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PARTICIPATION-FOCUSSED EVALUATION: IMPACT ON PRACTICE

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## Abstract

Evaluation is a keystone in the process of rehabilitation that is used to plan and monitor holistic, client-centred, goal-directed interventions. However, many common assessment tools do not fit well with occupational therapists' specific expertise.

Dynamic assessment uses interactions with clients during assessments as a context to both observe current performance and test possibilities for intervention. In this way, occupational therapists may substantiate their clinical reasoning in evaluation and intervention planning.

**Methods.** This study aimed to examine occupational therapists' implementation of a dynamic assessment of participation called *COMPLEAT*<sup>®</sup>. Participants were 14 occupational therapists with a wide range of experience, and 29 of their younger adult (<65 years) clients with diverse aetiologies and sequelae of acquired brain injury. Data were collected from multiple sources throughout the process from introducing the occupational therapists to *COMPLEAT*<sup>®</sup> and providing basic training, to interpreting their observations. Two phases of analyses examined the sociocultural influences on the implementation of *COMPLEAT*<sup>®</sup>, and the strategies observed with clients of varying levels of participation restriction.

**Results.** From a sociocultural perspective, the occupational therapists (i) facilitated their clients' participation through direct responses and also enabling therapeutic and everyday environmental supports, (ii) brought to the process experiences and views on working with clients and using standardised assessments, and (iii) utilised *COMPLEAT*<sup>®</sup> according to their roles and levels of experience. Overall, they facilitated clients'

participation using complex combinations of responses according to clients' levels of participation restriction.

**Conclusions.** Dynamic assessment, and *COMPLEAT*<sup>®</sup> in particular, has application to substantiating occupational therapists' clinical reasoning and expertise in participation. With this evidence, occupational therapists might promote a focus on clients' participation within their rehabilitation teams, consolidate the perceptions of their roles within those teams, and further develop assessments that support the planning and implementation of interventions consistent with the essence and theoretical foundations of occupational therapy.

**Keywords.** Dynamic assessment, occupational therapy, clinical reasoning, participation, ICF, brain injury.

## Declaration

I, **Jennie Brentnall**, declare that the work contained within this thesis is my own and has not been submitted to any other university or institution as a part or a whole requirement for any higher degree. It contains no other person's work except where due acknowledgement is made in the thesis.

Signed: *Brentnall*

Date: 30 / 3 / 2015

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## **List of Abbreviations**

4QM	FOUR-Quadrant Model of Facilitated Learning
ADL	Activity of Daily Living
AMPS	Assessment of Motor and Process Skills
CO-OP	Cognitive Orientation to Occupational Performance
EFPT	Executive Function Performance Test
IADL	Instrumental Activity of Daily Living
ICF	International Classification of Functioning, Disability and Health
LOTCA	Lowenstein Occupational Therapy Cognitive Assessment
MET	Multiple Errands Test
NSW	New South Wales
OT	Occupational Therapist
PRPP	Perceive, Recall, Plan and Perform
WHO	World Health Organization



## List of Related Presentations

Parts of the work presented in this thesis have previously been presented at the following forums:

Brentnall, J., Bundy, A. C., & Veitch, C. (2014, 30 April). *Facilitating participation: How occupational therapists support clients with brain injury in everyday routines*. Paper presented at the OT Research Showcase, Sydney.

Brentnall, J., Bundy, A. C., Veitch, C., & Oddy, M. (2014, 3-5 November). *Effects of administering a dynamic assessment on occupational therapists' roles and interactions with clients*. Paper presented at the Imag!ne.U - Creating the Future HDR Conference, Sydney.

Brentnall, J., Veitch, C., & Bundy, A. C. (2013, 24-26 July). *Facilitating participation: How occupational therapists support clients with brain injury in everyday routines*. Paper presented at the Occupational Therapy Australia 25th National Conference and Exhibition, Adelaide, SA.

Brentnall, J., Veitch, C., & Bundy, A. C. (2013, 2-4 May). *Preliminary analysis of the properties of an ICF-based, observational tool to measure participation outcomes from brain injury rehabilitation*. Paper presented at the 36th Annual Brain Impairment Conference: Assessing Clinical Change, Hobart, TAS.

Related work on the development and pilot testing of *COMPLEAT*<sup>®</sup> has also been presented at the following forums:

Veitch, C., & Brentnall, J. (2011, 29-30 June). *Development of an ICF-based tool for monitoring rehabilitation*. Paper presented at the Think Before You Measure Symposium, Sydney.

Veitch, C., & Brentnall, J. (2011, 21-22 September). *Routine Matters: Evaluating recovery and independent living – An Anglo-Australian study*. Paper presented at the BIRT Brain Injury Rehabilitation Conference: Inspiring learning and innovation in brain injury rehabilitation, Bristol, UK.

Veitch, C., Brentnall, J., Bundy, A. C., Madden, R., & Morath, P. (2009, 25-27 November). *Measuring recovery across time: A universal, client-centred, rehabilitation recovery measure*. Paper presented at the 6th Health Services Policy Research Conference, Brisbane.

## **Chapter 1:**

### **Introduction – Occupational Therapy Assessment**

The focus of this thesis is on occupational therapists' implementation of a novel assessment in their evaluation<sup>1</sup> of younger adult (<65 years) rehabilitation clients with brain injury. Evaluation is a keystone in the rehabilitation process in that it is the means by which rehabilitation teams identify barriers to clients' functioning, prioritise opportunities and targets for intervention, predict expected outcomes, highlight risks and needs for secondary prevention, and establish a mutual understanding of the situation with clients to form the basis of the goal setting to follow (Levack & Dean, 2012; Tyson, Greenhalgh, Long, & Flynn, 2010). In this way, in rehabilitation settings assessment and evaluation are inextricably intertwined with intervention (Brown & Gordon, 2004). With this in mind, on becoming involved in the development of a new assessment for application in brain injury rehabilitation<sup>2</sup>, I took an interest in the assessment's potential to assist occupational therapists to gather and formalise the information they require to plan rehabilitation interventions<sup>3</sup>.

My interest in this application of the assessment in particular, and my invitation to work on the broader instrument development project in general, arose from a course of loosely connected experiences with assessments in research and in brain injury rehabilitation practice. Aside from my relevant experience as an occupational therapist providing brain injury rehabilitation, I had previous experience of assessment development and related research going back to my undergraduate honours project in

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<sup>1</sup>The terms assessment and evaluation are used somewhat interchangeably in the literature. In this thesis, the term assessment is used to refer to a specific instrument or procedure, whether standardised or not. Evaluation is taken to be a broader concept, incorporating multiple procedures and sources of information to arrive at an overall appraisal. Either may occur at the start or throughout rehabilitation, including as in re-assessment or re-evaluation.

<sup>2</sup>Referred to throughout this thesis as the broader instrument development project, or simply the project.

<sup>3</sup>An interest that was developed into the work referred to throughout this thesis as the study.

which we (Brentnall, Bundy, & Kay, 2008) examined the influence of the length of observation on test-retest reliability. This research prompted me to examine closely how observational assessment fits in occupational therapy (Brentnall & Bundy, 2009) and provided me a view of assessment based on a Rasch measurement model (Bond & Fox, 2007; cf. classical test theory) that inevitably leads to questioning the interpretation of numerical data as measures. I also discovered how the wealth of data Rasch analyses provide on the properties of assessments and scores allows the opportunity for detailed interpretation of valid scores. Combining with a long-standing interest in cognition broadly (not only of clients), a curiosity about clinical reasoning was sparked from that early research experience.

I have since looked at different aspects of psychometric testing, clinical utility, and interpretation of a range of outcome measures, in most cases using Rasch analyses. Along the way, I was introduced to assessment of the construct of participation as outlined in the World Health Organization's (WHO's) *International Classification of Functioning, Disability and Health* (ICF). This occurred most prominently and tangibly through my involvement in the New South Wales (NSW, Australia) statewide Brain Injury Rehabilitation Directorate Community Outcomes Project when working as an occupational therapist in a brain injury rehabilitation program. The Community Outcomes Project (Badge, 2010) showed my multidisciplinary colleagues across NSW and I that, while we agreed on the value of participation outcomes in principle, there exist many challenges in defining and measuring those outcomes across clients, settings, and programs. The opportunity to be involved in a project to develop an assessment of participation as part of a proposal for a new brain injury rehabilitation service partnership between two organisations was therefore a logical progression, and

given the timing and nature of the work, building on my interest in clinical reasoning and embedding my own study within this project also made sense.

Drawing upon these experiences and interests, this chapter outlines the case for the study reported in this thesis to address the important issue of occupational therapists' assessment for intervention. First, the need to consider participation, the ICF, and the role of occupational therapists in brain injury rehabilitation is set out. The next section considers the need for holistic and contextualised assessment of participation to support client-centred, goal-directed rehabilitation, which is followed by consideration of how the features of assessments that are well-suited to occupational therapy meet these needs, yet in practice there are examples of consistencies and discrepancies between those features and the standardised and non-standardised assessments that are available to and used by occupational therapists. Resolving such discrepancies, as well as the process of choosing, implementing and interpreting assessment itself, draws upon clinical reasoning. The next section of this chapter therefore outlines the research that has been published on clinical reasoning, highlighting some gaps in relation to consideration of the conceptual issues in selecting and using assessments, in this case to support client-centred, goal-directed rehabilitation. One such gap is in considering the broader sociocultural context of service delivery, which is an influence arising through many of the topics touched on in this introduction. The sociocultural context is therefore explicitly introduced as a final topic to link a number of the issues raised and as a background to this study, before presenting an outline of the remainder of the thesis.

