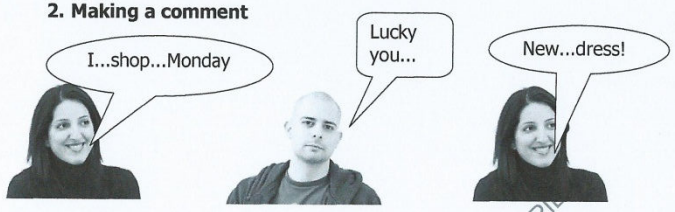
Instead of asking your partner with aphasia a series of questions try:

1. Using a passing turn

For example:

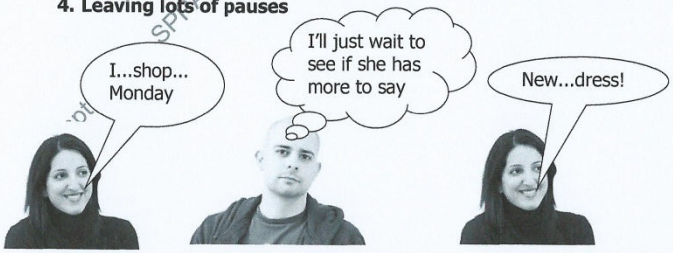
Session 5 Handout 5.2i (Based on SPAARC C37a)

2. Making a comment



3. Summarising what they have said

4. Leaving lots of pauses



All of these strategies may encourage them to say more.

Adapted from SPPARC for BetterConversations with Aphasia PILOT

'Are you using Passing Turns?'

Is this because you are giving you partner a chance to say more?

This is great, keep it up!

Your partner with aphasia may say more if you use a passing turn- one in which you do not add new information yourself.
Phrases such as:

'oh yes...',
'mm hm...',
'uh huh...'

can be used for passing turns. Remember to look interested and expectant as you take this type of turn, and leave a pause so your partner can take another turn.

For example:

from SPPARC for Better Conversations with Aphasia PILOT

'Why are you stopping the conversation to solve problems?

Is it because you have not understood what they have said?

Is this because you think it helps your partner if you correct their mistakes?

You may be stopping the conversation to:

- Clarify something that you have not understood by saying 'What?' or showing via facial expression that you have not understood.
- Help correct a word/sentence that your partner has said wrong.

However...:

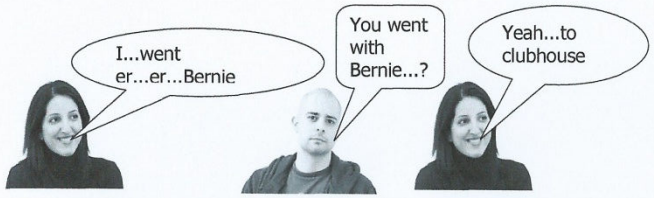
If the conversation is stopped a lot, this can disrupt the flow of conversation, making maintaining a conversation difficult.

Correcting your partner's errors can be embarrassing for them, and is unlikely to improve their talking, especially if errors are due to dyspraxia.

Instead of stopping your conversation try:

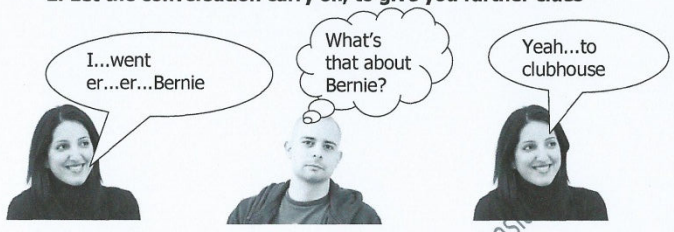
1. Paraphrasing what you think the person said

For example:

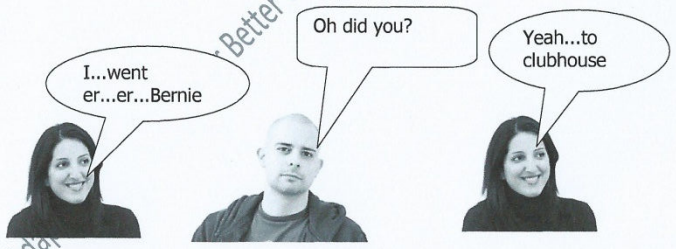


Adapted from SPPARC for Better Conversations with Aphasia PILOT

2. Let the conversation carry on, to give you further clues



3. Carry on, if you have understood the word/sentence does not need to be perfect



All of these strategies may help you both to not disrupt the flow of the conversation.

'Why Are You Overlapping?'

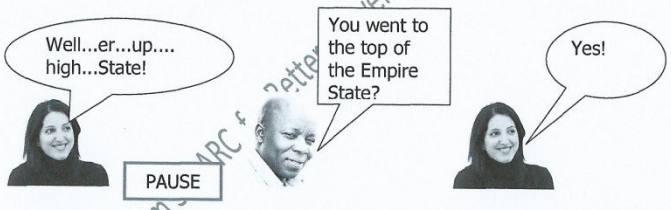
1. Is your partner taking a long time because they have trouble getting words out?

Your partner may have word-finding difficulties or slow speech.

2. Have you overlapped because you cannot understand what they have said?

If you have a problem with understanding you could:

1. Wait until they have finished talking, then have a guess

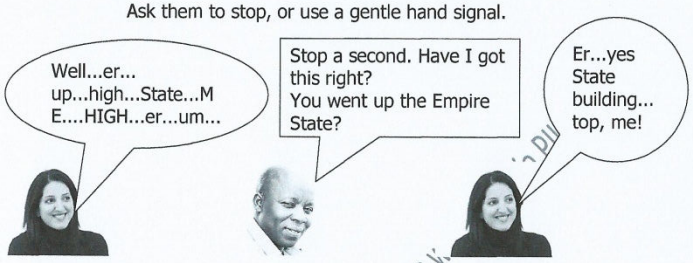


2. Ask them to repeat it or say it another way

Adapted from SPPARC & Better Conversations with Aphasia PILOT

3. Your partner cannot stop talking, and you need to stop them?

Ask them to stop, or use a gentle hand signal.



4. Are you overlapping your partner to encourage them to continue?

If you are sometimes overlapping your partner with words such as 'uh huh', 'mm hm', this is probably all right. This lets your partner know you are listening and encouraging.

5. Is this the same pattern as before the aphasia?

If you have always overlapped you both maybe happy with this. Talk to your partner- they may find your overlaps more difficult to deal with now.

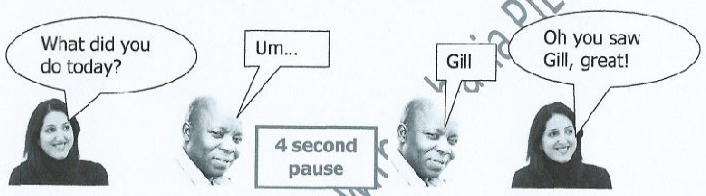
Talk to your partner about these strategies. Don't forget: turn-taking takes two!

Adapted from SPPARC for Better Conversations with Aphasia PILOT

'Are you leaving pauses?'

Is this because you are giving you partner a chance to say more?

This is a good strategy when your partner is searching for a specific word.



Your partner may show you that they need this time by saying 'um', having a 'thinking face' or looking away. We all do these things when we are searching for a word. It shows we are still taking our turn.

But sometimes a pause can become very long. Your partner may have lost their train of thought. You may not know if they are still searching for a word. The conversation stops.

Better Conversations with Aphasia PILOT

If this happens:

Strategies for partner

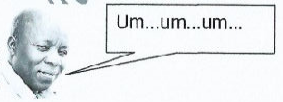
Ask what is going on e.g. 'Are you still thinking?'

What phrase would you both like to use?

Strategies for person with aphasia

Show your partner what is going on by:

1. Saying 'um' a number of times during a long pause, to break it up.



2. Gesture using your hand, the movement will show that you are holding your turn.

3. Use facial expression to show you are thinking

Better Conversations with Aphasia PILOT

Session 5 Handout 5.4 (Based on SPPARC C42 a/b)

'Good turn-taking strategies to use with your partner'

Below is a chart that you can complete with your conversation partner and therapist.

Choose three strategies you can use to help keep conversations 'on track'. These maybe strategies you already use and/or new ones you would like to try out.

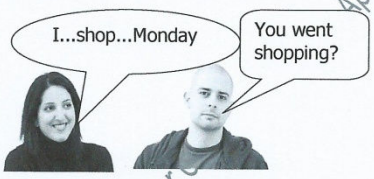
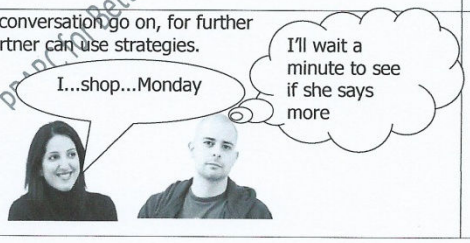
Adapted from SPPARC for Better Conversations with Aphasia PILOT

Session 5 Handout 5.4 (Based on SPPARC C42 a/b)

Possible trouble spot	Strategies to keep conversation 'on track'	I'd like to practice
Partner not taken a complete turn. Encourage them to keep going.	Using a passing turn	
Person with aphasia not taken a complete turn, encourage more from them.	Commenting on partner's turn	

Adapted from SPPARC for Better Conversations with Aphasia PILOT

Session 5 Handout 5.4 (Based on SPPARC C42 a/b)

Possible trouble spot	Strategies to keep conversation 'on track'	I'd like to practice
You may not have fully understood what they said/meant.	Paraphrasing what you think they said/mean 	
You may not have fully understood what they said/meant.	Letting the conversation go on, for further Clues/so partner can use strategies. 	

Adapted from SPPARC for Better Communication with Aphasia

Session 5 Handout 5.4 (Based on SPPARC C42 a/b)

Possible trouble spot	Strategies to keep conversation 'on track'	I'd like to practice
Repairing partners speech errors that you have understood	Carrying on, if you have understood, it does not need to be perfect	

Strategies I am going to practice:

1._____
2._____
3._____

Partner Signature_____ Date_____

Adapted from SPPARC for Better Communication with Aphasia

Home Activity Session5

'Turn Taking in conversation'

A chance to practice some strategies

Strategies I will practice this week:

1. _____
2. _____
3. _____

Participants' Signature:_____ Date:_____

Partner's Signature:_____ Date:_____

Better Conversations with Aphasia PILOT

What happened?	Which Strategy did you use (Circle 1,2,3)?	Did it work?	How did you feel afterwards?	Anything else you could have done?
	1 2 3			
	1 2 3			
	1 2 3			
	1 2 3			

Home Activity Session5

What was the problem?	Which Strategy did you use (Circle-1,2,3)?	What happened/Did it work?	How did you feel afterwards?	What else could you have done?
	1 2 3			
	1 2 3			
	1 2 3			
	1 2 3			
	1 2 3			
	1 2 3			

Better Conversations with Aphasia

Session 6 Handout 6.2 (Based on SPPARC C46b)

'Starting a Topic'

When you....	
✓ **start a topic...**	**don't start a topic...**
1. Does your partner know where the topic fits into the conversation? YES NO SOMETIMES _____ _____	1. Is it because you already know what each other is thinking? YES NO SOMETIMES _____ _____
2. Are the topics you talk about different from before the Stroke? YES NO SOMETIMES _____ _____	2. Is this the way you have always been? YES NO _____
3. Does the topic keep going? YES NO SOMETIMES _____ _____	3. Is this the result of life changes? YES NO _____
4. Who keeps the topic going? _____	4. Is this because communication is difficult? YES NO SOMETIMES _____
5. Are you letting your partner know when you are changing topic? YES NO SOMETIMES	

Adapted from SPPARC for Better Conversations with Aphasia PILOT

Better Conversations with Aphasia: Post-therapy Evaluation Interview

(Developed by Fiona Johnson, in consultation with the Better Conversations with Aphasia project team, 2011)

Instructions

- Speakers with aphasia (PWA) and their conversational partners (CP) to be interviewed separately and then jointly
- Audio recorded with notes
- Supported conversation to facilitate PWA: include writing keywords, offering choices and paraphrasing what's been understood by PWA's comments for confirmation
- Take place at least 3 months after final visit from research SLT
- Emphasise: I'm after your real honest views about the therapy

Questions for PWA/ CP When Interviewed Alone

1) Tell me about the therapy that you did with [SLT's name]

   Probes: videos, homework, thinking about conversations, changing behaviour, easy/difficult to understand/do, how useful?

2) What was the main thing you remember about the therapy?
3) Would you recommend it to another couple?
4) Tell me about how your conversations worked

   (a) before your stroke (b) before you started seeing [SLT's name]?

   Probes: how much, any difficulties, who with, one person speaking more, how did it make you feel

5) Tell me about how your conversations work now?

   Probes: how much, any difficulties, who with, one person speaking more

6) Tell me what changed in your conversations after the therapy, if anything?
7) Did anything else change?
8) What helped make it successful/ what stopped it being successful?

   Probes: major life events for person/ therapy/SLT/other/ therapy and life events

9) What was your role in making the therapy work?
10) Is there anything you learned in therapy that you still use?

    Probes: manual? specific strategies Who with? (trained partner only, other family & friends; strangers)

11) Is there anything else you think is important that we haven't covered?

Joint Questions

12) Tell me about working together in speech and language therapy?
13) Have there been any changes in your social life since seeing [SLT's name]?
14) Why do you think that is?
15) What was it like being tested?
16) Was the therapy what you expected?
17) I know videos were used a lot - Tell me a bit about that
18) What do you think about doing this kind of work earlier in your recovery?
19) Are there any suggestions for making it better?

Appendix 5

This Appendix contains the themes and data that are discussed in Section 6.2 (p100) of Study 1: Identifying Determinants of Conversational Behaviour, captured by the coding category Contexts for Using/ Not Using Conversational Behaviour. *The figure below is reproduced from Figure 12 (p101) and contains the thematic hierarchy developed to describe the data.*

The data are taken from the pre-therapy, during-therapy and post-therapy datasets and appear according to theme. They are presented here in the form of the summarised quotes used in the Framework charts, as opposed to the full verbatim quotes from the transcripts. Please refer to Section 5.5.4 (p89) for more information. For reference, the sections under which the themes are discussed within the thesis appear in brackets after the theme headings.

Contexts Determining Conversational Behaviour:

A Hierarchy of Analytic Themes to Represent the Data Captured by

Contexts for Using/ Not Using Behaviour

Physical Environment

- *Location* [PWA 1; CPs 2, 9]
- *Availability of resources* [CPs 1, 5, 9]

Social Situation

- *Opportunity for conversation* [PWA 2; CPs 2, 5]
- *Availability of time* [CPs 1, 3, 9]
- *Nature of the conversation* [CP 3]
- *The conversation partner* [PWA 2; CP 6]
- *Presence of other people* [CPs 3, 4, 6]
- *Humour* [CP 2]

Cues from Conversation

- *CP requests* [PWAs 4, 5, 6]
- *PWA signals* [CPs 1, 2, 3, 5, 7, 9]
- *Absence of cues* [CPs 7, 9]

Physical Environment *(Section 6.2.1, p102)*

Location	
Pre Therapy	If it's a noisy situation, we'll leave it (CP 2)
During Therapy	Did not use writing at the shops when carrying bags (PWA 1)
	Can't use strategies on the bus (CP 9)
Post Therapy	Not possible in the car (CP 9)

Availability of resources	
Pre Therapy	We always make sure we have a nice notepad that's attractive and handbag size (CP 1)
During Therapy	
Post Therapy	I have pen and paper in the car so we can get unstuck wherever we may be (CP 5) Mum gets a pen and paper in her hand when she gets to my house (CP 5) Impossible to use pictures that need to be planned when we're in the car (CP 9)

Social Situation *(Section 6.2.2, p102)*

Opportunity for conversation	
Pre Therapy	
During Therapy	
Post Therapy	Don't see my family much during the day (PWA 2)
	We don't have a lot of time which is why mealtimes are important (CP 2) Can get busy with the kids (CP 2) We're not seeing each other so much since I had a baby (CP 5)

Availability of time	
Pre Therapy	Will keep coming back and making new guesses over the course of the day (CP 9) If there's time, I will help him get the right word (CP 3)
During Therapy	
Post Therapy	It's difficult to listen when I'm in a rush (CP 1)

Nature of the conversation	
Pre Therapy	If a serious or urgent conversation will spend more time helping (CP 3) In general conversation about day to day, we won't worry about the difficulties and move on (CP 3)
During Therapy	
Post	

Therapy

The conversation partner	
Pre Therapy	
During Therapy	
Post Therapy	Easier to use strategies at home with family than when I go out (PWA 2)
	Different people affect PWA strategy use. Some people can't handle it and ignore him, some people give the time, have a laugh and watch him write it down (CP 6)

Presence of other people	
Pre Therapy	Will cue a word when we're in a group of people as it's important PWA has control (CP 4) Won't help when in a group because I get anxious (CP 6)
During Therapy	Easier to give space when it's just the two of them (CP 3)
Post Therapy	

Humour	
Pre Therapy	
During Therapy	Because we laugh when we're using the strategies we use them more (CP 2)
Post Therapy	

Cues from Conversation *(Section 6.2.3, p104)*

CP requests	
Pre Therapy	Will attempt to repeat something correctly when asked (PWA 6) Will use notepad when CP asks for the subject (PWA 6) Will write when CP asks me to (PWA 4) Will have a go at repeating if CP has pointed out a mistake (PWA 4) When CP corrects word, will repeat it back with him (PWA 5)
During Therapy	Used drawing after CP prompted (PWA 5)
Post Therapy	

PWA signals	
Pre Therapy	Will leave him alone if he's trying to correct himself (CP 9)
During Therapy	When PWA has leapt off into something I prompt for a keyword (CP 3) When PWA is thinking I use passing turns and waiting (CP 2) Will prompt to relax and think of another word when she's struggling (CP 1) After she uses a keyword I listen and let her continue (CP 1) I didn't understand what mum meant when she wrote so I waited and waited and kept guessing (CP 5) Don't have to use strategies as PWA is talking more (CP 2) Don't need to ask if PWA is thinking when he is already showing that he is (CP 2)
Post Therapy	I'll go through things and make sure she understands when she's signalled she hasn't understood (CP 7) I'll prompt a keyword when she gets stuck (CP 1)

Absence of cues	
Pre Therapy	Won't check/guess when I think what PWA is saying is what she means (only realise later there's been a problem) (CP 7)
During Therapy	I don't know I need to explain more because PWA doesn't signal he doesn't understand (CP 9)
Post Therapy	When PWA doesn't signal she hasn't understood, problems come up (CP 7)

Appendix 6

This Appendix contains the themes and data that are discussed in Section 6.3 (p106) of Study 1: Identifying Determinants of Conversational Behaviour, captured by the coding category Reasons for Using/ Not Using Conversational Behaviour. *The figure below is reproduced from Figure 13 (p107) and contains the thematic hierarchy developed to describe this data.*

The data are taken from the post-therapy dataset and appear according to theme. They are presented here in the form of the summarised quotes used in the Framework charts, as opposed to the full verbatim quotes from the transcripts. Please refer to Section 5.5.4 (p89) for more information. For reference, the sections under which the themes are discussed within the thesis appear in brackets after the theme headings.

Reasons Determining Conversational Behaviour:

A Hierarchy of Analytic Themes to Represent the Data Captured by

Reasons for Using/ Not Using Conversational Behaviour

Behaviour's Expected Impact on Communication

- ***Impact on Establishing Shared Understanding***
  - *Helps PWA get the message across* [PWA 1, 2, 4, 5, 6, 9; CPs 1, 4, 5, 6, 7, 9]
  - *Helps PWA understand CP* [CPs 4, 7]
  - *Helps CP work out what PWA is saying* [CPs 1, 2, 3, 4, 5, 6, 7, 9]
  - *Does not contribute to shared understanding* [PWA 3; CPs 1, 3, 4, 5, 9]
  - *Aligns understanding* [PWA 9; CPs 1, 2, 4, 7, 9]
- ***Impact on PWA Participation in Conversation***
  - *Helps PWA express more* [CPs 1, 2, 3, 5, 7]
  - *Enables PWA to contribute to conversation* [PWA 2; CPs 1, 2, 3, 5, 6, 7]
- ***Impact on Conversational Flow*** [PWA 4; CPs 1, 2, 3, 6, 7]
- ***Impact on Improving PWA Communication***
  - *Helps PWA produce words accurately* [CPs 1, 3, 5, 6, 9]
  - *Elicits more speech* [CP 9]
  - *Places responsibility on PWA to make an effort* [CPs 4, 9]
  - *Provides PWA with feedback about communication* [CPs 1, 2, 3, 5,7, 9]
  - *Prompts PWA to do something they wouldn't otherwise do* [CPs 1, 3, 5, 6, 9]

Social Reasons

- *Concern about perceptions of others* [CPs 2, 3]
- *Expected impact on protecting PWA competence* [CPs 1, 2, 4, 9]

Emotional Reasons

- *Expected impact on levels of frustration* [CPs 1, 2, 7, 9]
- *Expected negative reaction of PWA* [CPs 1, 2, 4]
- *Own negative emotions* [CPs 5, 6, 9]

Fit with Identity [CP 9]

Internal Fluctuations

- *Own Fluctuations* [CP 6]
- *Partner's Fluctuations* [CPs 3, 6]

Skills [PWA 4, 9]

Behaviour's Expected Impact on Communication *(Section 6.3.1, p108)*

➢ ***Impact on Establishing Shared Understanding*** *(Section 6.3.1.1, p108)*

	Helps PWA get the message across
Pre Therapy	Asking for clues, prompting writing helps PWA find the word she's after (CP 1) We go to the writing pad if the words haven't come out (CP 6) I'll hone things down because PWA is unable to (CP 9) Will jump in and guess when I know PWA is not going to get the word on his own (CP 9) Will think through what's been happening to help me guess what PWA is talking about (CP 7) Go through associated things to help (CP 4)
	Use writing when the words don't come out (PWA 2) Use the pen when struggling to find a word (PWA 4) Use pointing to answer questions (PWA 9) Will get an object to make meaning understood (PWA 5) Will write when CP asks me for a keyword (PWA 6)
During Therapy	Prompt to write because PWA got stuck (CP 5)
Post Therapy	Using aids and prompts helps get what you want to say out of things (CP 4) I prompt writing as it helps us get unstuck (CP 5) Strategies help overcome mum's aphasia because she has a lot of vocabulary but can't verbalise it (CP 5) Prompting to think of another word when she's stuck helps (CP 1) Strategies can be used to get out of a situation hopefully (CP 7)
	'Wait' and coming better (PWA 2) Writing down is useful (PWA 1)

Helps PWA understand CP	
Pre Therapy	Will simplify what I've said when PWA hasn't understood (CP 4)
During Therapy	
Post Therapy	Giving space enables PWA to digest information (CP 7) I'll go through things to make sure she'd understand (CP 7) Asking questions in a different way helps get around PWAs difficulties (CP 7)

Helps CP work out what PWA is saying	
Pre Therapy	Establish a subject/who's being talked about as I might know something about it (CP 5) Ask another family member if they know the subject PWA's trying to get at (CP 5) Ask for the subject/keyword to get things started, cos could be talking about anything (CP 6) Ask lots of questions as a process of elimination (CP 1) Ask questions if I can't get the meaning (CP 4) Will ask PWAs meaning, say I haven't understood if unclear (CP 2) Will prompt writing if haven't understood (CP 4) Will say I haven't understood to get PWA to clarify (CP 2) Will ask for topic when PWA is talking around something (CP 6) Will ask if it's something we've been talking about to establish topic (CP 7) Will ask if PWA can do something else to help me understand (CP 7) Will draw to help check what PWA means (CP 9) Will ask for writing when I don't know what he's going for (CP 6)
During Therapy	Staying quiet means PWA produces more words that help me understand (CP 1) Will prompt PWA to use a keyword when he's leapt off into something (CP 3)
Post Therapy	Strategies help us get past not knowing what you're saying (CP 5) Prompting keyword helps as PWA has a tendency to give whole picture and is hard to know the subject (CP 3)

	Does not contribute to shared understanding
Pre Therapy	I'll abandon it when PWA doesn't understand why I don't understand (CP 3) Will abandon asking questions if not getting anywhere (CP 1) Writing things down for PWA didn't work well (CP 4) Guessing takes things off on a tangent (CP 1) Will tell PWA to relax and think of another word when they're struggling because struggle may not be effective (CP 1)
During Therapy	Won't try to get the words exactly right when we can get to an understanding (CP 5) Won't prompt writing as can usually work it out without pen and paper (CP 3)
	In trying to write something, I forget what I wanted to say (PWA 3)
Post Therapy	Can usually work it out without drawing (CP 3) PWA is already able to make his point felt – there's nothing to teach him (CP 9) Guessing leads conversation off on a wrong tangent (CP 1) Will give up prompting keyword if PWA can't get to it (CP 1)

	Aligns understanding
Pre Therapy	Will ask to check if I'm on the right track (CP 1) Will check back when I don't think what PWA has said is reliable (CP 7)
	Will use gestures and yes/no to let CP know how accurate her guesses are (PWA 9)
During Therapy	Paraphrasing stops things going wrong (CP 4) Paraphrasing helps make sure we're on the same wave length (CP 7) I do this one because otherwise PWA thinks I'm not listening (CP 2)
Post Therapy	