## **Participation, the ICF, and the Recognition of Occupational Therapy**

Occupational therapists continue to face the problem that their roles, in this case with younger adults with acquired brain injury, and their clinical reasoning in planning interventions based on assessments, are not well understood by those with whom they work, including colleagues, clients, and funders, all of whom make decisions about pursuing occupational therapy (Di Tommaso & Wilding, 2014; H. Edwards & Durette, 2010; Wilding & Whiteford, 2007). Since occupational therapists frequently work with clients in everyday activities, occupational therapy can appear to be common sense, belying the sophistication of the intervention and skill of the occupational therapist (Creek, 2007; Reilly, 1962; Wilding & Whiteford, 2007). The nature and scope of occupational therapists' work in teams that are invariably stretched can also lead to their roles becoming defined in relation to those of other team members, the needs of particular workplaces, and the gaps for clients, rather than based on conceptual foundations (H. Edwards & Durette, 2010; Fortune, 2000).

For their part, occupational therapists themselves may not clearly articulate how their actions relate to occupational therapy theory and roles (Wilding & Whiteford, 2007). The lack of consistency in approaches to assessment and intervention between one occupational therapist and the next furthers confusion about the identification and communication of what occupational therapists do in brain injury rehabilitation (Korner-Bitensky, Barrett-Bernstein, Bibas, & Poulin, 2011). Of particular relevance to this study is whether the available assessments have the potential to provide a clear guide to support occupational therapists' clinical reasoning and communication about their interventions with this population.

In this case, the occupational therapists are evaluating clients and planning interventions with a view to optimising clients' *participation*. The most commonly cited definition of participation used in the field of rehabilitation is "involvement in a life situation", which is adopted from the ICF (WHO, 2001, p. 213). The ICF considers holistically individuals' body functions and structures, activities, and participation (collectively known as functioning) in interaction with their health conditions and the personal and environmental contexts in which they live (WHO, 2001). This holistic perspective is pertinent to brain injury rehabilitation given that participation restriction is impacted by impairments arising directly from the insult to the brain, but also from barriers or a lack of supports in the environment, and the interactions between factors that also give rise to secondary psychosocial difficulties (Geurtson, Van Heugten, Martina, & Geurts, 2010).

More broadly, the widespread use of the ICF around the world has focused the attention of rehabilitation teams on optimising each individual's participation in life situations as the ultimate intended rehabilitation outcome (e.g., Turner-Stokes, Nair, Sedki, Disler, & Wade, 2005). It also highlights interactions between factors that are of particular interest to occupational therapists (Imms, 2006). The use of the ICF model and language in planning, implementing, and communicating about assessment and intervention should therefore help to clarify the roles of occupational therapists in brain injury rehabilitation teams.

In terms of assessment and evaluation, the adoption of the ICF concept of participation as the ultimate outcome of rehabilitation raises the demand for processes to evaluate participation and participation restriction that are holistic and inclusive of clients' perspectives and information about their unique contexts (Levack & Dean, 2012).

Contemporary rehabilitation for younger adults with brain injury in particular requires addressing individual and societal expectations for participation in a broader range of life situations, such as for life goals like returning to work and raising a family, than may have been considered in the past or are priorities for the rehabilitation of older adults or people with less complex disabilities (Turner-Stokes et al., 2005). These expectations that clients will resume a cadre of daily activities necessitate that rehabilitation incorporates comprehensive, coordinated and holistic evaluation and intervention from multidisciplinary teams, going further than multiple but discipline-specific interventions (Bayley et al., 2014; Cicerone et al., 2005; Turner-Stokes et al., 2005). Given the particular expertise of occupational therapists, they are strongly represented in brain injury rehabilitation teams across all settings and can make a unique and valuable contribution in this field.

### **Assessment and Client-centred, Goal-directed Rehabilitation**

It is widely agreed that contemporary best practice and ethical rehabilitation is client centred and goal directed, as distinct from training and education (Bright, Boland, Rutherford, Kayes, & McPherson, 2012; Cott, 2004; Gzil et al., 2007; Leplege et al., 2007; Wade, 1998, 2009). Assessment for the purpose of planning client-centred, goal-directed rehabilitation has been described as comprising two components: (i) establishing an understanding of the client and context, and (ii) negotiating a shared understanding to support the client to make decisions regarding intervention (Copley, Turpin, Brosnan, & Nelson, 2008). That is, the therapist should not submit to merely providing information for the client, but rather the therapist and client should both retain power so that the client retains autonomy while the therapist guides, and outcomes are negotiated in what Falardeau and Durand (2002) described as a

‘negotiation-centred approach’ to client-centred practice. Applied to rehabilitation, the engagement of clients in assessment and intervention selection is argued to be particularly important since interdependence is the norm and clients in these settings usually experience long-term disability, with rehabilitation being in part a process whereby clients establish self-management strategies to use beyond rehabilitation, with or without continued access to support services (Bright et al., 2012; Copley et al., 2008; Cott, 2004; I. Edwards, Jones, Higgs, Trede, & Jensen, 2004; Kjellberg, Kåhlin, Haglund, & Taylor, 2012).

As it stands, however, it is agreed that rehabilitation has not yet achieved the client-centred, goal-directed practice that is purported to be highly valued (Gzil et al., 2007; Hammell, 2013; Levack, Dean, Siegert, & McPherson, 2011; Maitra & Erway, 2006). Indeed, while the importance of client-centred, goal-directed rehabilitation is agreed, there are many descriptions of how the perceived importance and even perceived implementation may be at odds with the reality of practice (e.g., Bright et al., 2012; Daniëls, Winding, & Borell, 2002; Duggan, 2005; Gibson et al., 2000; Hammell, 2013; Levack et al., 2011; Maitra & Erway, 2006; Toth-Cohen, 2008). Of particular relevance to this study, client-centred, goal-directed practice is more often felt to be achieved for clients who are willing and able to conform to the expectations of therapists and programs (Cott, 2004; Daniëls et al., 2002; Levack et al., 2011), with clients’ cognitive and communication impairments rating highly among the barriers cited to achieving client-centred, goal-directed rehabilitation (Kjellberg et al., 2012; Maitra & Erway, 2006).

Occupational therapists can become complicit in thwarting client-centred, goal-directed practice when they evaluate options for safe discharge to independent



living without attention to the applicability of the evaluation to their clients' individual situations. In doing so, they undermine their clients' autonomy by adopting organisations' hidden assumptions about risk tolerance or the priority given to physical recovery and independence (Bright et al., 2012; Daniëls et al., 2002; Knox, Douglas, & Bigby, 2013; Levack et al., 2011; Zur, Johnson, Roy, Rudman, & Wells, 2012). Likewise, therapist and client roles are often subject to unquestioned cultural beliefs (Bright et al., 2012; Kjellberg et al., 2012; Maitra & Erway, 2006). Given that clients are frequently excluded from planning the assessments that are used with them in practice, and are also not involved in the development of the assessment tools used by therapists, their perspectives may not be recognised (Brown, 2010; Brown & Gordon, 2004).

With the most commonly used rehabilitation outcome measures focusing on functional independence (Kitsos, Harris, Pollack, & Hubbard, 2011; Salter, Teasell, Foley, & Jutai, 2007), a rehabilitation focus on independence goes unquestioned, and may even be further reinforced by efforts toward consistency in the interests of evidence-based practice and statistical or funding-related data collections. The consistent use of these same outcome measures, whilst desirable for some purposes, does not address individuals' goals and engagement in planning their rehabilitation. Further, the consistent use of outcome measures focussed on independence means there is little evidence with which to critique or challenge the systemic assumptions within rehabilitation—either at the service level with research or for the occupational therapist advocating for truly client-centred, goal-directed rehabilitation for an individual. These conflicts may often not be apparent to therapists as they work within their comfort zones, but can be exposed upon reflection, including when research or a

new style of work that demands a client-centred, goal-directed approach is introduced (Bright et al., 2012; Duggan, 2005; Toth-Cohen, 2008; Wilding, 2011; Wilding & Whiteford, 2007, 2008).

To implement holistic, contextualised, assessment of participation in line with the ICF is congruent with efforts to progress rehabilitation toward the purported best practice that is client centred and goal directed. Specifically, being holistic rather than taking a narrow focus on attaining independence and skills, a client-centred assessment acknowledges that each individual has a range of strengths (Gzil et al., 2007; Hammell, 2013), and that these can be identified to give a better picture of the client's situation and as a resource for addressing difficulties. Starting the assessment process with a broad view and systematically investigating a range of alternatives when evaluating a client assists the therapist not to fall into the trap of confirming expectations and focusing on the client's difficulties (Rogers, 1983). And considering clients' individual situations and needs in determining the qualities that define a positive outcome ensures relevance to the client (Brown & Gordon, 2004). This applies to occupational therapy as much as to any other rehabilitation discipline.

### **Occupational Therapy Assessment in Brain Injury Rehabilitation**

Occupational therapists' assessments should reflect the essence of the profession. From a philosophical standpoint, occupational therapy's core contribution is founded on the premise that humans are occupational beings, and occupational therapists value participation in personally meaningful occupations in context (Creek, 2003; Drolet, 2014; J. M. Fleming, Doig, & Katz, 2000). This particular focus on what occupational therapists refer to as 'occupational performance' complements that of other multidisciplinary team members in brain injury rehabilitation (Drolet, 2014; J. M.

Fleming et al., 2000; Lee, Powell, & Esdaile, 2001). Specifically, occupational therapists are guided by frames of reference and professional models to consider the interactions between clients' performance in their occupations and the physical, social and cultural environments (Creek, 2003; Lee et al., 2001)—a view of clients' functioning that aligns with the ICF construct of participation (Imms, 2006; Stamm, Cieza, Machold, Smolen, & Stucki, 2006) and the needs of clients after brain injury (Bilbao et al., 2003; Landa-Gonzalez, 2001). With these common features in mind, occupational therapists choose to adopt particular conceptual frames of reference based on knowledge, experience, and context, from which point therapists begin their processes of narrowing down the possibilities for what to consider in assessing their clients (Rogers, 1983).

Based on their models of practice, occupational therapists have identified that it is essential that assessments of relevance to occupational therapy (i) take a holistic view; (ii) reflect a client-centred approach; (iii) emphasise the dynamic interplay between the person, environment and task; (iv) address the unique characteristics the individual brings to the task; and (v) recognise the client's own definition of task success whilst ensuring safety (Klein, Barlow, & Hollis, 2008). These criteria align relatively well with the principles of client-centred practice. Specifically, client-centred measures recognise the importance of personal meaningfulness to task performance and allow the client to choose both the tasks assessed and the approach to performance of those tasks (Brown, 2010; Brown & Gordon, 2004; Klein et al., 2008). Further, client-centred assessments recognise that autonomy in being able to achieve meaningful tasks, with support from the human or non-human environment as applicable to the individual, may be a more relevant outcome to the client—and

therefore target for intervention—than absolute independence (Barak & Duncan, 2006; Brown, 2010; Klein et al., 2008). Both client-centred practice and the ICF emphasise a holistic perspective.

Despite this emphasis, however, most standardised assessments that occupational therapists report using in a range of survey studies reflect a bottom-up approach through the measurement of impairment and components of performance (Alotaibi, Reed, & Nadar, 2009; Korner-Bitensky et al., 2011; Piernik-Yoder & Beck, 2012; Stapleton & McBrearty, 2009). Occupational therapists report that they seek to use assessments for the purposes of eligibility determination, initial evaluation, identification of deficits, prediction of functioning in tasks and settings, development and support for intervention, and progress evaluation (Douglas, Liu, Warren, & Hopper, 2007; Piernik-Yoder & Beck, 2012; Sansonetti & Hoffmann, 2013). When more detailed questions are asked about the use of standardised assessment, however, findings often suggest they are not being used as intended or standardised.

A large survey (albeit with a low response rate) showed that among occupational therapists working in different practice areas in the United States, approximately half those using standardised assessments reported administering only part of the assessment and significant proportions indicated modifying the instructions or making other changes to the standardised procedures (Piernik-Yoder & Beck, 2012). A small qualitative study recently published similarly noted that because standardised instructions and methods can be challenging for clients and result in their disengagement from the evaluation process, occupational therapists may break standardised assessments into parts or otherwise use them in non-standardised ways so as to maintain relevance and an optimum level of challenge for clients with cognitive

impairments (White, Hocking, & Reid, 2014). Likewise, in response to a case study presentation of a client with stroke at different stages of rehabilitation, occupational therapists reported use of standardised assessment dropped off markedly after initial assessment, suggesting that standardised assessments were not being used for outcome monitoring and measurement (Korner-Bitensky et al., 2011).

In relation to clients with cognitive impairments, and when the question is more open, occupational therapists report that the assessments they choose to use in practice are based on observation and other qualitative information gathering such as history-taking interviews (Douglas et al., 2007; Sansonetti & Hoffmann, 2013; Stapleton & McBrearty, 2009). One contributor to this preference for observational assessment and evaluation is likely that clients with cognitive impairments find it difficult to complete self-report questionnaires; therefore occupational therapists seek supplementary data to attain the understanding of functioning that they require (Bottari, Swaine, & Dutil, 2007; M. Mitchell & Miller, 2008).

Occupational therapists often incorporate observation in non-standardised evaluations of performance to evaluate both physical and cognitive performance factors and consider the contexts in which activities are usually performed (Douglas et al., 2007; A. G. Fisher, 2009; J. M. Fleming et al., 2000; Guidetti & Tham, 2002; Korner-Bitensky et al., 2011; Sansonetti & Hoffmann, 2013). This is fitting with Rogers' (1983) notation that, from a clinical reasoning perspective, occupational therapists' concerns for the 'quality' of data pertain to whether the clients' performances are representative, including the clients' levels of motivation and emotional state, understanding of the tasks, and the assessment environment. Another factor is occupational therapists' considerable concern for client-centred practice, and

particularly for building and then protecting relationships and rapport with their clients as a means to recruiting their engagement in evaluation (White et al., 2014). These relationships and rapport are based on time spent understanding each client as an individual, often keeping things informal and aligning with the client as an ally, and perhaps choosing attractive functional activities for evaluation, rather than taking a formal and structured approach with standardised assessments (White et al., 2014).

Overall, occupational therapists consider standardised assessment batteries and cognitive screening tools less important and more challenging to implement—particularly while building a relationship with the client—than occupational performance based assessments and qualitative information gathering (Kristensen, Borg, & Hounsgaard, 2012; Sansonetti & Hoffmann, 2013; White et al., 2014).

Conversely, they report that observational evaluations of performance address many of the challenges of linking evaluation and desired participation outcomes (Sansonetti & Hoffmann, 2013). That is, many available standardised assessments are perceived not to provide the information that occupational therapists seek.

The discrepancy between occupational therapists' stated preferences for assessment and the supposed ideal of standardised assessments implemented as intended in the standardisation process suggests a mismatch between occupational therapists' perceptions of their needs for information and the value of standardised assessments to provide that information (Duncan & Murray, 2012). Occupational therapists report that they use the standardised assessments they choose because they are available, easy, and time efficient (Alotaibi et al., 2009; Douglas et al., 2007; Stapleton & McBrearty, 2009). This compares with their selection of occupational performance based assessments (which are often non-standardised) because they provide the

information the therapist seeks, fit with the therapist's theoretical orientation, and support the development of interventions (Douglas et al., 2007; Sansonetti & Hoffmann, 2013). Not surprisingly then, occupational therapists' preference is for occupational performance based assessments when it comes to considerations for implementing assessments to inform practice (Douglas et al., 2007; Korner-Bitensky et al., 2011; Sansonetti & Hoffmann, 2013; Stapleton & McBrearty, 2009).

In many cases occupational therapists' preferred assessments are the non-standardised, site-specific or "homegrown" assessment protocols they have developed locally to assess the occupational performance of their client group in their contexts (Korner-Bitensky et al., 2011). Occupational therapists often report that they use interviews and observation of similar, common, daily living activities such as self-care and simple meal preparation tasks (Douglas et al., 2007; Koh, Hoffmann, Bennett, & McKenna, 2009; Korner-Bitensky et al., 2011; Sansonetti & Hoffmann, 2013; Stapleton & McBrearty, 2009). While there do exist standardised occupational therapy assessments that draw upon observation (e.g., the Perceive, Recall, Plan and Perform [PRPP] System of Task Analysis; Chapparo & Ranka, 1997; and the Assessment of Motor and Process Skills [AMPS]; A. G. Fisher, 2003) or interview (e.g., the Occupational Performance History Interview; Kielhofner et al., 2004; and the Canadian Occupational Performance Measure; Law et al., 2005), these are reported to be used only rarely in practice with adults with cognitive impairments (Alotaibi et al., 2009; Sansonetti & Hoffmann, 2013). This is the case even in hypothetical 'ideal' situations where training, time, and cost do not need to be considered (Korner-Bitensky et al., 2011).

The reasons for the low uptake of standardised, occupational performance based assessments are likely multifactorial and have not been directly investigated, but might be presumed to include difficulties in accessing and implementing standardised assessments (e.g., training, time, skills), the value placed on non-standardised occupational performance based assessments, and a lack of appreciable benefit to overcoming the difficulties in order to implement standardised rather than non-standardised occupational performance based assessments (Duncan & Murray, 2012). Additional benefits of specific, standardised, observational assessments such as the PRPP and AMPS may also not be recognised by many occupational therapists given the need for additional training that occupational therapists may have difficulty accessing, and therefore the lack of direct or observed experience with these tools. Likewise, occupational therapists are likely not cognisant of how non-standardised approaches may be applied with varying consistency depending on the occupational therapists' experience, and consequently influence clinical reasoning and decision making (Gibson et al., 2000).

When choosing to use observational methods, occupational therapists must consider how professional background, experience, and training influence observational evaluation, irrespective of the degree of standardisation. When using non-standardised performance-based assessments a significant proportion of occupational therapists report it is difficult to know what prompts to provide to clients (Sansone & Hoffmann, 2013), any variance in which influences the client's opportunities and therefore the observed performance and interpretations. When observing performance, occupational therapists have been shown to attend to different features of novel but relevant visual stimuli and to employ deliberate strategies to gather information from



visual scenes when compared to controls without health professional training, indicating that domain-specific knowledge and skill is significant in how observations may be processed (MacKenzie & Westwood, 2013a, 2013b). Again, this is a consideration for pre-requisites to administering observational assessments.

Having observed, there is then the question of the judgement required for interpretation of the observation, such as in determining the criteria for adequate performance, identifying the effective and ineffective aspects of performance, and considering whether observed difficulties are likely attributable to performance deficits or to normal and inconsequential variations (Bottari & Dawson, 2011; Bottari et al., 2007; Polatajko, Mandich, & Martini, 2000). By experimental manipulation, it has been found that when presented with written or written plus observational examples of single performance errors, occupational therapists demonstrate poor confidence and accuracy in identifying whether the errors reflect neurological impairment or impacts on independence (Bottari & Dawson, 2011; Bottari et al., 2007). The finding that misattribution of observed performance errors occurs frequently irrespective of whether the errors were in familiar everyday tasks (Bottari et al., 2007) or a standardised assessment with which the therapists had limited experience (Bottari & Dawson, 2011), suggests that further research is required into the nature of these attributions and errors, and whether means such as training and interpretive information may reduce such errors.