- ***Impact on PWA Participation in Conversation*** *(Section 6.3.1.2, p110)*

	Helps PWA express more
Pre Therapy	Leaving silences is important so PWA can rest and see if it comes out later (CP 2)
During Therapy	Paraphrasing helps mum consolidate her opinion (CP 7) Giving time means mum can say what she wants to say (CP 5) Giving more time and not interrupting so PWA can get words out (CP 3) Giving time allows PWA to finish what he's saying (CP 2) Staying quiet means PWA produces more words that help me understand (CP 1)
Post Therapy	Strategies help us get past one word (CP 5) Giving time and writing down we get a bit further (CP 5) Pen and paper gets things going (CP 5) We will always write things down because it makes sense (CP 1)

Enables PWA to contribute to conversation	
Pre Therapy	Reason for Not Using
	Won't guess and interrupt because PWA ends up not saying anything (CP 2)
During Therapy	Reason for Using
	Uses stop sign when thinking (PWA 2) Says 'wait' and uses stop sign so can have space to talk (PWA 2)
	Reason for Not Using
	Guessing closes the conversation down in a second (CP 1)
Post Therapy	Reason for Using
	Tried techniques to see if they help PWA start a conversation (CP 3) Instead of letting PWA struggle, me saying the word means he can carry on with conversation (CP 3) Rather than pushing I ask open questions and let her lead (CP 5) Letting PWA know I'm still listening triggers him back (CP 2) I think about the context of what I'm saying so PWA can respond (CP 6) Giving space enables PWA to digest information and make a comment (CP 7) I used to ask test questions just to have a conversation (CP 5)

- ***Impact on Conversational Flow*** *(Section 6.3.1.3, p111)*

Pre Therapy	Reason for Using
	Will expand on what PWA has said to keep the conversation going (CP 7)
During Therapy	Reason for Using
	Commenting makes things more flowing (CP 7) Backing off and using passing turns instead of lots of questions avoids closing down the conversation (CP 1)
	Reason for Not Using
	Stopping making PWA say things feels more normal more natural (CP 6) Backing off and not guessing means conversation is becoming more relaxed (CP 1) Strategies take too long (PWA 4)
Post Therapy	Reason for Using
	Techniques keep the conversation going (CP 3) Strategies get the conversation to flow (CP 2)

- ***Impact on Improving PWA Communication*** *(Section 6.3.1.4, p111)*

Helps PWA produce words accurately	
Pre Therapy	Provide 1st sound of word to help PWA remember the word (CP 3) Mouth the words so PWA can get it right (CP 1) Giving the first sound helps PWA get there (CP 1) Mouthing a word helps PWA say it properly (CP 5) Will correct PWA and try and make PWA him say it (CP 6) Try to make PWA say it by repeating when he's struggling to say it (CP 6) Will write the word and say first sound to help PWA get it (CP 9)
During Therapy	
Post Therapy	

Elicits more speech	
Pre Therapy	When's he said 1 thing, I'll ask questions to bring out more words. If you've said one thing you can say two (CP 9)
During Therapy	
Post Therapy	

Places responsibility on PWA to make an effort	
Pre Therapy	Won't correct as I can't be PWA's speech (CP 4) Won't correct and instead let PWA try as that's part of the learning process (CP 4) Sometimes I won't help because I think you need to push & concentrate to try & get it out (CP 9)
During Therapy	Using strategies means PWA can be lazy and I have to do all the hard work (CP 9) PWA is losing ability to say words (CP 9)
Post Therapy	Doing whatever to get your point across is not speech (CP 9) Speech is what we want. Not to flap your hands about (CP 9)

Provides PWA with feedback about communication	
Pre Therapy	Repeat back what PWA has said so he realises it doesn't make sense (CP 3) Will point out if PWA has got it wrong. Not sure if that's helpful or not (CP 3) Correct PWA when the word sounds funny (CP 1) Will pick up on PWA's mistakes and mouth the word, because she doesn't notice them (CP 5) Will tell PWA what the most useful word was (CP 7) Will repeat back what PWA has said if it doesn't make sense so he can confirm it (CP 3) Will repeat back a muddled word see if PWA can make it clearer and I may have a guess (CP 7) Remind PWA what he's talking about when he's lost his thread (CP 2)
During Therapy	Let mum know when she's used a keyword successfully (CP 7) When PWA used a mime I got the therapy notes out and asked him to identify which strategy he'd used (CP 9)
Post Therapy	

	Prompts PWA to do something they wouldn't otherwise do
Pre Therapy	Prompt pen & paper cos PWA forgets he can do this (CP 2) Will prompt mum to write if I think she knows the word (CP 5) Will ask for writing if I don't know what he's going for (CP 6)
During Therapy	Keywords are a breakthrough if we can just keep reminding you (CP 3) I have to remind PWA what she needs to work on (CP 7) I prompt keyword (CP 1) I have to nag PWA to use strategies (CP 2) Prompted PWA to think of a keyword, this generalised to the same conversation the next day (CP 1)
Post Therapy	Will prompt for keyword when PWA gets stuck (CP 1) I have to remind PWA to write down (CP 2) Every so often will ask for topic before PWA launches into story (CP 3) We're talking and I try and put a pen in her hand (CP 5)

Social Reasons *(Section 6.3.2, p113)*

	Concern about perceptions of others
Pre Therapy	Can't be seen to be correcting or patronising PWA (2)
During Therapy	When I'm waiting, other people might wonder why I'm not helping (CP 3)
Post Therapy	

	Expected impact on protecting PWA competence
Pre Therapy	Reason for Using
	Starting word off for PWA to finish gives him control in a group of people and stops others taking over (CP 4) It's not fair to let PWA say something wrong I wouldn't let that happen (CP 1)
	Reason for Not Using
	Not fair to keep putting PWA right (CP 2) Won't correct into sentences as it's patronising (CP 2)
During Therapy	Reason for Not Using
	I won't prompt keyword because it puts me in teacher role (CP 4) Am deliberately stepping back as it's right for PWA to have more freedom (CP 4)
Post Therapy	Reason for Using
	Give time to talk as I could see other people didn't (CP 2) Using prompts and aid is not belittling (CP 4) Introducing someone as having had a stroke breaks the barrier and people see you as normal (CP 4)
	Reason for Not Using
	I can't go round speaking to my husband like a 4 year old (CP 9)

Emotional Reasons *(Section 6.3.3, p114)*

	Expected impact on levels of frustration
Pre Therapy	Reason for Using
	Will jump in and guess when PWA is turning himself inside out (CP 9)
	Reason for Not Using
	Will abandon getting to the bottom of it when it gets frustrating (CP 1) We used to stop the guessing because it would make us go a bit insane (CP 7)
During Therapy	
Post Therapy	Reason for Using
	If PWA gets frustrated and gives me a look I'll say the word for him (CP 2) We use strategies to get over our frustration (CP 1)

	Expected negative reaction of PWA
Pre Therapy	Reason for Not Using
	Won't make guesses as PWA gets cross (CP 2)
During Therapy	Reason for Using
	PWA will get cross unless I'm doing it properly (CP 2)
	Reason for Not Using
	Me guessing panics PWA when she's trying to find a word (CP 1)
Post Therapy	Reason for Not Using
	Saying 'I don't understand' is a good way of winding someone up or causing upset (CP 4)

	Own negative emotions
Pre Therapy	Reason for Not Using
	Won't help PWA when we're in a group as I get anxious (CP 6)
During Therapy	Reason for Not Using
	I'd go mad if I had to think ahead for every conversation (CP 9)
Post Therapy	Reason for Using
	My impatience meant I would vocalise words for mum when she got stuck (CP 5) I would lead the conversation and make her talk – I used to push my mum because I wanted her to get better asap (CP 5)

Fit with Identity *(Section 6.3.4 , p115)*

Pre Therapy	
During Therapy	I'm just not that type of person (CP 9) I'm not at one with this I don't feel it's the right approach (CP 9)
Post Therapy	I'm not the kind of person to sit with a pen in my hand (CP 9)

Internal Fluctuations *(Section 6.3.5, p115)*

Own fluctuations	
Pre Therapy	
During Therapy	Tiredness (PWA 3) Didn't use strategies when frustrated and angry (PWA 4)
Post Therapy	If I'm having a bad day I can't be bothered, so we don't try on those days (CP 6)

Partner's fluctuations	
Pre Therapy	On a good day, he hardly needs any help (CP 3)
During Therapy	Nothing works on a bad day (CP 3)
Post Therapy	Good days and bad days. On a bad day we'll just leave it (CP 6)

Skills *(Section 6.3.6, p116)*

Pre Therapy	Will give up because not able to make self more specific (PWA 9)
During Therapy	Didn't use strategies, just had to wait for CP to stumble across what he wanted to say (PWA 9) Not able to write a word down when he doesn't know what something is called (PWA 4)
Post Therapy	

Appendix 7

This Appendix contains the themes and data that relating to Hierarchy I of Study 2's analysis, discussed in Section 7.2 (p132). The data presented here was captured by the coding category Personal Factors Hindering/ Supporting Conversational Behaviour Change *and can be described by one of two major themes in the data*: **Factors Determining the Success of Making Changes.** *The figure below is reproduced from Figure 15 (p133) and contains the thematic hierarchy developed to describe the data contributing to this major theme.*

The data are taken from the during-therapy and post-therapy datasets and appear according to theme. They are presented here in the form of the summarised quotes used in the Framework charts, as opposed to the full verbatim quotes from the transcripts. Please refer to Section 5.5.4 (p89) for more information. For reference, the sections under which the themes are discussed within the thesis appear in brackets after the theme headings.

Factors Determining the Success of Making Changes:

Hierarchy I of Analytic Themes to Represent the Data Captured by

Personal Factors Hindering/ Supporting Conversational Behaviour Change

MOTIVATION for Conversational Behaviour Change

- ***Personal Investment in Therapy***
  - *Motivation for goals of therapy* [PWA 7, 9; CPs 2, 3, 6, 7, 9]
  - *Commitment to participate in therapy* [CPs 1, 5, 7]
- ***Commitment to Enacting Behavioural Changes***
  - *Intention to make changes* [CPs 1, 2, 3 4, 6, 7]
  - *Perceived effort required for strategies* [CP 9]

CAPABILITY for Conversational Behaviour Change

- ***Ability to Recognise Target Behaviour***
  - *Knowledge of target behaviour* [PWA 3, 5, 7]
  - *Monitoring own use of behaviour* [PWA 2, 5]
- ***Ability to Harness Cognitive Effort for Making Changes***
  - *Remembering to use strategies* [PWA 1, 5, 6, 7; CPs 6, 7]
  - *Thinking about doing something differently in context* [PWA 1, 2, 4, 6; CPs 1, 5, 6, 7]
  - *Decrease in monitoring strategy use over time* [CPs 1,2, 3, 7]
- ***Ability to Carry Out Target Strategy*** [PWA 1, 2, 4, 6; CPs 3, 6]

MOTIVATION for Conversational Behaviour Change *(Section 7.2.1, p133)*

- ***Personal Investment in Therapy*** *(Section 7.2.1.1, p134)*

Motivation for goals of therapy	
During Therapy	
Post Therapy	Supporting Change
	The loss of speech was the worst thing, so anything I could do to improve was my motivation (CP3)
	It's mental readiness. Accepting you can't talk and wanting to do something about it (CP2)
	It gives you a boost to think there are other ways you can be having conversations (CP6)
	Because the speech was so poor it was important to find a strategy to work (CP2)
	I think you've got to give everything a go to try and help with the situation (CP7)
	Hindering Change
	Therapy did not fit with what we wanted (CP9)
	I disagreed I should go in at a low level (CP9)
	You could see him slipping back because he wasn't practicing speech (CP9)
	Didn't like it, was not what I wanted (PWA9)
	Would rather say word than use strategies (PWA9)
	Confirms it wasn't for her (PWA7)
	Anxious slipping back/losing language gains as they were not working on words (PWA9)

Commitment to participate in therapy	
During Therapy	
Post Therapy	We worked hard to make it work (CP1)
	We wanted to be part of it and spend the time, even if things were busy at work (CP1)
	Committing to doing the homework, taking on board the strategies and making them part of everyday life (CP1)
	I wanted it to work (CP5)
	More important to me to help my mum out than be at work for a few hours (CP5)
	During the therapy I tried hard to practice the things we talked about (CP7)
	I was keen and thought it would do us good so we carried on. Mum might not have [i.e. carried on] without that (CP7)

- ***Commitment to Enacting Behavioural Changes*** *(Section 7.2.1.2, p135)*

Intention to make changes	
During Therapy	Supporting Change
	I'm dedicating myself to using my strategies (CP7)
	Have been deliberately using paraphrasing all week (CP4)
	I've been deliberately not so helpful this week (CP4)
	I'm trying really hard not to make PWA repeat (CP3)
	Trying really hard to give more time and not interrupt (CP3)
	Trying really hard to use the strategies we talked about (CP3)
	Hindering Change
	No I haven't thought I'm specifically going to practice (CP6)
Post Therapy	Supporting Change
	I always try to use the tools we were taught (CP2)
	I consciously try to be helpful (CP1)