Occupational therapists working with clients with brain injury specifically would also likely benefit from using formal assessments of executive functioning to support the validity of their conclusions, given the prevalence and under-recognition of executive functioning difficulties that impact on performance in at times subtle and complex

ways that have compounding ramifications for participation after brain injury (Bottari & Dawson, 2011; Bottari et al., 2007; Cramm, Krupa, Missiuna, Lysaght, & Parker, 2013; Hartman-Maeir, Katz, & Baum, 2009; Korner-Bitensky et al., 2011; Poulin, Korner-Bitensky, & Dawson, 2013). All of this would suggest occupational therapists may require more specific knowledge to guide their observations than they commonly have when using non-standardised evaluations of the performance of everyday activities, or even many standardised observational assessments that do not address the interpretation of the full range of performance difficulties occupational therapists observe clients to have during the assessment task.

Looking at the assessments available to occupational therapists in brain injury rehabilitation, it also becomes apparent that the construction of most standardised assessments fails to capture the essence of participation as it is defined in the ICF (or occupational performance from an occupational therapy perspective). Instead, the emphasis is on what rehabilitation providers and payers consider to be important (Brown & Gordon, 2004; Coster, 2008), and constructs that are readily and reliably measured in a standardised approach with familiar assessments.

Recognising the limitations in the assessments currently available, the development of new instruments continues at a pace within occupational therapy (G. Gillen, 2010) and in rehabilitation more broadly (Tse, Douglas, Lentin, & Carey, 2013). For now there is no consensus on the most appropriate approaches to measure participation outcomes, likely contributing to low rates of consistent use of (any) outcome measures in practice (Duncan & Murray, 2012; Tse et al., 2013). Meanwhile clinicians and researchers are frequently using summary indicators, including living situation and engagement in work or study, as proxies for participation (Taylor & Geyh, 2012). Assumptions and

measurement properties aside, such indicators reflect long-term outcomes but can also only be captured long-term after much of the often very intensive rehabilitation has been completed. In the interim, the most frequent approach in rehabilitation research is to revert to measures of functional independence (Barak & Duncan, 2006; Kitsos et al., 2011; Salter et al., 2005; Salter et al., 2007).

A consequence of the use of these measures of functional independence in self-care activities as indicators of rehabilitation outcome, and the connections between activities or outcomes and payments, may be to shape and restrict the focus of occupational therapy interventions (Bode, Heinemann, Semik, & Mallinson, 2004; Richards et al., 2005). At a minimum, team members and funders come to understand (or misunderstand) the range of occupational therapy interventions and outcomes from reports of these common outcome measures (Klein et al., 2008).

### **Clinical Reasoning from Evaluation to Intervention Planning**

Clinical reasoning is at the core of evaluation, intervention planning, and service delivery. It is a broad skill set that refers to how an occupational therapist thinks about and interprets information and situations, ranging “from a simple perception to a complex abstract construction” (M. H. Fleming, 1991a, p. 989). It is, in essence, a process of consciously or otherwise addressing questions about the current status of a client in relation to the outcomes of interest, what can be done, and what should be done (Rogers, 1983), reconciling information from multiple sources of evidence and the practice context (Bennett & Bennett, 2000). In this way, it is a function of clinical reasoning to enable occupational therapists to navigate the evaluation process, including any dilemmas that arise in that process, and to plan intervention accordingly. Clinical reasoning enables occupational therapists to select from many poorly defined

possibilities or where there is much uncertainty, and to manage competing demands in these situations (Ajjawi & Higgs, 2008; Rogers, 1983; Rogers & Masagatani, 1982). The body of literature on clinical reasoning addresses how occupational therapists seek and treat information to guide action.

Clinical reasoning is described in the literature as a confluence of cognitive processes that is largely hidden and not directly observable (Ajjawi & Higgs, 2008; Leicht & Dickerson, 2001). Some aspects are explicit and expressed in deliberated actions and conscious reactions, while many remain hidden (Ajjawi & Higgs, 2008; Ajjawi & Higgs, 2012; Leicht & Dickerson, 2001; Mattingly & Fleming, 1994). These hidden or tacit aspects of practice are lived through therapists' actions and through the culture, language and values of their disciplines, presenting as the things that therapists simply know by doing (Mattingly & Fleming, 1994). Even if attended to consciously, these aspects of practice may not be readily describable in language (Mattingly & Fleming, 1994). As a result, therapists have difficulty articulating what clinical reasoning is and how they go about it (Ajjawi & Higgs, 2012; Gibson et al., 2000). There are also aspects of reasoning that clinicians cannot or do not report to their colleagues or in documentation (Ajjawi & Higgs, 2012; Leicht & Dickerson, 2001).

When therapists try to explain their clinical reasoning to clients, less experienced mentees, and colleagues from different disciplines, they may break the reasoning down into steps and use specific frameworks that are familiar to the audience, such that the explanation is linear and no longer resembles the actual clinical reasoning (Ajjawi & Higgs, 2012; Kristensen et al., 2012). Therapists' lack of expression of their clinical reasoning is therefore far from reflective of the cognitive processes, with more experienced therapists perhaps more likely to have difficulty expressing their clinical

reasoning due to it being more complex and less like the deliberate processes guided by external structures that may be used by their less experienced counterparts (Gibson et al., 2000). A consequence of these difficulties is that much research on clinical reasoning is based on understanding it as a fluid feature of clinical practice that becomes evident as therapists create, prescribe, monitor and terminate interventions (Nikopoulou-Smyrni & Nikopoulos, 2007).

Most occupational therapy clinical reasoning research has focussed on *what* therapists consider in terms of types of reasoning, and whether that is consistent with what researchers purport that they should consider (Schell, Unsworth, & Schell, 2008; Toth-Cohen, 2008). More recent research has applied methodologies such as Social Judgement Theory to investigate whether what occupational therapists consider in decision making is consistent with what they report they consider (Harries & Harries, 2001b; Rassafiani, Ziviani, & Rodger, 2006; Rassafiani, Ziviani, Rodger, & Dalgleish, 2008). One of the primary aims of this research has been to ‘improve’ clinical reasoning, such as through educational strategies for students and novice therapists, or tools to guide and assist reasoning and decision-making. For this reason, another line of investigation has been to identify differences in the clinical reasoning of ‘novices’ and ‘experts’ (Gibson et al., 2000; Leicht & Dickerson, 2001; R. Mitchell & Unsworth, 2005).

Clinical reasoning is characterised as developing with experience (Benner, 1984; Gibson et al., 2000; Leicht & Dickerson, 2001), and more specifically with interaction with clients (Benner, 1984; Gibson et al., 2000) and challenging or complex problems (Ajjawi & Higgs, 2008; Benner, 1984). Experience provides the individual with a greater range of cases, concepts and relationships on which to draw when processing

information (Ajjawi & Higgs, 2008; Benner, 1984; Gibson et al., 2000; Greenwood & King, 1995). More experienced therapists demonstrate greater flexibility and speed in gathering and interpreting information, allowing them to work more closely with clients, rely less on external structures, and flexibly reconcile competing demands (Ajjawi & Higgs, 2008; Benner, 1984; Gibson et al., 2000; Kristensen et al., 2012).

Benner (1984), applying the Dreyfus Model of skill development to nursing, described this progression in five levels:

1. Novice, characterised by limited and inflexible, rule-governed, performance, given no experience on which to act otherwise
2. Advanced beginner, characterised by identification and prioritisation of the meaningful characteristics in situations
3. Competent, characterised by conscious awareness of how actions pertain to long-range goals, the ability to manage many contingencies, and the development of organisation and planning for multiple and complex demands
4. Proficient, characterised by perception of the whole situation, in relation to long-range goals, based on experience; and
5. Expert, characterised by intuitive performance based on experience rather than any analytical tools, leading to appreciation of the possibilities in a situation.

Experience alone is, however, considered insufficient to develop clinical reasoning (Benner, 1984; Leicht & Dickerson, 2001; Rassafiani, Ziviani, Rodger, & Dagleish, 2008), and not all professionals can be expected to reach the expert level of performance (Benner, 1984).

The process and development of clinical reasoning cannot be discussed independently of consideration of what therapists focus on, or ignore, and how they frame and weight

information (Mattingly & Fleming, 1994), particularly in situations where the skills are inherently relational and thus dependent on “content, context, and function” (Benner, 1984, p. 42). Some clinical reasoning research has therefore considered the impact of the roles and theoretical stances of therapists on their clinical reasoning, and the counter-impact of their clinical reasoning on their roles and interventions. Burke (2001), for example, found that while therapists may look to the same information in initial evaluation sessions, they frame this information differently depending on their alignment with bottom-up / impairment-focussed versus top-down / occupation-centred models.

Parallel findings have also been made in psychotherapy, where therapists differ according to their alignment with psychodynamic, behavioural, family systems or eclectic models (Gil-Adi & Newman, 1984). Ajjawi and Higgs (2008) considered similar assumptions when they examined how physiotherapists learned clinical reasoning through processes of professional socialisation. They observed that physiotherapists learned in context, from reasoning about challenging and complex problems to which they had to specifically devote attention and seek new knowledge, and in conversations and reflection that were embedded in individual and workplace norms, values, and beliefs. It is notable, however, that these factors are typically not discussed or reflected upon in practice or clinical education, obscuring recognition of the influence of personal interpretations of each therapy discipline’s values and approaches (Ajjawi & Higgs, 2008; Gibson et al., 2000). Also not widely discussed are therapists’ personal contexts and worldviews—their values, beliefs, ethics, faiths, personalities, motivations and interests—and how they influence clinical reasoning (Unsworth, 2004).