Perceived effort required for strategies	
During Therapy	Strategies require a lot of preparation which feels like being at work rather than everyday life, I can't bring myself to do it for everything I do (CP9)
	It's a lot of preparation for a throw away remark (CP9)
Post Therapy	Preparation involved was unrealistic for spontaneous conversation (CP9)

CAPABILITY for Conversational Behaviour Change *(Section 7.2.2, p137)*

- ***Ability to Recognise Target Behaviour*** *(Section 7.2.2.1, p138)*

Knowledge of target behaviour	
During Therapy	Struggles to remember what the strategies are (PWA5)
	Is not sure what mime is (PWA3)
Post Therapy	Neither CP nor PWA can remember what PWA's strategies were (PWA7)

Monitoring own use of behaviour	
During Therapy	Reports not knowing what mimes he's used (PWA2)
	Is not sure if it is hard to use mime (PWA2)
	Can't remember using writing to solve problem (PWA5)
Post Therapy	

- ***Ability to Harness Cognitive Effort for Making Changes*** *(Section 7.2.2.2, p140)*

Remembering to use strategies	
During Therapy	Supporting Change
	Confirms remembering to try strategies out (PWA6) Reports remembering to use keywords word is happening 'a bit'(PWA1) Every so often I remember to use the strategies (CP7)
	Hindering Change
	Reports did not remember to use strategies (PWA7)
Post Therapy	Hindering Change
	Confirms needs CP to prompt writing otherwise wouldn't pick up a pen (PWA5) I need to give PWA time but I don't always (CP6)

Thinking about doing something differently in context	
During Therapy	It's in the back of my mind - I tell myself to stop trying to guess everything (CP1) I prepare to do a paraphrase (CP7) I'm being aware of whether I need to ask a question or whether a comment would be better (CP7) I have to think a bit about using the strategies – it works when I'm bearing it in mind (CP5) Reports using writing without being prompted (PWA4) Confirms is starting to think of another word without prompting (PWA1) Reports trying new things out (PWA6) Not sure if been doing anything different (PWA2)
Post Therapy	I do alot of thinking before I talk (CP7) I don't always think about what I'm saying but I do try (CP6) I consciously try to get myself to listen and by helpful (CP1) I think about what I say to get the meaning across (CP6) I don't always think about what I'm saying but I do try (CP6) I know I prompt keyword but I don't think about it, I suppose I might subconsciously (CP1)

Decrease in monitoring strategy use over time	
During Therapy	The things SLT taught us are second nature now (CP2) We've used the techniques and incorporated into how we talk now (CP3)
Post Therapy	I don't know if I still say those things after all this time (CP1) I'm unsure about what I do now (CP7) It's hard to say if I still use strategies without seeing a video (CP7)

- ***Ability to Carry Out Target Strategy*** *(Section 7.2.2.3, p143)*

During Therapy	Supporting Change
	It was easy to stop making him repeat everything (CP3) Confirms is easy to think of a keyword (PWA1) Reports writing is successful (PWA2)

	Confirms writing is easy and 'lovely' (PWA1)
	Hindering Change
	Grimaces at 'mime' (PWA1)
	Reports mime is not working (PWA2)
	Trying to use keyword but not so easy (PWA6)
	Difficult to link keyword to most important part (PWA4)
	Groans at being prompted for keywords, confirms this is difficult (PWA4)
	Difficult to write something down when you don't know what it's called (PWA4)
Post Therapy	Supporting Change
	Confirms it was easy to change (PWA6)
	It was easy to change (CP6)
	Hindering Change
	Hard to think of another word (PWA1)

Appendix 8

This Appendix contains the themes and data that relating to Hierarchy II of Study 2's analysis, discussed in Section 7.2.3 (p146). The data presented here was captured by the coding category Personal Factors Hindering/ Supporting Conversational Behaviour Change *and can be described by one of two major themes in the data***: Mechanisms of Conversational Behaviour Change.** *The figure below is reproduced from* Figure 17 *(p149) and contains the thematic hierarchy developed to describe the data contributing to this major theme.*

The data are taken from the during-therapy and post-therapy datasets and appear according to theme. They are presented here in the form of the summarised quotes used in the Framework charts, as opposed to the full verbatim quotes from the transcripts. Please refer to Section 5.5.4 (p89) for more information. For reference, the sections under which the themes are discussed within the thesis appear in brackets after the theme headings.

Mechanisms of Conversational Behaviour Change:

Hierarchy II of Analytic Themes to Represent Data Captured by

Personal Factors Hindering/ Supporting Conversational Behaviour Change

Changing OPPORTUNITY to Change Behaviour

- ***Change in Conversational Support for PWA Strategies*** [PWA 5, 6; CP 5]

Changing CAPABILITY to Change Behaviour

- *Increased Awareness of Own Behaviour* [CPs 3, 5, 6, 7]
- *Replacing Barriers with Facilitators* [CPs 1, 3, 4, 5, 7]
- *Increased Ease at Implementing Strategies* [PWA 2; CPs 2, 4]

Changing MOTIVATION to Change Behaviour

- *Changed Expectation of Behaviour's Impact*
  - ***Changed expectation of benefits*** [PWA 2, 6; CPs 1, 2, 4, 5, 6]
  - ***Changed expectation of costs*** [PWA 2, 6; CPs 4, 5]
- *Changed Priorities for Conversation* [CPs 3, 5, 6]
- *Changed Perception of Success in Conversation* [CPs 6, 7]
- *Changed Emotions about Conversation* [CPs 5, 6]

Changing OPPORTUNITY to Change Behaviour *(Section7.3.1, p150)*

- ***Change in Conversational Support for PWA Strategies*** *(Section 7.3.1.1, p150)*

During Therapy	Reports remembering to use keyword with support from CP (PWA5)
Post Therapy	We now carry a notepad in the car, never used to (CP5) Uses writing when CP prompts (PWA5) CP starting to give me extra time made a big difference (PWA6)

Changing CAPABILITY to Change Behaviour *(Section7.3.2, p153)*

- ***Increased Awareness of Own Behaviour*** *(Section 7.3.2.1, p153)*

During Therapy	I'm avoiding asking you questions you know the answer to now I'm more aware of it (CP3) Sometimes you're aware of it when you're talking but not all the time (CP6) I caught myself doing a passing turn, it's made me aware I do do it (CP7)
Post Therapy	I think back to the awareness of how I communicate when we talk (CP7) A little bit of that I think I was doing already, but it just made me aware of a lot of things and really hone in on what would help (CP7) I became aware of things I was doing over the course of therapy, it opened my eyes and has stayed with me (CP5)

- ***Replacing Barriers with Facilitators*** *(Section 7.3.2.2, p155)*

During Therapy	After she uses a keyword I listen and let her continue rather than asking a lot of questions (CP1) Backing off and using passing turns instead of asking lots of questions/making lots of guesses (CP1) I've been giving you words rather than letting you struggle (CP3) I've been trying really hard to not interrupt and give you more space (CP3) Being aware of where a comment would be better than a question (CP7) Using paraphrasing when I don't understand to stop things going wrong (CP4)
Post Therapy	Instead of letting him struggle, I say the word so he can carry on with his conversation (CP3) Rather than pushing I ask open questions (CP5)

- ***Increased Ease at Implementing Strategies*** *(Section7.3.2.3 , p156)*

During Therapy	Confirms getting easier to use the strategies: 'getting on, getting better' (PWA2)
Post Therapy	You start using the prompts and aids easier (CP4) It was hard at first, but didn't take too long (CP2)

Changing MOTIVATION to Change Behaviour *(Section 7.3.3, p158)*

- ***Changed Expectation of Behaviour's Impact*** *(Section7.3.3.1 , p159)*

Changed perception of benefits	
During Therapy	Staying quiet meant PWA produced more words and I understood – it was really good (CP1) Using the strategies – have noticed conversation is becoming more relaxed (CP1) Letting the conversation go on & checking – it's been good, it's been much better (CP2) PWA said it was better when I used the strategies (CP4) Stopping making PWA say it feel more normal. Must make PWA feel better (CP6) Writing/drawing helpful and is doing it more (PWA6)
Post Therapy	With me giving time and her writing down we would get a bit further than we would have previously (CP5) Writing was just another way of communicating and helping us to not worry so much (CP6) Using tools like writing, gestures helps us communicate (CP6) Our conversations were a bit laboured before we realised about the tools (CP6) I'm able to help him express himself better and it's reduced frustration and helped the relationship (CP4) Stop and wait – it's alright. Coming better (PWA2) Pen and paper. Gets further than words (PWA2) At first I didn't want to carry round a notepad and pen, then I go 'ooh'! (PWA6)

Changed perception of costs	
During Therapy	
Post Therapy	The main thing I remember is the things I was doing wrong and realising the impact it was having on PWA (CP4) Being aware of how asking questions I knew the answer to affected our conversations opened my eyes (CP5) Becoming aware of how what I was doing was affecting our conversations – that's stayed with me and broken the habit (CP5) Seeing the video back and watching where I was going wrong helped learn to stop and listen (CP6) Realised during therapy was looking down and not making eye contact with people. Much better now (PWA2)

- ***Changed Priorities for Conversation*** *(Section 7.3.3.2, p162)*

During Therapy	We thought we had to make PWA say everything. Don't feel the pressure so much now, whatever we do it doesn't really matter (CP6) We thought we needed to make PWA say it (CP6)
Post Therapy	The conversations about supporting PWA rather than waiting for correct words have stayed with me (CP3) Before therapy we left you to try and say words even when we knew what you were

	saying, because we thought it was helpful (CP3) I would lead the conversation and make her talk – I used to push my mum because I wanted her to get better asap (CP5) Realising it doesn't matter how you converse as long as you find a way. You don't have to talk (CP6) Moved from 'PWA must speak' to communicating whatever way (CP6) It was more about having a different way of communication, not just speech (CP6) Instead of letting him struggle, I say the word so he can carry on with his conversation (CP3)

- ***Changed Perception of Success in Conversation*** *(Section 7.3.3.3, p163)*

During Therapy	Reflecting on homework conversations and strategies highlights what you can do (CP6)
Post Therapy	Having to make time helped us learn we could have a conversation (CP6) It gives you a boost to think there are other ways of having conversation, stops you getting complacent (CP6) Watching the videos made me realise we do have conversation (CP7)

- ***Changed Emotions about Conversation*** *(Section 7.3.3.4, p164)*

During Therapy	We're not worrying so much about making PWA say it, we've stopped that (CP6)
Post Therapy	Instead of PWA *must* speak, we must do this, we must do that; don't worry about it so much (CP6) After the stroke I used to push my mum a lot because I wanted her to get better quickly and that would come into conversation. It changed that dynamic, rather than pushing I now ask questions and leave it open (CP5)

Appendix 9

Taxonomy of Behaviour Change Techniques

Reproduced from the supplementary material published with Michie, Richardson, Johnston, Abraham, Francis, Hardeman, Eccles, Cane & Wood (2013)

Techniques shaded in black represent those included in the streamlined version of the taxonomy used to code Better Conversations with Aphasia in this thesis.