The range of knowledge sources and the processes of clinical reasoning therefore require attention by occupational therapists and other health professionals seeking to reconcile knowledge and evidence-based practice concepts developed within the biomedical paradigm with holistic and client-centred frames of reference (Kristensen et al., 2012). Yet these factors remain largely tacit and poorly identified, in part due to differences in methods to examine clinical reasoning and the degree to which the content and process of clinical reasoning may have been confounded in research (Harries & Harries, 2001a; Unsworth, 2004), precluding strong assertions on how these factors may weigh in to occupational therapists' applications and interpretations of assessments.

Professional culture and local contexts (including other team members) influence clinical reasoning via inherent and unquestioned beliefs, values and assumptions (Ajjawi & Higgs, 2008; Kristensen et al., 2012; Rassafiani et al., 2006). Despite this knowledge, the emphasis in clinical reasoning research has been on cognitive processes and tools rather than on reasoning in dynamic interpersonal and institutional environments (Toth-Cohen, 2008). Rassafiani, Ziviani and Rodger (2006) investigated 18 experienced, Australian, paediatric occupational therapists' responses to case vignettes on upper limb hypertonicity intervention decisions and showed that while occupational therapists in different settings (hospital, community and school) reported similar stated influences on intervention decisions, their selected interventions varied by setting. Such variations in intervention selection have also been noted between hospital and community-based stroke rehabilitation, where they are attributed to preferencing different forms of knowledge and particular interdisciplinary team members' values and goals (Kristensen et al., 2012).



Toth-Cohen (2008) also illustrated “hidden influences” (p. 91) such as clients’ expectations when they investigated occupational therapists’ implementation of a set program in the homes of caregivers of people with dementia. She identified these influences through an activity system perspective that looks beyond the therapist (who is traditionally considered in relative isolation when examining clinical reasoning) and incorporates the problem space, the tools of practice, the community sharing the problem space, the relationships between players and distribution of tasks, and the rules, norms and expectations (Toth-Cohen, 2008). From this perspective, she introduced the concept of appropriation as occupational therapists and clients interact in a collaborative partnership to create and adapt interventions (Toth-Cohen, 2008). These dynamic interpersonal and institutional influences on clinical reasoning remain to be investigated in broader contexts including rehabilitation.

The ways in which occupational therapists draw upon elements of clinical reasoning, specifically when engaging clients with cognitive impairments in assessment, have been noted in a recent and isolated study of their descriptions of the process (White et al., 2014). The assessments therapists utilise in client evaluation have also been noted, in the general sense, to have an influence on the perception of the client, situation, and likely outcomes (Coster, 2008). These descriptions are among the literature on occupational therapists’ use of assessment that has been noted above. In relation to the topic of this research, however, it is a limitation of clinical reasoning research that while a number of studies have included the assessment/evaluation phase of the occupational therapy process (e.g., Copley et al., 2008; Unsworth, 2004, 2005), few have considered the selection of evaluation methods and assessments themselves (Roberts, 1996; Rogers & Masagatani, 1982). At the same time, the pressure to

consistently implement outcome measures in practice is growing, yet there remain many barriers to their implementation that have been found to be persistent across a number of studies (Duncan & Murray, 2012).

The lack of understanding of the clinical reasoning in this process is therefore a significant gap in the literature regarding understanding practice and guiding developments and improvements, resulting in the continued development of local solutions to implementation difficulties that are based on usual practice in single settings (Groves, Coggles, Hinrichs, Berndt, & Bright, 2010). The local contextual influences within those settings have in turn been acknowledged to influence clinical reasoning (Ajjawi & Higgs, 2008; Kristensen et al., 2012; Rassafiani et al., 2006), yet the emphasis in the bulk of the research has been on types of clinical reasoning rather than on processes, interpretations, decisions and actions occurring in dynamic sociocultural situations.

### **The Sociocultural Context of Evaluation and Clinical Reasoning**

The research highlighted above alludes to how the clinical reasoning of occupational therapists, and their evaluation and rehabilitation processes, exist in sociocultural contexts that are greater than the individual therapists or even their teams or professional communities. Specifically, while the inter-relationships are difficult to detect from within (Coster, 2008), occupational therapists' selection and interpretation of particular assessments occur within and in turn influence the sociocultural contexts in which those therapists act. In this process, professional and institutional contexts influence what therapists consider is important and relevant to their work (Svidén & Hallin, 1999).

Evaluation can strongly influence intervention by identifying areas of relative difficulty or strength and predictions of prognosis on which to base interventions (A. G. Fisher, 2009; Levack & Dean, 2012; Tyson et al., 2010), but also by defining desirable or at least measurable outcomes on which to base decisions on realistic goals and intervention effectiveness (Bright et al., 2012; Brown, 2010; Brown & Gordon, 2004), and shaping how people think about the client who has been the subject of assessment (Coster, 2008). It is the interplay between individual and sociocultural influences that form, perpetuate and modify the multiple, often mismatched, perceptions of occupational therapists' roles in brain injury rehabilitation teams.

Clients are key in the sociocultural context in which evaluation occurs, particularly given the emphasis on client-centred practice. Yet how to engage clients with cognitive impairments in making informed decisions about their involvement in assessment remains a largely neglected consideration in the evaluation process (White et al., 2014). Many occupational therapists recognise that their relationships with their clients and the execution of their evaluations can strongly influence the information obtained and outcomes achieved. Occupational therapists therefore need to draw upon their clinical reasoning in integrating multiple sources of data to ensure that their evaluations are relevant to each individual client (White et al., 2014).

The influence of the occupational therapists' work setting has been the subject of comment in the literature to a greater extent than other aspects of the sociocultural context. For example, occupational therapists working in rehabilitation often find that there are limitations on the time available to conduct their evaluations, with workload and concurrent demands on clients limiting opportunities in inpatient settings, and community settings requiring an emphasis on evaluations that require minimal

preparation and can be completed in limited visits to settings that are not familiar to, or able to be controlled by, the therapist (White et al., 2014). Additional pressure is applied when other team members are awaiting the occupational therapist's recommendations to contribute to discharge planning (Bottari et al., 2007).

As well as the above influences of the sociocultural context on the evaluation process for occupational therapists, it is also true that what occupational therapists attend to in their evaluation of clients and report on in their communication about clients and the impacts of intervention also shape what others—including clients, families, guardians, funders, policy-makers and team members—perceive to be the roles of occupational therapists. Here the occupational therapy profession has found itself in a bind. On the one hand, occupational therapists have been encouraged to focus on and speak about “occupation” and clients’ “occupational performance” as constructs core to the profession (Di Tommaso & Wilding, 2014; Fortune, 2000; A. Gillen & Greber, 2014; Molineux, 2011; Wilding, 2011; Wilding & Whiteford, 2007, 2008). On the other hand, there exists concern that the use of occupation-based terminology in occupational therapy evaluation and reporting is not well understood by others and therefore fails to demonstrate the value of occupational therapy (Desrosiers, 2005; Doucet & Gutman, 2013). The ICF provides common terminology for multidisciplinary teams and a model that is consistent with occupational therapy (Desrosiers, 2005; Imms, 2006; Stamm et al., 2006).

### **Summary and Thesis Overview**

In this chapter I have argued that participation, as defined by the ICF, is an important outcome, and that the holistic evaluation of participation in support of client-centred and goal-directed rehabilitation is highly relevant to the role of occupational therapists

and requires further investigation. Observational, performance-based assessments are highly valued among the assessments available to and used by occupational therapists for the purposes of intervention planning with clients with cognitive impairments. Recent studies have begun to highlight the issues in implementing assessments with clients with cognitive impairments that influence occupational therapists' preferences (Sansone & Hoffmann, 2013; White et al., 2014). These studies, however, continue to rely on therapists' self-reported approaches that may be insensitive to less deliberate and publicly acknowledged strategies while observation of practice has been specifically recommended for future research (White et al., 2014). Further, how these issues might vary or be impacted upon by the teams and settings in specialist brain injury rehabilitation services is not known as such research has not been conducted in these settings, let alone acknowledging the sociocultural context of evaluation activities. Responding to the issues and gaps identified to this point, and drawing upon my own experiences and interests, this thesis presents a mixed methods study of occupational therapists' implementation of a novel assessment approach that draws upon a measurement framework and a sociocultural perspective on data analysis.

In the next chapter I provide a critical review of a selection of observational assessments occupational therapists use with clients with brain injury rehabilitation, and in particular the potential of these assessments to inform occupational therapists' approaches to complex interventions. Included among these is *COMPLEAT*<sup>®</sup>, the novel assessment tool that the occupational therapists implemented in this study. Looking at what is available to and used by occupational therapists in brain injury rehabilitation, against occupational therapists' needs for intervention planning, dynamic assessment is highlighted as an emerging avenue for occupational therapy assessment. Dynamic

assessment has been implemented in a few occupational therapy assessments but, Chapter 2 concludes, requires further investigation in relation to occupational therapy assessment and intervention planning in brain injury rehabilitation.

In Chapter 3 I set out the methodology and methods for the study, providing the reader with the context established by the methodological framework for the broader instrument development project within which this study is situated, and the design of the study itself. I describe the settings and participants in this study, and detail *COMPLEAT*<sup>®</sup> as a data collection instrument, as well as the data collection and analysis methods. I also address the ethical considerations in designing this study and particularly for collecting potentially sensitive data from vulnerable populations and in public places.

Through Chapters 4 and 5 I present the results of the study derived from respective phases of the data analysis. In Chapter 4 I address the sociocultural nature of the processes as the occupational therapists implemented and interpreted *COMPLEAT*<sup>®</sup>. In Chapter 5 I take a subset of these findings, on the occupational therapists' interpersonal interactions with their clients and specifically their direct responses to situations arising during the assessment, and investigate these in light of the measurement framework and yardstick provided by *COMPLEAT*<sup>®</sup> and analysis from the broader instrument development project. Together, these two chapters situate the occupational therapists' implementation of *COMPLEAT*<sup>®</sup> in context of the individuals involved, the broader situations, and the tasks of planning and implementing occupational therapy interventions in brain injury rehabilitation.

In Chapter 6 I consider the findings of this study in light of the argument I have made in this chapter and other data and perspectives from the literature. I suggest that the findings of this study have relevance for making explicit assessment for occupational therapy, highlighting dynamic assessment in occupational therapy, and addressing the barriers occupational therapists face in assessment with clients with brain injury. That being the case, I conclude with implications for best practice rehabilitation to enable clients' participation, for occupational therapists' identity within their rehabilitation teams, and for the development of dynamic assessment for occupational therapy. These implications together provide an avenue for occupational therapists to take action to assert their position as experts in participation and to apply participation-focussed evaluation that will positively impact on practice.

Finally, in three appendices to this thesis, I provide supplementary material on *COMPLEAT*® and the broader instrument development project with which this study was intertwined. In Appendix A I supplement the presentation of *COMPLEAT*® in Chapters 2 and 3 with some detail on its features and the stages of development through the broader project. In Appendix B I detail the qualitative participation restriction hierarchy derived from *COMPLEAT*® on which this study draws, including preliminary qualitative evidence for the validity of that hierarchy. And in Appendix C I provide the results of preliminary statistical investigations of the psychometric properties of *COMPLEAT*® scores, including the technical details of the Rasch analysis of quantitative data from the instrument development project.

## **Chapter 2:**

### **Literature Review – Assessment for Intervention Planning**

Rehabilitation usually begins with a process of information gathering and assessment (evaluation) to identify the individual's current status, needs, and rehabilitation goals, followed by intervention and re-evaluation, in repeated cycles until discharge (A. G. Fisher, 2009; Levack & Dean, 2012). There is considerable pressure on occupational therapists to use standardised assessments to monitor the outcomes of their practice (e.g., Corr & Siddons, 2005; Coster, 2008; Turner-Stokes et al., 2012), although this pressure is predominantly philosophical rather than based on strong evidence for a positive impact on client outcomes (Colquhoun, Letts, Law, MacDermid, & Missiuna, 2012). The objective of this chapter is to examine the literature on a selection of observational assessments that occupational therapists may use with younger adult clients with brain injury, with a particular view to how these assessments (could) inform rehabilitation practice. Having reviewed a number of relevant assessments and the limited literature on their use for intervention planning, the chapter turns to the features of assessment relevant to occupational therapy and data potentially available to inform interventions. This concludes with a brief overview of how the assessments reviewed in this chapter relate to dynamic assessment principles from other fields that might assist with intervention planning.

#### **Review of Selected Observational Assessments for Brain Injury Rehabilitation**

The assessments selected for review in this chapter reflect the focus of this thesis on participation (WHO, 2001) as an outcome of rehabilitation for younger adults with brain injury. Given the emphasis of occupational therapy and features of assessment for this client group that were outlined in the previous chapter, each of the included



assessments is based on the observation of clients' performance of common activities in naturalistic environments, rather than on isolated skills performed in clinical environments. Wherever the published literature exists to do so, the review specifically examines insights into occupational therapists' use of the assessments in practice and specifically in clinical reasoning regarding planning interventions for the target client group.

### *The ICF and related participation assessments*

Given the focus in this thesis on participation as it is defined by the ICF, it stands to reason to look first to the ICF when seeking to assess this construct. The ICF offers a definition of participation and a list of potential domains for assessment, but the list of domains is often considered of limited use as it stands in the ICF publication (Jette, Norweg, & Haley, 2008). Specifically, as an international health taxonomy, this list of domains includes the “universe” of potentially relevant domains across settings and cultures (Dijkers, 2010). The list is therefore unmanageable in terms of length and because many of the domains are likely to be rarely encountered in any given setting (Dijkers, 2010; Jette et al., 2008; Stucki et al., 2002). As a result, the utility of the list in differentiating participation is limited (Dijkers, 2010).

Core sets narrow the ICF list of domains to those most relevant to particular client populations or settings, such as for traumatic brain injury or stroke (Bernabeu et al., 2009; Geyh et al., 2004). However, core sets are not without their limitations, including on occupational therapists' attempts to maintain a holistic and client-centred perspective (McIntyre & Tempest, 2007). They are also not assessments. Since the ICF was never intended as an assessment and does not offer a practical operational definition of participation for this purpose (Taylor & Geyh, 2012), many assessments

of participation and related constructs have been developed and applied in brain injury rehabilitation.

With strong interest in the assessment of clients' participation outcomes, there already exist a number of systematic reviews of participation assessments. These reviews have a particular focus on the scope of content (Cardol et al., 1999; Dalemans, de Witte, Lemmens, van den Heuvel, & Wade, 2008; Magasi & Post, 2010; Noonan, Kopec, Noreau, Singer, Chan, et al., 2009; Noonan, Kopec, Noreau, Singer, & Dvorak, 2009; Noonan, Miller, & Noreau, 2009; Perenboom & Chorus, 2003; Resnik & Plow, 2009) or on the psychometric properties of the assessments (Magasi & Post, 2010; Noonan, Kopec, Noreau, Singer, & Dvorak, 2009; Noonan, Miller, et al., 2009; Salter, Foley, Jutai, Bayley, & Teasell, 2008; Tse et al., 2013). These reviews have identified an extensive list of published, standardised assessments, but the included assessments are overwhelmingly (sometimes deliberately) pen-and-paper questionnaires that use self- or proxy-report. Given what has been outlined in the previous chapter regarding the difficulties in using such assessments with clients with cognitive impairments after brain injury, occupational therapists' preference for observational assessments for the purposes of intervention planning, and the context of this study, this literature review will only include observational assessments.

While the focus of this thesis is on the evaluation of participation, it is clear from the reviews that have already been conducted that it is necessary to look beyond assessments of “participation” in order to identify assessments—and the published literature on these—that may illustrate the information and applications that occupational therapists seek. What follows is, therefore, a review of assessments that, while addressing the objective of this chapter, examine a range of constructs such as

motor and cognitive skills; information processing; executive functioning; and functional performance in terms of the interactions between factors related to the person, environment, and occupation. This review is not comprehensive with respect to these other constructs, but rather provides a review of observational assessments used by occupational therapists with younger adult clients with brain injury, and the properties, strengths and limitations of those assessments for intervention planning with this client group.

Those assessments with the broadest scope with regard to the focus of this thesis on participation, and those most widely used or described in the literature, are included here. For example, a recent review concluded that the Multiple Errands Test versions, Executive Function Performance Test, and Assessment of Motor and Process Skills had the strongest evidence of reliability and validity among 17 assessments of executive function for use with clients with stroke (Poulin et al., 2013), so those assessments are included here along with other observational, occupational therapy assessments of occupational performance, while many other executive function assessments are excluded.

#### *Multiple Errands Test (MET)*

The Multiple Errands Test (MET; Shallice & Burgess, 1991) was designed by neuropsychologists to overcome the limitations of traditional neuropsychological assessment in detecting difficulties with executive functioning that have profound impacts on everyday life. It has subsequently been picked up by occupational therapists in research and, anecdotal reports would suggest, to some extent in practice where occupational therapists work very closely with neuropsychologists. The MET was originally designed to overcome the shortcomings in other neuropsychological

assessments in which “rarely are patients required to organize or plan their behaviour over longer time periods, or to set priorities in the face of two or more competing tasks” (Shallice & Burgess, 1991, p. 728). That is, the MET is intended to better represent the complexity of everyday life and thus to better inform effective intervention with those who need it.

The MET, in its original version (Shallice & Burgess, 1991), involves the person being taken to an unfamiliar shopping strip to carry out eight tasks that are interleaved and require multi-tasking, all the while following a set of six ‘rules’ (e.g., no shop is to be entered other than to make a purchase). Most of the tasks are fairly easy, involving simple purchases and meeting the examiner at an agreed location after a set period of time. Information gathering tasks increase the complexity by requiring the person to identify the store most likely to have the most expensive item and to research item prices, weather observations, and currency exchange rates (Shallice & Burgess, 1991). The multi-tasking requirements and some “hidden” problems, such as the need to write a postcard despite not being provided a pen, contribute to the complexity and characteristic lack of clear structure that test executive functioning in the MET (Burgess et al., 2006, p. 200; Morrison et al., 2013).

The MET is most commonly scored according to the number of errors the person makes in the categories of inefficiencies, rule breaks (including rules specified in the assessment and social rules), interpretation failures, and task failures (Alderman, Burgess, Knight, & Henman, 2003; Knight & Alderman, 2002; Shallice & Burgess, 1991). Healthy adults have been observed to make some errors, particularly with the more challenging information gathering tasks, but people with frontal lobe damage make more errors, make unique errors such as taking required items from shops

without paying, and use different strategies (Alderman et al., 2003; Knight & Alderman, 2002; Morrison et al., 2013; Shallice & Burgess, 1991).

More detailed analyses of whether or not particular errors are made by healthy adults have led to the development of weighted scoring schemes that place more emphasis on unusual errors that are presumed pathological (Alderman et al., 2003; Dawson, Anderson, et al., 2009). In some cases these weighted scores have proved markedly more efficient at distinguishing people with neurological impairments from healthy adults (Alderman et al., 2003). Other versions have otherwise changed the scoring system to varying degrees. The most notable change is found in a recent effort to render the scoring more objective by considering time taken, number of locations visited, number of tasks completed, and number of rule breaks (Morrison et al., 2013). In doing so, the authors were able to create a performance efficiency ratio (tasks completed to locations visited) that has an optimum value and allowed for the generation of a criterion-referenced, normalised score on a 0-1 scale (Morrison et al., 2013). However, this “assumes that frequency is more sensitive than type of rule break in discriminating between groups” (Morrison et al., 2013, p. 462), which runs counter to some studies above that have shown the nature of errors to be significant in determining the presence of impairments of executive functioning.