No.	Label	Definition	Examples
1. Goals and planning			
1.1	***Goal setting (behavior)***	Set or agree on a goal defined in terms of the behavior to be achieved *Note: only code goal-setting if there is sufficient evidence that goal set as part of intervention; if goal unspecified or a behavioral outcome, code **1.3, Goal setting (outcome)**; if the goal defines a specific context, frequency, duration or intensity for the behavior, also code **1.4, Action planning***	Agree on a daily walking goal (e.g. 3 miles) with the person and reach agreement about the goal Set the goal of eating 5 pieces of fruit per day as specified in public health guidelines
1.2	***Problem solving***	Analyse , or prompt the person to analyse, factors influencing the behavior and generate or select strategies that include overcoming barriers and/or increasing facilitators (includes '**Relapse Prevention**' *and* '**Coping Planning**') *Note: barrier identification without solutions is not sufficient. If the BCT does not include analysing the behavioral problem, consider **12.3, Avoidance/changing exposure to cues for the behavior, 12.1, Restructuring the physical environment, 12.2, Restructuring the social environment,** or **11.2, Reduce negative emotions***	Identify specific triggers (e.g. being in a pub, feeling anxious) that generate the urge/want/need to drink and develop strategies for avoiding environmental triggers or for managing negative emotions, such as anxiety, that motivate drinking Prompt the patient to identify barriers preventing them from starting a new exercise regime e.g., lack of motivation, and discuss ways in which they could help overcome them e.g., going to the gym with a buddy
1.3	***Goal setting (outcome)***	Set or agree on a goal defined in terms of a positive **outcome** of wanted behavior *Note: only code guidelines if set as a goal in an intervention context; if goal is a behavior, code **1.1, Goal setting (behavior)**; if goal unspecified code **1.3, Goal setting (outcome)***	Set a weight loss goal (e.g. 0.5 kilogram over one week) as an outcome of changed eating patterns

No.	Label	Definition	Examples
1.4	***Action planning***	Prompt detailed planning of performance of the behavior (must include at least one of context, frequency, duration and intensity). Context may be environmental (physical or social) or internal (physical, emotional or cognitive) (includes *'***Implementation Intentions***'*) *Note: evidence of action planning does not necessarily imply goal setting, only code latter if sufficient evidence*	Encourage a plan to carry condoms when going out socially at weekends Prompt planning the performance of a particular physical activity (e.g. running) at a particular time (e.g. before work) on certain days of the week
1.5	***Review behavior goal(s)***	Review behavior goal(s) jointly with the person and consider modifying goal(s) or behavior change strategy in light of achievement. This may lead to re-setting the same goal, a small change in that goal or setting a new goal instead of (or in addition to) the first, or no change *Note: if goal specified in terms of behavior, code* ***1.5, Review behavior goal(s)****, if goal unspecified, code* ***1.7, Review outcome goal(s);*** *if discrepancy created consider also* ***1.6, Discrepancy between current behavior and goal***	Examine how well a person's performance corresponds to agreed goals e.g. whether they consumed less than one unit of alcohol per day, and consider modifying future behavioral goals accordingly e.g. by increasing or decreasing alcohol target or changing type of alcohol consumed
1.6	***Discrepancy between current behavior and goal***	Draw attention to discrepancies between a person's current behavior (in terms of the *form, frequency, duration, or intensity* of that behavior) and the person's previously set outcome goals, behavioral goals or action plans (goes beyond self-monitoring of behavior) *Note: if discomfort is created only code* ***13.3, Incompatible beliefs*** *and not* ***1.6, Discrepancy between current behavior and goal****; if goals are modified, also code* ***1.5, Review behavior goal(s)*** *and/or* ***1.7, Review outcome goal(s)****; if feedback is provided, also code* ***2.2, Feedback on behaviour***	Point out that the recorded exercise fell short of the goal set

No.	Label	Definition	Examples
1.7	***Review outcome goal(s)***	Review outcome goal(s) jointly with the person and consider modifying goal(s) in light of achievement. This may lead to re-setting the same goal, a small change in that goal or setting a new goal instead of, or in addition to the first *Note: if goal specified in terms of behavior, code **1.5, Review behavior goal(s)**, if goal unspecified, code **1.7, Review outcome goal(s);** if discrepancy created consider also **1.6, Discrepancy between current behavior and goal***	Examine how much weight has been lost and consider modifying outcome goal(s) accordingly e.g., by increasing or decreasing subsequent weight loss targets
1.8	***Behavioral contract***	Create a written specification of the behavior to be performed, agreed on by the person, and witnessed by another *Note: <u>also</u> code **1.1, Goal setting (behavior)***	Sign a contract with the person e.g. specifying that they will not drink alcohol for one week
1.9	***Commitment***	Ask the person to affirm or reaffirm statements indicating commitment to change the behavior *Note: if defined in terms of the behavior to be achieved <u>also</u> code **1.1, Goal setting (behavior)***	Ask the person to use an "I will" statement to affirm or reaffirm a strong commitment (i.e. using the words "strongly", "committed" or "high priority") to start, continue or restart the attempt to take medication as prescribed
2. Feedback and monitoring			
2.1	***Monitoring of behavior by others without feedback***	Observe or record behavior with the person's knowledge as part of a behavior change strategy *Note: if monitoring is part of a data collection procedure rather than a strategy aimed at changing behavior, do not code; if feedback given, code only **2.2, Feedback on behavior**, and <u>not</u> **2.1, Monitoring of behavior by others without feedback**; if monitoring outcome(s) code **2.5, Monitoring outcome(s) of behavior by others without feedback**; if self-monitoring behavior, code **2.3, Self-monitoring of behaviour***	Watch hand washing behaviors among health care staff and make notes on context, frequency and technique used

No.	Label	Definition	Examples
2.2	***Feedback on behavior***	Monitor and provide informative or evaluative feedback on performance of the behavior *(e.g. form, frequency, duration, intensity)* *Note: if Biofeedback, code only **2.6, Biofeedback** and <u>not</u> **2.2, Feedback on behavior**; if feedback is on **outcome(s)** of behavior, code **2.7, Feedback on outcome(s) of behavior**; if there is no clear evidence that feedback was given, code **2.1, Monitoring of behavior by others without feedback**; if feedback on behaviour is evaluative e.g. praise, also code **10.4, Social reward***	Inform the person of how many steps they walked each day (as recorded on a pedometer) or how many calories they ate each day (based on a food consumption questionnaire).
2.3	***Self-monitoring of behavior***	Establish a method for the person to monitor and record their behavior(s) as part of a behavior change strategy *Note: if monitoring is part of a data collection procedure rather than a strategy aimed at changing behavior, do not code; if monitoring of outcome of behavior, code **2.4, Self-monitoring of outcome(s) of behavior**; if monitoring is by someone else (without feedback), code **2.1, Monitoring of behavior by others without feedback***	Ask the person to record daily, in a diary, whether they have brushed their teeth for at least two minutes before going to bed Give patient a pedometer and a form for recording daily total number of steps
2.4	***Self-monitoring of outcome(s) of behavior***	Establish a method for the person to monitor and record the **outcome(s)** of their behavior as part of a behavior change strategy *Note: if monitoring is part of a data collection procedure rather than a strategy aimed at changing behavior, do not code ; if monitoring behavior, code **2.3, Self-monitoring of behavior**; if monitoring is by someone else (without feedback), code **2.5, Monitoring outcome(s) of behavior by others without feedback***	Ask the person to weigh themselves at the end of each day, over a two week period, and record their daily weight on a graph to increase exercise behaviors
2.5	***Monitoring outcome(s) of behavior by others without feedback***	Observe or record outcomes of behavior with the person's knowledge as part of a behavior change strategy *Note: if monitoring is part of a data collection procedure rather than a strategy aimed at changing behavior, do not code; if feedback given, code only **2.7, Feedback on outcome(s) of behavior**; if monitoring behavior code **2.1, Monitoring of behavior by others without feedback**; if self-monitoring outcome(s), code **2.4, Self-monitoring of outcome(s) of behavior***	Record blood pressure, blood glucose, weight loss, or physical fitness

No.	Label	Definition	Examples
2.6	***Biofeedback***	Provide feedback about the body *(e.g. physiological or biochemical state)* using an external monitoring device as part of a behavior change strategy *Note: if Biofeedback, code only* ***2.6, Biofeedback*** *and* *not* ***2.2, Feedback on behavior*** *or* ***2.7, Feedback on outcome(s) of behaviour***	Inform the person of their blood pressure reading to improve adoption of health behaviors
2.7	***Feedback on outcome(s) of behavior***	Monitor and provide feedback on the outcome of performance of the behavior *Note: if Biofeedback, code only* ***2.6, Biofeedback*** *and* *not* ***2.7, Feedback on outcome(s) of behavior****; if feedback is on* ***behavior*** *code* ***2.2, Feedback on behavior****; if there is no clear evidence that feedback was given code* ***2.5, Monitoring outcome(s) of behavior by others without feedback;*** *if feedback on behaviour is evaluative e.g. praise, also code* ***10.4, Social reward***	Inform the person of how much weight they have lost following the implementation of a new exercise regime
3. Social support			
3.1	***Social support (unspecified)***	Advise on, arrange or provide social support *(e.g. from friends, relatives, colleagues,' buddies' or staff)* or non-contingent praise or reward for performance of the behavior. It includes encouragement and counselling, but only when it is directed at the **behavior** *Note: attending a group class and/or mention of 'follow-up' does not necessarily apply this BCT, support must be explicitly mentioned; if practical, code* ***3.2, Social support (practical)****; if emotional, code* ***3.3, Social support (emotional)*** (includes '**Motivational interviewing**' and **'Cognitive Behavioral Therapy'**)	Advise the person to call a 'buddy' when they experience an urge to smoke Arrange for a housemate to encourage continuation with the behavior change programme Give information about a self-help group that offers support for the behavior
3.2	***Social support (practical)***	Advise on, arrange, or provide **practical** help *(e.g. from friends, relatives, colleagues, 'buddies' or staff)* for performance of the behavior *Note: if emotional, code* ***3.3, Social support (emotional)****; if general or unspecified, code* ***3.1, Social support (unspecified)*** *If only restructuring the physical environment or adding objects to the environment, code* ***12.1, Restructuring the physical environment*** *or* ***12.5, Adding objects to the environment;*** *attending a group or class and/or mention of 'follow-up' does not necessarily apply this BCT, support must be explicitly mentioned.*	Ask the partner of the patient to put their tablet on the breakfast tray so that the patient remembers to take it

No.	Label	Definition	Examples
3.3	***Social support (emotional)***	Advise on, arrange, or provide **emotional** social support *(e.g. from friends, relatives, colleagues, 'buddies' or staff)* for performance of the behavior *Note: if practical, code **3.2, Social support (practical)**; if unspecified, code **3.1, Social support (unspecified)***	Ask the patient to take a partner or friend with them to their colonoscopy appointment
4. Shaping knowledge			
4.1	***Instruction on how to perform a behavior***	Advise or agree on how to perform the behavior (includes '**Skills training**') *Note: when the person attends classes such as exercise or cookery, code **4.1, Instruction on how to perform the behavior, 8.1, Behavioral practice/rehearsal** and **6.1, Demonstration of the behavior***	Advise the person how to put a condom on a model of a penis correctly
4.2	***Information about antecedents***	Provide information about antecedents (*e.g. social and environmental situations and events, emotions, cognitions)* that reliably predict performance of the behaviour	Advise to keep a record of snacking and of situations or events occurring prior to snacking
4.3	***Re-attribution***	Elicit perceived causes of behavior and suggest alternative explanations *(e.g. external or internal and stable or unstable)*	If the person attributes their over-eating to the frequent presence of delicious food, suggest that the 'real' cause may be the person's inattention to bodily signals of hunger and satiety
4.4	***Behavioral experiments***	Advise on how to identify and test hypotheses about the behavior, its causes and consequences, by collecting and interpreting data	Ask a family physician to give evidence-based advice rather than prescribe antibiotics and to note whether the patients are grateful or annoyed
5. Natural consequences			
5.1	***Information about health consequences***	Provide information (e.g. written, verbal, visual) about health consequences of performing the behavior *Note: consequences can be for any target, not just the recipient(s) of the intervention; emphasising importance of consequences is not sufficient; if information about emotional consequences, code **5.6, Information about emotional consequences**; if about social, environmental or unspecified consequences code **5.3, Information about social and environmental consequences***	Explain that not finishing a course of antibiotics can increase susceptibility to future infection Present the likelihood of contracting a sexually transmitted infection following unprotected sexual behavior

No.	Label	Definition	Examples
5.2	***Salience of consequences***	Use methods specifically designed to **emphasise** the consequences of performing the behaviour with the aim of making them more memorable (goes beyond informing about consequences) *Note: if information about consequences, also code **5.1, Information about health consequences**, **5.6, Information about emotional consequences** or **5.3, Information about social and environmental consequences***	Produce cigarette packets showing pictures of health consequences e.g. diseased lungs, to highlight the dangers of continuing to smoke
5.3	***Information about social and environmental consequences***	Provide information (e.g. written, verbal, visual) about social and environmental consequences of performing the behavior *Note: consequences can be for any target, not just the recipient(s) of the intervention; if information about health or consequences, code **5.1, Information about health consequences**; if about emotional consequences, code **5.6, Information about emotional consequences**; if unspecified, code **5.3, Information about social and environmental consequences***	Tell family physician about financial remuneration for conducting health screening Inform a smoker that the majority of people disapprove of smoking in public places
5.4	***Monitoring of emotional consequences***	Prompt assessment of **feelings** after attempts at performing the behavior	Agree that the person will record how they feel after taking their daily walk
5.5	***Anticipated regret***	Induce or raise awareness of expectations of future regret about performance of the unwanted behavior *Note: <u>not</u> including **5.6, Information about emotional consequences**; if suggests adoption of a perspective or new perspective in order to change cognitions <u>also</u> code **13.2, Framing/reframing***	Ask the person to assess the degree of regret they will feel if they do not quit smoking
5.6	***Information about emotional consequences***	Provide information (e.g. written, verbal, visual) about emotional consequences of performing the behavior *Note: consequences can be related to emotional health disorders (e.g. depression, anxiety) and/or states of mind (e.g. low mood, stress); <u>not</u> including **5.5, Anticipated regret**; consequences can be for any target, not just the recipient(s) of the intervention; if information about health consequences code **5.1, Information about health consequences**; if about social, environmental or unspecified code **5.3, Information about social and environmental consequences***	Explain that quitting smoking increases happiness and life satisfaction