The MET was originally developed for use with people with traumatic brain injury involving the frontal lobes, who were involved in rehabilitation due to severe ongoing difficulties in daily life, but who performed relatively well on most other cognitive tests and were of superior intelligence (Shallice & Burgess, 1991). Since then adaptations have been developed, with modifications including to make the rules more concrete (if more numerous) and provide them in written form, to provide a pen and

clipboard, and to provide a clearly marked place to record the required information (Alderman et al., 2003; Dawson, Anderson, et al., 2009; Knight & Alderman, 2002; Morrison et al., 2013). Unlike in the original study (Shallice & Burgess, 1991), some participants in these subsequent studies have also been familiar with the assessment environments (e.g., a hospital in which they work or are a patient, or a local shopping centre).

Specific published variants include a simplified version (MET-SV) that is still carried out in a shopping centre, but is pitched at a level for people more characteristic of the population with brain injury (Alderman et al., 2003); a hospital version (MET-HV) for use with people who may not be able to complete the MET in a public shopping area for reasons such as mobility or behavioural problems, or movement restrictions under mental health treatment legislation (Knight & Alderman, 2002); and a revised version (MET-R) for use in a busy hospital environment with people with mild brain injury (Morrison et al., 2013).<sup>4</sup> Additionally, because of the nature of the tasks and interaction with the environment in the MET, it is necessary to adapt the assessment to local environments (Morrison et al., 2013). This has given rise to a further version—the Baycrest MET (BMET)—based on the MET-HV and on which separate validation studies have been published (Dawson, Anderson, et al., 2009). There are also local versions used in other studies (e.g., Rand et al., 2009) that have used the instructions and scoring systems from other published versions and have not been the

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<sup>4</sup>A virtual version (VMET), conducted in a nine-aisle virtual reality supermarket, has also been developed as the only MET version intended for use with people with motor impairments, as well as to save time and resources (Rand, Rukan, Weiss, & Katz, 2009). However, despite significant correlations in scores, research with a very small sample suggests there may be key differences in characteristics of the assessment and the performances of clients in this version (Rand et al., 2009). The lack of a social element in particular may contradict the validation of other versions (see text). In short, further research is required to determine whether the VMET is best considered a version of the MET or a different test of executive functioning, of which it is just one of a growing number based in virtual reality settings that are not considered here.

subject of separate validation. No doubt there are still more local versions, including in clinical settings, about which little if anything has been investigated let alone published.

Validation of some versions of the MET has included people with stroke, or who have had surgery for tumour, as well as those with traumatic brain injury (Alderman et al., 2003; Dawson, Anderson, et al., 2009; Knight & Alderman, 2002; Morrison et al., 2013), expanding the applicability of the assessment with mixed brain injury rehabilitation groups. Further, that healthy adults make some errors avoids attenuation of the scores with clients with few or subtle difficulties (i.e., a floor effect; Alderman et al., 2003). There is some suggestion that the assessment may discriminate better between healthy adults and people with stroke than people with traumatic brain injury, depending on the summary score used (Dawson, Anderson, et al., 2009), although this is possibly in part attributable to characteristics of the matched “healthy” control group given differences in the profile of people with stroke versus traumatic brain injury.

Where investigations of reliability and validity have been reported, the findings have been positive. Inter-rater reliability has been assessed as good to excellent for various summary scores in different versions (intraclass correlations of .71 to 1.00; Dawson, Anderson, et al., 2009; Knight & Alderman, 2002; Morrison et al., 2013), although it should be noted that some studies have had the second rater score from the first rater’s notes rather than from direct observation, and other studies have not specified the method. One study that used scores from video-recorded observations found identical scores from two raters (Morrison et al., 2013), but that study used the MET-R scoring that was created specifically to maximise objectivity and therefore cannot be

generalised to other versions. For the MET-HV, internal consistency was also found to be satisfactory (Cronbach's alpha .77; Knight & Alderman, 2002).

Concurrent validity has been investigated by comparison of scores on various MET versions against a range of other executive functioning measures (Alderman et al., 2003; Dawson, Anderson, et al., 2009; Knight & Alderman, 2002) and also, of particular interest to occupational therapists, against the Assessment of Motor and Process Skills (Dawson, Anderson, et al., 2009). In these studies, statistically significant correlations in the expected direction have been more often demonstrated with measures that are considered more 'ecologically valid' indicators of difficulties. The MET itself has inherent ecological validity (performing a set of errands vs. traditional psychometric testing). It also has demonstrated sensitivity to identify in a discrete assessment those clients suggested to have difficulties with executive functioning in longer observations of everyday task performance (e.g., informal observations or reports of significant others on the Dysexecutive Questionnaire; Alderman et al., 2003; Dawson, Anderson, et al., 2009; Knight & Alderman, 2002).

An advantage of the MET is that it does not require special equipment or training, with variants of the MET having been published in academic journal articles in differing detail. Being a norm-referenced assessment, however, each version needs to be validated to enable interpretation of the findings. For example, cut-off scores based on the performance of the 95th percentile of healthy adult samples have been calculated at seven total errors for the MET-HV (correctly classifying 85% of the 20 people with brain injury; Knight & Alderman, 2002), but at 12 total errors for the parallel MET-SV by the same research group (correctly classifying 44% of the 50 people with brain



injury if total errors were used, or 82% if total weighted error scores were used; Alderman et al., 2003).

While each of the published studies has involved only limited samples (3-50 people with acquired brain injury), the need to recruit matched healthy adults, administer concurrent assessments, and statistically analyse the findings would put this process beyond the reach of many clinical settings. Having said that, as the body of literature reporting on parallel studies with different versions of the MET increases, so does knowledge to guide interpretation of findings at the group level—even in the absence of normative references. In particular, social rule breaks are a category of errors that are performed significantly more often by people with brain injury than by healthy adults, and interestingly are also not part of traditional clinic-based assessments of executive functioning (Alderman et al., 2003).

Examining performance on the MET(-SV) in more detail, patterns of errors may suggest some clients' performances are dominated by rule breaking errors that indicate impaired self-monitoring, while others' performances are dominated by task failures that indicate impaired initiation, each of which might be responsive to different interventions (Alderman et al., 2003). More recent variations, namely the MET-R and Virtual MET, are specifically targeted at identifying and even implementing interventions for different groups (Morrison et al., 2013; Rand et al., 2009). However, since these represent more radical departures from the original MET, some of the promising earlier findings no longer apply and further research is therefore required regarding these versions specifically (see also Footnote 4 on page 37). As can be seen above, much of the literature published on the MET to date has focussed on developing, standardising, and validating various versions, often against other

psychometrically-sound neuropsychological measures of executive functioning, rather than on considering links to intervention.

#### *Executive Function Performance Test (EFPT)*

The Executive Function Performance Test (EFPT), as the name implies, is another assessment of executive functioning. The EFPT was developed by occupational therapists and involves observation of a person completing four instrumental tasks (Baum et al., 2008; Baum & Wolf, 2013; Hahn et al., 2014): simple cooking (quick cooking oats or pasta), making a telephone enquiry (looking up a phone number and calling to make an enquiry with a grocery store or doctors surgery), managing medications (selecting the ‘correct’ mock medication from among three and taking as directed, or sorting medications into a 7-day pill sorter), and money management (identifying two bills from among the mail to pay by cheque given an account with an insufficient balance, or ordering a purchase from a catalogue). The two examples of each activity provide alternate forms of the assessment, enabling the possibility of re-testing (Hahn et al., 2014).

Irrespective of the assessment form, scoring of the EFPT follows the format of the earlier Kitchen Task Assessment by the same authors (Baum & Edwards, 1993), whereby performance on each task is scored on initiation, organisation, sequencing, safety and judgement, and completion. These together constitute a measure of executive functioning (Baum et al., 2008; Baum & Wolf, 2013; Hahn et al., 2014). Assistance required due to physical disability is not scored, as long as the person requests the assistance, so that the focus remains on executive functioning independent of physical disability (Baum & Wolf, 2013).

There are six levels of performance, defined by the type of cue or assistance the person required to complete the task: 0 for no cue, 1 for verbal guidance, 2 for gestural guidance, 3 for direct verbal assistance, 4 for physical assistance, and 5 for doing for the participant (Baum et al., 2008; Baum & Wolf, 2013; Hahn et al., 2014). Two instances of each type of cue are given before moving to the next type of cue if the person is not successful, though cuing can then start at that level for subsequent instances of the same executive functioning component (Baum & Wolf, 2013). Total scores on the EFPT are calculated by simple summing the levels of cueing for each item, and have shown adequate to very high inter-rater reliability and internal consistency (Baum et al., 2008). A recent study by the developers of the alternate form of the EFPT showed that total scores on the two forms were equivalent over a period of one week, although scores on individual activities and tasks (items) varied between forms (Hahn et al., 2014).

The EFPT has been used with various client populations, including people with acute mild stroke and those with chronic mild or moderate stroke, who have been predominantly older (Baum et al., 2008; Cederfeldt, Widell, Andersson, Dahlin-Ivanoff, & Gosman-Hedström, 2011). Evidence for validity of the scores of people with chronic stroke is supported by differences in scores between those with mild and moderate stroke, and between those with stroke and healthy adults (Baum et al., 2008; Hahn et al., 2014). In other studies, moderate correlations have been identified between EFPT scores and scores on neuropsychological tests, and assessments of the performance of instrumental activities of daily living such as the Assessment of Motor and Process Skills (Baum et al., 2008; Cederfeldt et al., 2011). However, the validity of the assumptions made in ranking and summing types of

assistance to gain a score has been questioned but not investigated (Bottari, Dassa, Rainville, & Dutil, 2010b).