No.	Label	Definition	Examples
6. Comparison of behaviour			
6.1	***Demonstration of the behavior***	Provide an observable sample of the performance of the behaviour, directly in person or indirectly e.g. via film, pictures, for the person to aspire to or imitate (includes '**Modelling**'). *Note:* if advised to practice, also code, ***8.1, Behavioural practice and rehearsal;*** *If provided with instructions on how to perform, also code* ***4.1, Instruction on how to perform the behaviour***	Demonstrate to nurses how to raise the issue of excessive drinking with patients via a role-play exercise
6.2	***Social comparison***	Draw attention to others' performance to allow comparison with the person's own performance *Note: being in a group setting does not necessarily mean that social comparison is actually taking place*	Show the doctor the proportion of patients who were prescribed antibiotics for a common cold by other doctors and compare with their own data
6.3	***Information about others' approval***	Provide information about what other people think about the behavior. The information clarifies whether others will like, approve or disapprove of what the person is doing or will do	Tell the staff at the hospital ward that staff at all other wards approve of washing their hands according to the guidelines
7. Associations			
7.1	***Prompts/cues***	Introduce or define environmental or social stimulus with the purpose of prompting or cueing the behavior. The prompt or cue would normally occur at the time or place of performance *Note: when a stimulus is linked to a specific action in an if-then plan including one or more of frequency, duration or intensity also code* ***1.4, Action planning****.*	Put a sticker on the bathroom mirror to remind people to brush their teeth
7.2	***Cue signalling reward***	Identify an environmental stimulus that reliably predicts that reward will follow the behavior (includes ***'Discriminative cue'***)	Advise that a fee will be paid to dentists for a particular dental treatment of 6-8 year old, but not older, children to encourage delivery of that treatment (the 6-8 year old children are the environmental stimulus)
7.3	***Reduce prompts/cues***	Withdraw gradually prompts to perform the behavior (includes ***'Fading'***)	Reduce gradually the number of reminders used to take medication
7.4	***Remove access to the reward***	Advise or arrange for the person to be separated from situations in which unwanted behavior can be rewarded in order to reduce the behavior (includes ***'Time out'***)	Arrange for cupboard containing high calorie snacks to be locked for a specified period to reduce the consumption of sugary foods in between meals

No.	Label	Definition	Examples
7.5	***Remove aversive stimulus***	Advise or arrange for the removal of an aversive stimulus to facilitate behavior change (includes ***'Escape learning'***)	Arrange for a gym-buddy to stop nagging the person to do more exercise in order to increase the desired exercise behaviour
7.6	***Satiation***	Advise or arrange repeated exposure to a stimulus that reduces or extinguishes a drive for the unwanted behavior	Arrange for the person to eat large quantities of chocolate, in order to reduce the person's appetite for sweet foods
7.7	***Exposure***	Provide systematic confrontation with a feared stimulus to reduce the response to a later encounter	Agree a schedule by which the person who is frightened of surgery will visit the hospital where they are scheduled to have surgery
7.8	***Associative learning***	Present a neutral stimulus jointly with a stimulus that already elicits the behavior repeatedly until the neutral stimulus elicits that behavior (includes ***'Classical/Pavlovian Conditioning'***) *Note: when a BCT involves reward or punishment, code one or more of:* ***10.2, Material reward (behavior); 10.3, Non-specific reward; 10.4, Social reward, 10.9, Self-reward; 10.10, Reward (outcome)***	Present repeatedly fatty foods with a disliked sauce to discourage the consumption of fatty foods
8. Repetition and substitution			
8.1	***Behavioral practice/ rehearsal***	Prompt practice or rehearsal of the performance of the behavior one or more times in a context or at a time when the performance may not be necessary, in order to increase habit and skill *Note: if aiming to associate performance with the context, also code* ***8.3, Habit formation***	Prompt asthma patients to practice measuring their peak flow in the nurse's consulting room
8.2	***Behavior substitution***	Prompt substitution of the unwanted behavior with a wanted or neutral behavior *Note: if this occurs regularly, also code* ***8.4, Habit reversal***	Suggest that the person goes for a walk rather than watches television
8.3	***Habit formation***	Prompt rehearsal and repetition of the behavior in the same context repeatedly so that the context elicits the behavior *Note: also code* ***8.1, Behavioral practice/rehearsal***	Prompt patients to take their statin tablet before brushing their teeth every evening
8.4	***Habit reversal***	Prompt rehearsal and repetition of an alternative behavior to **replace** an unwanted habitual behavior *Note: also code* ***8.2, Behavior substitution***	Ask the person to walk up stairs at work where they previously always took the lift

No.	Label	Definition	Examples
8.5	***Overcorrection***	Ask to repeat the wanted behavior in an exaggerated way following an unwanted behaviour	Ask to eat only fruit and vegetables the day after a poor diet
8.6	***Generalisation of a target behavior***	Advise to perform the wanted behaviour, which is already performed in a particular situation, in another situation	Advise to repeat toning exercises learned in the gym when at home
8.7	***Graded tasks***	Set easy-to-perform tasks, making them increasingly difficult, but achievable, until behavior is performed	Ask the person to walk for 100 yards a day for the first week, then half a mile a day after they have successfully achieved 100 yards, then two miles a day after they have successfully achieved one mile
9. Comparison of outcomes			
9.1	***Credible source***	Present verbal or visual communication from a credible source **in favour of or against the behavior** *Note: code this BCT if source generally agreed on as credible e.g., health professionals, celebrities or words used to indicate expertise or leader in field and if the communication has the aim of persuading; if information about health consequences, also code **5.1, Information about health consequences**, if about emotional consequences, also code **5.6, Information about emotional consequences**; if about social, environmental or unspecified consequences also code **5.3, Information about social and environmental consequences***	Present a speech given by a high status professional to emphasise the importance of not exposing patients to unnecessary radiation by ordering x-rays for back pain
9.2	***Pros and cons***	Advise the person to identify and compare reasons for wanting (pros) and not wanting to (cons) change the behavior (includes '**Decisional balance'**) *Note: if providing information about health consequences, also code **5.1, Information about health consequences**; if providing information about emotional consequences, also code **5.6, Information about emotional consequences**; if providing information about social, environmental or unspecified consequences also code **5.3, Information about social and environmental consequences***	Advise the person to list and compare the advantages and disadvantages of prescribing antibiotics for upper respiratory tract infections
9.3	***Comparative imagining of future outcomes***	Prompt or advise the imagining and comparing of future outcomes of changed versus unchanged behaviour	Prompt the person to imagine and compare likely or possible outcomes following attending versus not attending a screening appointment

No.	Label	Definition	Examples
10. Reward and threat			
10.1	***Material incentive (behavior)***	Inform that money, vouchers or other valued objects ***will be*** delivered if and only if there has been effort and/or progress in performing the behavior (includes ***'Positive reinforcement'***) *Note: if incentive is social, code **10.5, Social incentive** if unspecified code **10.6, Non-specific incentive,** and not **10.1, Material incentive (behavior)**; if incentive is for **outcome,** code **10.8, Incentive (outcome).** If reward is delivered also code one of: **10.2, Material reward (behavior); 10.3, Non-specific reward; 10.4, Social reward, 10.9, Self-reward; 10.10, Reward (outcome)***	Inform that a financial payment will be made each month in pregnancy that the woman has not smoked
10.2	***Material reward (behavior)***	Arrange for the delivery of money, vouchers or other valued objects if and only if there ***has been*** effort and/or progress in performing the behavior (includes '**Positive reinforcement'**) *Note: If reward is social, code **10.4, Social reward**, if unspecified code **10.3, Non-specific reward**, and not **10.1, Material reward (behavior)**; if reward is for **outcome**, code **10.10, Reward (outcome).** If informed of reward in advance of rewarded behaviour, also code one of: **10.1, Material incentive (behaviour); 10.5, Social incentive; 10.6, Non-specific incentive; 10.7, Self-incentive; 10.8, Incentive (outcome)***	Arrange for the person to receive money that would have been spent on cigarettes if and only if the smoker has not smoked for one month
10.3	***Non-specific reward***	Arrange delivery of a reward if and only if there ***has been*** effort and/or progress in performing the behavior (includes '**Positive reinforcement'**) *Note: if reward is material, code **10.2, Material reward (behavior)**, if social, code **10.4, Social reward**, and not **10.3, Non-specific reward**; if reward is for **outcome** code **10.10, Reward (outcome).** If informed of reward in advance of rewarded behaviour, also code one of**: 10.1, Material incentive (behaviour); 10.5, Social incentive; 10.6, Non-specific incentive; 10.7, Self-incentive; 10.8, Incentive (outcome)***	Identify something (e.g. an activity such as a visit to the cinema) that the person values and arrange for this to be delivered if and only if they attend for health screening

No.	Label	Definition	Examples
10.4	***Social reward***	Arrange verbal or non-verbal reward if and only if there ***has been*** effort and/or progress in performing the behavior (includes '**Positive reinforcement**') *Note: if reward is material, code **10.2, Material reward (behavior)**, if unspecified code **10.3, Non-specific reward**, and not **10.4, Social reward**; if reward is for **outcome** code **10.10, Reward (outcome).** If informed of reward in advance of rewarded behaviour, also code one of: **10.1, Material incentive (behaviour); 10.5, Social incentive; 10.6, Non-specific incentive; 10.7, Self-incentive; 10.8, Incentive (outcome)***	Congratulate the person for each day they eat a reduced fat diet
10.5	***Social incentive***	Inform that a verbal or non-verbal reward ***will be*** delivered if and only if there has been effort and/or progress in performing the behavior (includes '**Positive reinforcement'**) *Note: if incentive is material, code **10.1, Material incentive (behavior)**, if unspecified code **10.6, Non-specific incentive**, and not **10.5, Social incentive**; if incentive is for **outcome** code **10.8, Incentive (outcome).** If reward is delivered also code one of: **10.2, Material reward (behavior); 10.3, Non-specific reward; 10.4, Social reward, 10.9, Self-reward; 10.10, Reward (outcome)***	Inform that they will be congratulated for each day they eat a reduced fat diet
10.6	***Non-specific incentive***	Inform that a reward ***will be*** delivered if and only if there has been effort and/or progress in performing the behavior (includes '**Positive reinforcement'**) *Note: if incentive is material, code **10.1, Material incentive (behavior)**, if social, code **10.5, Social incentive** and not **10.6, Non-specific incentive**; if incentive is for **outcome** code **10.8, Incentive (outcome).** If reward is delivered also code one of: **10.2, Material reward (behavior); 10.3, Non-specific reward; 10.4, Social reward, 10.9, Self-reward; 10.10, Reward (outcome)***	Identify an activity that the person values and inform them that this will happen if and only if they attend for health screening

No.	Label	Definition	Examples
10.7	***Self-incentive***	Plan to reward self in future if and only if there has been effort and/or progress in performing the behavior *Note: if self-reward is material, also code **10.1, Material incentive (behavior)**, if social, also code **10.5, Social incentive**, if unspecified, also code **10.6, Non-specific incentive**; if incentive is for **outcome** code **10.8, Incentive (outcome).** If reward is delivered also code one of: **10.2, Material reward (behavior); 10.3, Non-specific reward; 10.4, Social reward, 10.9, Self-reward; 10.10, Reward (outcome)***	Encourage to provide self with material (e.g., new clothes) or other valued objects if and only if they have adhered to a healthy diet
10.8	***Incentive (outcome)***	Inform that a reward ***will be*** delivered if and only if there has been effort and/or progress in achieving the behavioural **outcome** (*includes **'Positive reinforcement'***) *Note: this includes social, material, self- and non-specific incentives for outcome; if incentive is for the **behavior** code **10.5**, **Social incentive**, **10.1, Material incentive (behavior)**, **10.6, Non-specific incentive** or **10.7**, **Self-incentive** and not **10.8, Incentive (outcome).** If reward is delivered also code one of: **10.2, Material reward (behavior); 10.3, Non-specific reward; 10.4, Social reward, 10.9, Self-reward; 10.10, Reward (outcome)***	Inform the person that they will receive money if and only if a certain amount of weight is lost
10.9	***Self-reward***	Prompt self-praise or self-reward if and only if there ***has been*** effort and/or progress in performing the behavior *Note: if self-reward is material, also code **10.2, Material reward (behavior)**, if social, also code **10.4, Social reward**, if unspecified, also code **10.3, Non-specific reward**; if reward is for **outcome** code **10.10, Reward (outcome).** If informed of reward in advance of rewarded behaviour, also code one of: **10.1, Material incentive (behaviour); 10.5, Social incentive; 10.6, Non-specific incentive; 10.7, Self-incentive; 10.8, Incentive (outcome)***	Encourage to reward self with material (e.g., new clothes) or other valued objects if and only if they have adhered to a healthy diet

No.	Label	Definition	Examples
10.10	***Reward (outcome)***	Arrange for the delivery of a reward if and only if there ***has been*** effort and/or progress in achieving the behavioral **outcome** (includes '**Positive reinforcement**') *Note: this includes social, material, self- and non-specific rewards for outcome; if reward is for the* ***behavior*** *code* ***10.4, Social reward, 10.2, Material reward (behavior), 10.3, Non-specific reward*** *or* ***10.9, Self-reward*** *and not* ***10.10, Reward (outcome).*** *If informed of reward in advance of rewarded behaviour, also code one of****: 10.1, Material incentive (behaviour); 10.5, Social incentive; 10.6, Non-specific incentive; 10.7, Self-incentive; 10.8, Incentive (outcome)***	Arrange for the person to receive money if and only if a certain amount of weight is lost
10.11	***Future punishment***	Inform that future punishment or removal of reward will be a consequence of performance of an unwanted behavior (may include fear arousal) (includes ***'Threat'***)	Inform that continuing to consume 30 units of alcohol per day is likely to result in loss of employment if the person continues
11. Regulation			
11.1	***Pharmacological support***	Provide, or encourage the use of or adherence to, drugs to facilitate behavior change *Note: if pharmacological support to reduce negative emotions (i.e. anxiety) then also code* ***11.2, Reduce negative emotions***	Suggest the patient asks the family physician for nicotine replacement therapy to facilitate smoking cessation
11.2	***Reduce negative emotions*** [b]	Advise on ways of reducing negative emotions to facilitate performance of the behavior (includes '**Stress Management**') *Note: if includes analysing the behavioural problem, also code* ***1.2, Problem solving***	Advise on the use of stress management skills, e.g. to reduce anxiety about joining Alcoholics Anonymous
11.3	***Conserving mental resources***	Advise on ways of minimising demands on mental resources to facilitate behavior change	Advise to carry food calorie content information to reduce the burden on memory in making food choices
11.4	***Paradoxical instructions***	Advise to engage in some form of the unwanted behavior with the aim of reducing motivation to engage in that behaviour	Advise a smoker to smoke twice as many cigarettes a day as they usually do Tell the person to stay awake as long as possible in order to reduce insomnia
12. Antecedents			

No.	Label	Definition	Examples
12.1	***Restructuring the physical environment***	Change, or advise to change the **physical** environment in order to facilitate performance of the wanted behavior or create barriers to the unwanted behavior (other than prompts/cues, rewards and punishments) *Note: this may also involve **12.3, Avoidance/reducing exposure to cues for the behavior**; if restructuring of the social environment code **12.2, Restructuring the social environment;*** *if only adding objects to the environment, code **12.5, Adding objects to the environment***	Advise to keep biscuits and snacks in a cupboard that is inconvenient to get to Arrange to move vending machine out of the school
12.2	***Restructuring the social environment***	Change, or advise to change the **social** environment in order to facilitate performance of the wanted behavior or create barriers to the unwanted behavior (other than prompts/cues, rewards and punishments) *Note: this may also involve **12.3, Avoidance/reducing exposure to cues for the behavior**; if also restructuring of the physical environment also code **12.1, Restructuring the physical environment***	Advise to minimise time spent with friends who drink heavily to reduce alcohol consumption
12.3	***Avoidance/reducing exposure to cues for the behavior***	Advise on how to avoid exposure to specific social and contextual/physical cues for the behavior, including changing daily or weekly routines *Note: this may also involve **12.1, Restructuring the physical environment*** and/or ***12.2, Restructuring the social environment***; if the BCT includes analysing the behavioral problem, only code ***1.2, Problem solving***	Suggest to a person who wants to quit smoking that their social life focus on activities other than pubs and bars which have been associated with smoking
12.4	***Distraction***	Advise or arrange to use an alternative focus for attention to avoid triggers for unwanted behaviour	Suggest to a person who is trying to avoid between-meal snacking to focus on a topic they enjoy (e.g. holiday plans) instead of focusing on food
12.5	***Adding objects to the environment***	Add objects to the environment in order to facilitate performance of the behavior *Note: Provision of information (e.g. written, verbal, visual) in a booklet or leaflet is insufficient. If this is accompanied by social support, also code **3.2, Social support (practical)**; if the environment is changed beyond the addition of objects, also code **12.1, Restructuring the physical environment***	Provide free condoms to facilitate safe sex Provide attractive toothbrush to improve tooth brushing technique

No.	Label	Definition	Examples
12.6	***Body changes***	Alter body structure, functioning or support **directly** to facilitate behavior change	Prompt strength training, relaxation training or provide assistive aids (e.g. a hearing aid)
13. Identity			
13.1	***Identification of self as role model***	Inform that one's own behavior may be an example to others	Inform the person that if they eat healthily, that may be a good example for their children
13.2	***Framing /reframing***	Suggest the deliberate adoption of a perspective or new perspective on behavior (e.g. its purpose) in order to change cognitions or emotions about performing the behavior (includes '**Cognitive structuring**'); *If information about consequences then code **5.1, Information about health consequences, 5.6, Information about emotional consequences** or **5.3, Information about social and environmental consequences** instead of **13.2, Framing/reframing***	Suggest that the person might think of the tasks as reducing sedentary behavior (rather than increasing activity)
13.3	***Incompatible beliefs***	Draw attention to discrepancies between current or past behavior and self-image, in order to create discomfort (includes ***'Cognitive dissonance'***)	Draw attention to a doctor's liberal use of blood transfusion and their self-identification as a proponent of evidence-based medical practice
13.4	***Valued self-identity***	Advise the person to write or complete rating scales about a cherished value or personal strength as a means of affirming the person's identity as part of a behavior change strategy (includes ***'Self-affirmation'***)	Advise the person to write about their personal strengths before they receive a message advocating the behavior change
13.5	***Identity associated with changed behavior***	Advise the person to construct a new self-identity as someone who 'used to engage with the unwanted behavior'	Ask the person to articulate their new identity as an 'ex-smoker'
14. Scheduled consequences			
14.1	***Behavior cost***	Arrange for withdrawal of something valued if and only if an unwanted behavior is performed (includes '**Response cost'**). Note if withdrawal of contingent reward code*, **14.3, Remove reward***	Subtract money from a prepaid refundable deposit when a cigarette is smoked
14.2	***Punishment***	Arrange for aversive consequence contingent on the performance of the unwanted behavior	Arrange for the person to wear unattractive clothes following consumption of fatty foods

No.	Label	Definition	Examples
14.3	***Remove reward***	Arrange for discontinuation of contingent reward following performance of the unwanted behavior (includes **'Extinction'**)	Arrange for the other people in the household to ignore the person every time they eat chocolate (rather than attending to them by criticising or persuading)
14.4	***Reward approximation***	Arrange for reward following any approximation to the target behavior, gradually rewarding only performance closer to the wanted behavior (includes ***'Shaping'***) *Note: also code one of* ***59-63***	Arrange reward for any reduction in daily calories, gradually requiring the daily calorie count to become closer to the planned calorie intake
14.5	***Rewarding completion***	Build up behavior by arranging reward following final component of the behavior; gradually add the components of the behavior that occur earlier in the behavioral sequence (includes ***'Backward chaining'***) *Note: also code one of* ***10.2, Material reward (behavior); 10.3, Non-specific reward; 10.4, Social reward, 10.9, Self-reward; 10.10, Reward (outcome)***	Reward eating a supplied low calorie meal; then make reward contingent on cooking and eating the meal; then make reward contingent on purchasing, cooking and eating the meal
14.6	***Situation-specific reward***	Arrange for reward following the behavior in one situation but not in another (includes ***'Discrimination training'***) *Note: also code one of* ***10.2, Material reward (behavior); 10.3, Non-specific reward; 10.4, Social reward, 10.9, Self-reward; 10.10, Reward (outcome)***	Arrange reward for eating at mealtimes but not between meals
14.7	***Reward incompatible behavior***	Arrange reward for responding in a manner that is incompatible with a previous response to that situation (includes ***'Counter-conditioning'***) *Note: also code one of* ***10.2, Material reward (behavior); 10.3, Non-specific reward; 10.4, Social reward, 10.9, Self-reward; 10.10, Reward (outcome)***	Arrange reward for ordering a soft drink at the bar rather than an alcoholic beverage
14.8	***Reward alternative behavior***	Arrange reward for performance of an alternative to the unwanted behavior (includes ***'Differential reinforcement'***) *Note: also code one of* ***10.2, Material reward (behavior); 10.3, Non-specific reward; 10.4, Social reward, 10.9, Self-reward; 10.10, Reward (outcome);*** *consider also coding* ***1.2, Problem solving***	Reward for consumption of low fat foods but not consumption of high fat foods

No.	Label	Definition	Examples
14.9	***Reduce reward frequency***	Arrange for rewards to be made contingent on increasing duration or frequency of the behavior (includes ***'Thinning'***) *Note: also code one of* ***10.2, Material reward (behavior); 10.3, Non-specific reward; 10.4, Social reward, 10.9, Self-reward; 10.10, Reward (outcome)***	Arrange reward for each day without smoking, then each week, then each month, then every 2 months and so on
14.10	***Remove punishment***	Arrange for removal of an unpleasant consequence contingent on performance of the wanted behavior (includes ***'Negative reinforcement'***)	Arrange for someone else to do housecleaning only if the person has adhered to the medication regimen for a week
15. Self-belief			
15.1	***Verbal persuasion about capability***	Tell the person that they can successfully perform the wanted behavior, arguing against self-doubts and asserting that they can and will succeed	Tell the person that they can successfully increase their physical activity, despite their recent heart attack.
15.2	***Mental rehearsal of successful performance***	Advise to practise imagining performing the behavior successfully in relevant contexts	Advise to imagine eating and enjoying a salad in a work canteen
15.3	***Focus on past success***	Advise to think about or list previous successes in performing the behavior (or parts of it)	Advise to describe or list the occasions on which the person had ordered a non-alcoholic drink in a bar
15.4	***Self-talk***	Prompt positive self-talk (aloud or silently) before and during the behavior	Prompt the person to tell themselves that a walk will be energising
16. Covert learning			
16.1	***Imaginary punishment***	Advise to imagine performing the **unwanted** behavior in a real-life situation followed by imagining an unpleasant consequence (includes ***'Covert sensitisation'***)	Advise to imagine overeating and then vomiting
16.2	***Imaginary reward***	Advise to imagine performing the **wanted** behavior in a real-life situation followed by imagining a pleasant consequence (includes ***'Covert conditioning'***)	Advise the health professional to imagine giving dietary advice followed by the patient losing weight and no longer being diabetic

No.	Label	Definition	Examples
16.3	***Vicarious consequences***	Prompt observation of the consequences (including rewards and punishments) for others when they perform the behavior *Note: if observation of health consequences, also code **5.1, Information about health consequences**; if of emotional consequences, also code **5.6, Information about emotional consequences**, if of social, environmental or unspecified consequences, also code **5.3, Information about social and environmental consequences***	Draw attention to the positive comments other staff get when they disinfect their hands regularly

Tally of Agreements and Disagreements when Coding Better Conversations with Aphasia with the Streamlined Taxonomy of Behaviour Change Techniques (see Appendix 9)

Behaviour Change Technique	Tally	Agreement	Ratings	Rater 1	Rater 2
		1 = agreement 0 = disagreement	0 = agreed NO BCT 2 = agreed same BCT 1 = disagreement	0 = NO BCT 1 = BCT	
Session 1					
Session 2					
4.1 Instruction on how to perform a behaviour	1	0	1	0	1
5.2 Salience of consequences	1	0	1	1	0
2.2 Feedback on behaviour	1	1	2	1	1
2.7 Feedback on outcome(s) of behaviour	1	1	2	1	1
Session 3					
4.1 Instruction on how to perform a behaviour	1	0	1	0	1
6.1 Demonstration of the behaviour	1	0	1	0	1
Session 4					
Handout C34 - NO BCT	1	1	0	0	0
Video - select strategy	1	1	0	0	0
Video to select alternative strategy - NO BCT	1	1	0	0	0
1.1 Goal setting (behaviour)	1	1	2	1	1
8.1 Behavioural practice/rehearsal	1	1	2	1	1
7.1 Prompts/cues	1	1	2	1	1
2.2 Feedback on behaviour	1	1	2	1	1
2.7 Feedback on outcome(s) of behaviour	1	0	1	0	1
8.1 Behavioural practice/rehearsal	1	1	2	1	1
7.1 Prompts/cues	1	1	2	1	1
2.2 Feedback on behaviour	1	1	2	1	1
2.7 Feedback on outcome(s) of behaviour	1	0	1	0	1
8.1 Behavioural practice/rehearsal	1	1	2	1	1
7.1 Prompts/cues	1	1	2	1	1
2.2 Feedback on behaviour	1	1	2	1	1
2.7 Feedback on outcome(s) of behaviour	1	0	1	0	1
8.1 Behavioural practice/rehearsal	1	1	2	1	1
5.4 Monitoring of emotional consequences	1	1	2	1	1
2.4 Self-monitoring of outcome(s) of behaviour	1	1	2	1	1

Behaviour Change Technique	Tally	Agreement	Ratings	Rater 1	Rater 2
1.4 Action planning	1	0	1	1	0
2.3 Self-monitoring of behaviour	1	1	2	1	1
1.8 Behavioural contract	1	1	2	1	1
Session 5					
Review home activity - NO BCT	1	1	0	0	0
Review last week session - NO BCT	1	1	0	0	0
5.3 Information on social and environmental consequences	1	0	1	1	0
5.6 Information about emotional consequences	1	0	1	1	0
2.2 Feedback on behaviour	1	1	2	1	1
2.2 Feedback on behaviour	1	1	2	1	1
6.1 Demonstration of the behaviour	1	1	2	1	1
4.1 Instruction on how to perform a behaviour	1	1	2	1	1
8.2 Behaviour substitution	1	1	2	1	1
6.1 Demonstration of the behaviour	1	1	2	1	1
4.1 Instruction on how to perform a behaviour	1	1	2	1	1
8.2 Behaviour substitution	1	1	2	1	1
5.3 Information on social and environmental consequences	1	1	2	1	1
6.1 Demonstration of the behaviour	1	1	2	1	1
4.1 Instruction on how to perform a behaviour	1	1	2	1	1
5.6 Information about emotional consequences	1	1	2	1	1
8.2 Behaviour substitution	1	1	2	1	1
6.1 Demonstration of the behaviour	1	1	2	1	1
4.1 Instruction on how to perform a behaviour	1	1	2	1	1
5.6 Information about emotional consequences	1	1	2	1	1
8.2 Behaviour substitution	1	1	2	1	1
5.3 Information on social and environmental consequences	1	1	2	1	1
4.1 Instruction on how to perform a behaviour	1	1	2	1	1
5.3 Information on social and environmental consequences	1	1	2	1	1
10.4 Social reward	1	1	2	1	1
2.2 Feedback on behaviour	1	1	2	1	1
2.2 Feedback on behaviour	1	1	2	1	1
1.1 Goal setting (behaviour)	1	1	2	1	1
8.1 Behavioural practice/rehearsal	1	1	2	1	1
7.1 Prompts/cues	1	1	2	1	1
2.2 Feedback on behaviour	1	1	2	1	1
2.7 Feedback on outcome(s) of behaviour	1	0	1	0	1
8.1 Behavioural practice/rehearsal	1	1	2	1	1
7.1 Prompts/cues	1	1	2	1	1
2.2 Feedback on behaviour	1	1	2	1	1
2.7 Feedback on outcome(s) of behaviour	1	0	1	0	1
1.8 Behavioural contract	1	1	2	1	1
8.1 Behavioural practice/rehearsal	1	1	2	1	1

Behaviour Change Technique	Tally	Agreement	Ratings	Rater 1	Rater 2
5.4 Monitoring of emotional consequences	1	1	2	1	1
2.4 Self-monitoring of outcome(s) of behaviour	1	1	2	1	1
1.4 Action planning	1	0	1	1	0
2.3 Self-monitoring of behaviour	1	1	2	1	1
Session 6					
Review home activity - NO BCT	1	1	0	0	0
Review last week session - NO BCT	1	1	0	0	0
Handout C46b - NO BCT	1	1	0	0	0
Video A - NO BCT	1	1	0	0	0
Handout 6.1 - NO BCT	1	1	0	0	0
6.1 Demonstration of the behaviour	1	0	1	0	1
2.7 Feedback on outcome(s) of behaviour	1	0	1	0	1
1.1 Goal setting (behaviour)	1	1	2	1	1
6.1 Demonstration of the behaviour	1	1	2	1	1
4.1 Instruction on how to perform a behaviour	1	1	2	1	1
5.3 Information on social and environmental consequences	1	1	2	1	1
6.1 Demonstration of the behaviour	1	0	1	0	1
Video Clip C - NO BCT	1	1	0	0	0
Video D - NO BCT	1	1	0	0	0
8.1 Behavioural practice/rehearsal	1	1	2	1	1
7.1 Prompts/cues	1	1	2	1	1
2.2 Feedback on behaviour	1	1	2	1	1
2.7 Feedback on outcome(s) of behaviour	1	0	1	0	1
8.1 Behavioural practice/rehearsal	1	1	2	1	1
2.3 Self-monitoring of behaviour	1	1	2	1	1
2.4 Self-monitoring of outcome(s) of behaviour	1	1	2	1	1
1.4 Action planning	1	0	1	1	0
Session 7					
Review home activity - NO BCT	1	1	0	0	0
Review PWA strategy use - NO BCT	1	1	0	0	0
Review CP strategy use - NO BCT	1	1	0	0	0
Video to select alternative strategy - NO BCT	1	1	0	0	0
Video to select alternative strategy - NO BCT	1	1	0	0	0
Video to select alternative strategy - NO BCT	1	1	0	0	0
7.1 Prompts/cues	1	0	1	0	1
8.1 Behavioural practice/rehearsal	1	1	2	1	1
7.1 Prompts/cues	1	1	2	1	1
2.2 Feedback on behaviour	1	1	2	1	1
2.7 Feedback on outcome(s) of behaviour	1	0	1	0	1
2.3 Self-monitoring of behaviour	1	1	2	1	1
2.4 Self-monitoring of outcome(s) of behaviour	1	1	2	1	1
8.1 Behavioural practice/rehearsal	1	1	2	1	1
8.3 Habit formation	1	1	2	1	1

Behaviour Change Technique	Tally	Agreement	Ratings	Rater 1	Rater 2
1.4 Action planning	1	0	1	1	0
8.1 Behavioural practice/rehearsal	1	1	2	1	1
2.3 Self-monitoring of behaviour	1	0	1	1	0
Session 8					
8.1 Behavioural practice/rehearsal	1	1	2	1	1
7.1 Prompts/cues	1	1	2	1	1
2.2 Feedback on behaviour	1	1	2	1	1
2.7 Feedback on outcome(s) of behaviour	1	0	1	0	1
TOTAL Activities with a Target Behaviour	**114**				
TOTAL Agreements Registered		**91**			
Raters TOTAL BCTs				**81**	**88**
Raters TOTAL NO BCTs				**33**	**26**

Appendix 11

This Appendix contains the themes and data that are discussed in Section 9.2 (p220) of Study 4: Participant Perspectives on Therapy Content, captured by the coding category Therapy Ingredients Supporting Change. *The figure below is reproduced from Figure 21 (p221) and contains the thematic hierarchy developed to describe this data.*

The data are taken from the post-therapy datasets and appear according to theme. They are presented here in the form of the summarised quotes used in the Framework charts, as opposed to the full verbatim quotes from the transcripts. Please refer to Section 5.5.4 (p89) for more information. For reference, the sections under which the themes are discussed within the thesis appear in brackets after the theme headings.

Participant Perspectives on Therapy Content:

A Hierarchy of Analytic Themes to Represent the Data Captured by

Therapy Ingredients Supporting Change

Involvement of the CP [PWA 4; CPs 1, 3, 4]

Practice Conversations

- *Trying out strategies* [CPs 2, 3, 4, 6]
- *Making time for conversations* [CPs 2, 6, 7]

Analysing Conversation [PWA6; CPs 1, 3, 7]

Therapist Advice

- *Feedback on the impact of behaviour* [CPs 3, 5, 7]
- *Direction on what to do* [CPs 1, 2, 3,5, 6]

Video

- *Feedback on the impact of behaviour* [PWA 2; CPs 1, 2, 4, 5, 6, 7]
- *Making therapy more memorable* [PWA 6]
- *Identifying problems and solutions* [CPs 1, 2, 6]

Involvement of the CP *(Section 9.2.1, p221)*

Being part of it helped take it on board and make it part of everyday life (CP1)

Me being part of the process hopefully helped get a better solution at the end (CP3)

Me being there meant I could reinforce things (CP4)

Working together helped make the difference (PWA4)

Practice Conversations *(Section9.2.2, p222)*

Trying out strategies
I tried hard to practice the things SLT suggested (CP3)
All the practicing helped (CP3)
We tried out different techniques to see what would be helpful in moving the conversation forward (CP3)
We tried to do the things SLT taught us (CP2)
We always had things we had to try and remember to do in conversation (CP2)
We tried hard to employ different techniques (CP3)
Having work to do together (CP4)
Being videoed made us use all the tools, what we were supposed to be doing (CP6)

Making time for conversations
If nothing else, sitting down a few times a week has got to be helpful. It was nice to be forced to chat and make time for it (CP7)
Making time for conversation made us learn we could have a conversation. Being videoed made us persevere and use the tools, where maybe we wouldn't have gone so deep (CP6)
Being forced to have conversations is good because it made us make time for each other (CP2)
It challenged us to sit down and have conversations (CP2)

Analysing Conversation *(Section 9.2.3, p224)*

Home activities – we had to tell SLT when we'd had a problem conversation and what strategy we'd used. Helpful to analyse things (CP1)
Talking to the therapist about the videos and seeing what was going on – it helps you be more analytical (CP3)
There's a lot of thought processes you have to go through. Sometimes it goes in sometimes it doesn't. (CP7)
Watching the video and thinking helped it to work (PWA6)

Therapist Advice *(Section 9.2.4, p225)*

Feedback on the impact of behaviour
SLT said PWA struggling to get word was not helpful (CP3)
SLT able to point out why certain things were happening (CP3)
SLT pointed out things I was doing that weren't very helpful. Bringing this to my attention helped (CP5)
SLT said don't lead the conversation down a dead end (CP5)
SLT pointed out things we were doing right and it surprised me (CP7)

Direction on what to do
Getting hints about what would have been helpful (CP1)
SLT would say, what would happen if you'd done this, and it was like yeah (CP2)
Some of the things therapist pointed out about what might work really made sense. Things you wouldn't

have thought of yourself. (CP3)
Some the things SLT gave us really helped moved us forward (CP3)
Having someone objective and knowledgeable make suggestions about what to try (CP3)
SLT said use open questions (CP5)
SLT coming and teaching us different ways of talking (CP6)
Those conversation about trying to support your conversations rather than wait for you to get it right have stayed with me (CP3)
SLT said don't lead the conversation down a dead end, use open questions (CP5)

Video *(Section 9.2.5, p227)*

Feedback on the impact of behaviour
Watching the video made me realise we were doing something that helped work around the communication problem (CP7)
Videos showed things that were going well (CP5)
Videos helped identify things that maybe weren't so helpful (CP1)
Watching the video you realised how much you interrupted (CP2)
Realised that was looking down and away from people during conversation (PWA2)
Seeing the video and seeing what I was doing wrong, where I wasn't giving you enough time (CP6)
Videos showed where I was leading the conversation down a dead end (CP5)
Seeing the videos and realising the impact of some of the things I was saying (CP4)

Making therapy more memorable
Videos stay with you (PWA6)

Identifying problems and solutions
Being given examples of conversation and how to respond was teaching a different way (CP6)
Seeing some the video back and watching where I was going wrong and learning to stop and listen I think. Taking the time (CP6)
Helpful to look back at videos and identify what wasn't helpful and get hints about what would have been of benefit (CP1)
SLT would say, what would happen if you'd done this, and it was like – yeah, I know (CP2)

Appendix 12

This Appendix contains the themes and data that are discussed in Section 9.3 (p240) of Study 4: Participant Perspectives on Therapy Content, captured by the coding category Therapeutic Barriers to Change. *The figure below is reproduced from Figure 22 (p240) and contains the thematic hierarchy developed to describe this data.*

The data are taken from the post-therapy dataset and appear according to theme. They are presented here in the form of the summarised quotes used in the Framework charts, as opposed to the full verbatim quotes from the transcripts. Please refer to Section 5.5.4 (p89) for more information. For reference, the sections under which the themes are discussed within the thesis appear in brackets after the theme headings.

Participant Perspectives on Therapy Content: Analytic Themes Representing the Data Captured by Therapeutic Barriers to Change
Difficulties Understanding Therapy Content and Aims [PWA 3, 4, 5, 7, 9]
Therapy Format Hard to Engage With [CPs 4, 9]
Value of Therapy Not Obvious [CPs 3, 4]

Difficulties Understanding Therapy Content and Aims *(Section 9.3.1, p241)*

Didn't understand what therapy was about (PWA7)
What was all that about? Found frustrating as didn't understand (PWA9)
Found therapy a bit difficult (PWA5)
Thought therapy was about doing picture description and getting better at tests (PWA3)
Found therapy hard. And what?? Difficult to get head around (PWA4)

Therapy Format Hard to Engage With *(Section 9.3.2, p241)*

A long way round to get to something straightforward (CP4)
Using words like repair – more for SLTs than the lay person (CP9)
It was a hell of a lot of theory and only a small amount of practice (CP4)
It took a long time, I assume because it was trying to prove new concepts (CP3)

Value of Therapy Not Obvious *(Section 9.3.3, p242)*

Therapy is a big commitment and you may not see the value at the time (CP3)
The tips help, though you may not think so at the time (CP3)
My attention span is not that good if I can't see what something is about (CP4)