The authors assert that the EFPT can be used to plan intervention and to determine a person's capacity for independent living (Baum et al., 2008; Baum & Wolf, 2013). However, this is not supported by published data. Research has been conducted with people with acute mild stroke who were soon after discharged, or with people already living independently in the community six months after a mild or moderate stroke (Baum et al., 2008; Cederfeldt et al., 2011). A study involving people with diagnosed substance abuse problems who were homeless found that EFPT scores did not significantly correlate with indicators of community living as expected, leading that author to suggest further research and that the emphasis should be on the use of the EFPT to guide the nature of supports in situ rather than to predict the need for supports in advance (Raphael-Greenfield, 2012). Research is also lacking on the use of this assessment with populations with brain injury from causes other than stroke, despite executive functioning problems being a major limitation for some other groups (particularly those with traumatic brain injury).

### *IADL Profile*

The IADL Profile measures independence in executive functioning aspects of the execution of a set of instrumental activity of daily living (IADL) tasks in the home and community (Bottari et al., 2010b). The IADL Profile was developed to provide an extension to the ADL Profile for use with clients with traumatic brain injury that would ensure that executive functioning was captured within an observational occupational therapy measure of IADL performance (Bottari et al., 2010b). To capture the influence of executive functions on performance, the tasks on the IADL Profile are

complex and inter-related, and the instructions to the client are deliberately vague in providing direction about the tasks that comprise the assessment (Bottari, Dassa, Rainville, & Dutil, 2009a, 2009b; Bottari et al., 2010b).

Specifically, the client is told, “Without knowing it, you invited my assistant and I to have lunch with you. Please get ready to receive us. We will assume any incurred expenses for a maximum of \$20. Now, please tell me what you are going to do.” (Bottari, Dassa, Rainville, & Dutil, 2010a, p. 736). The client is observed and scored on dressing to go out, travelling to the grocery store, shopping for food, preparing a hot meal, having the meal with the guests, and clearing up afterwards (Bottari et al., 2010b). Two, additional, discrete tasks are also performed and scored: find a bus timetable for an inter-city journey, and make a budget for a fixed income when the aim is to purchase a car within a year (Bottari et al., 2010a, 2010b). The observation usually takes place in the client’s home and community and takes approximately 3 hours (Bottari et al., 2010a, 2010b).

Scoring of the IADL Profile is based on the assistance required in each task for each of four executive functioning operations: goal formation, planning, execution, and verification (Bottari et al., 2009b, 2010b). Where errors are observed, the occupational therapist refrains from providing assistance or direction unless the client cannot proceed or is in danger, in order to assess the client’s ability to self-monitor and correct errors independently (Bottari et al., 2010b). When cues are needed they are provided in a graded, least-to-most, fashion (Bottari et al., 2010b). Raters are trained in this procedure in a three-day workshop and provided a manual with definitions of each of the four operations to be scored and examples of relevant behaviours (Bottari et al., 2009b, 2010a).

There are 29 items (four operations for each of five tasks, and three operations for three tasks where the goal is determined by the examiner). Each is scored according to the level of assistance required: 4 is independent, 3 is independent with difficulty, 2 is verbal or physical assistance, 1 is verbal and physical assistance, and 0 is dependent (Bottari et al., 2010b). These are combined into a total score (sum of all items) and factor scores (average of three to eight related items) for each of six factors derived from factor analysis (Bottari et al., 2009b, 2010a). The total score and each of the factor scores have high internal consistency (Bottari et al., 2009b). Very high generalisability coefficients were also shown in a generalisability study examining scores from the IADL Profile administered and video recorded by the assessment developer and then scored from the video by three other trained raters (Bottari et al., 2010a).

Most of the error in the generalizability study by Bottari et al. (2010a) was associated with raters, and particularly for the factor on preparing the meal, highlighting the importance of training raters and providing clear scoring guidelines, especially for very familiar tasks for which occupational therapists may have pre-conceived criteria. In another study (Bottari et al., 2009a), IADL Profile scores were modestly correlated with selected measures of executive functioning and showed small to moderate correlations with injury severity. However, the proportions of the variance in IADL Profile scores explained by those factors was small, suggesting some overlap in the constructs measured but that independence in the IADL Profile tasks is also influenced by other factors (Bottari et al., 2009a).

The IADL Profile specifically seeks to establish whether the client's difficulties with IADL performance are related to any of the four operations reflecting executive

functioning. To do this, the IADL Profile specifically incorporates the formulation of the plan by the client, which is lacking from other assessments of IADL performance and also from measures of executive functioning (Bottari et al., 2010b). However, as is the case for all executive functioning tests, novelty of the task is likely to significantly influence performance. Re-testing is not possible because there is no alternate version of the IADL Profile (Bottari et al., 2010a).

Looking to scores at one point in time, comparison of the performance of 27 people with moderate or severe traumatic brain injury against matched healthy adults on performance in the budgeting task showed significant differences in the factor score (1.59/4.00 compared with 3.35/4.00), as well as a longer time to complete the task and the spontaneous generation of fewer expense categories (Bottari, Gosselin, Guillemette, Lamoureux, & Ptito, 2011), though the latter are not formally measured in the IADL Profile. Other investigations of the comparative performance of people with brain injury and others have not been reported in the literature, and nor have investigations of the performance of people with brain injury other than traumatic brain injury (e.g., stroke).

When it comes to using the IADL Profile for intervention planning, little has been described in the literature regarding the profile and total scores, but two recent studies on self-generated strategies and occupational therapists' assistance respectively may highlight implications for interventions. In one of these studies, Bottari, Shun, Le Dorze, Gosselin, and Dawson (2014) investigated the self-generated strategies that clients with traumatic brain injury who scored at each level of the IADL Profile scale on the shopping task ( $n=5$ ) utilised whilst planning and executing that task. Their study highlighted the interrelated nature of the strategies that clients use, whereby the

application of external strategies was found to be dependent on internal processes. Therefore, the authors posited, there is likely overlap with the application of external and internal strategies such that external strategies may not fully compensate for difficulties with the application of internal strategies (at least not without specific training). On that basis the authors proposed a first step to identifying a hierarchy of the cognitive demands involved in the selection and application of strategies.

In the other recently published study examining strategies associated with the IADL Profile, Le Dorze, Villeneuve, Zumbansen, Masson-Trottier, and Bottari (2014) conducted a detailed conversational analysis of instances of verbal assistance in the interactions between the occupational therapist and clients with brain injury selected to represent the verbal assistance and dependent levels on the information gathering task ( $n=2$ ). Their study elucidated six types of verbal assistance: restarting, scaffolding, cueing, action priming, strategy suggestion, and explicit advice. The experienced examiner was found to engage the client in supported thinking and provide more or less assistance, both in terms of frequency and directiveness, according to clients' demonstrated needs and benefits. The authors therefore suggested that rather than doling out graded prompts, the experienced occupational therapist acted as a resource to the participant. The occupational therapist, they report, appeared to be guided by general principles such as allowing the client time, asking open-ended questions, rephrasing questions, maintaining respect and belief in the client, avoiding confronting errors, neither encouraging nor discouraging digressions, and validating correct elements.

Authors of both of these recent studies have proposed that such work might inform the understanding of the impact of cognitive deficits on performance, the training of



occupational therapists, and the refinement of existing interventions. Specifically, interventions may be refined through deliberate application of intervention principles to facilitate supported thinking, and through individualisation to recognise the level at which the client's performance breaks down, the nature of the next level of performance, and the particular strategies the individual is using well. However, both studies were extremely limited in scope to allow for detailed investigation, including only one task each from the IADL Profile and very few participants.

#### *Assessment of Motor and Process Skills (AMPS)*

The Assessment of Motor and Process Skills (AMPS) is a well-known and researched assessment of skill in executing goal-directed actions during occupational performance (A. G. Fisher, 2003). As the name implies, the AMPS assesses skills in both motor and process (cognitive execution) domains, providing separate measures against the same scale. To derive these measures, a trained occupational therapist observes and scores the person performing (at least) two activity of daily living tasks. The tasks to be observed are selected in collaboration with the person from among a wide range of tasks that have been standardised for the AMPS, which the occupational therapist initially narrows to a set of 3-6 relevant tasks that are sufficiently challenging (A. G. Fisher, 2003). The tasks are selected to be familiar, meaningful, and relevant to the individual, encapsulating principles of client-centred practice that individualise approaches to each client's specific needs and wishes (A. G. Fisher, 2003). Between and within tasks there are a range of options to allow individuals to perform activities as they would prefer (A. G. Fisher, 2003).

For each task observed, the occupational therapist scores the person's performance on 16 motor and 20 process skill items using a 4-point scale. The detailed administration

manual provides descriptors for each level of performance for each item, taking into consideration effort, efficiency, safety and independence (A. G. Fisher, 2003). The occupational therapist is trained to use the AMPS and score each item in a 5-day training course that includes practical experience and that is then followed by scoring a further 10 people with the AMPS and submitting those scores for reliability analysis using a Rasch measurement model. This process also allows for “calibrating” how severe or lenient each rater is when scoring the assessment. Calibration has previously been completed to determine how difficult each of the standardised tasks and each of the skill items are, all on the same scale on which the person’s skill is to be measured (A. G. Fisher, 1993, 2003).

Intra-rater reliability for trained and calibrated raters has been supported in investigations of both “fit” of observed ratings to the expectations of the Rasch model (i.e., self-consistency such that more lenient raters rate all clients more leniently and vice versa) and stability over time by re-calibrating raters’ severity after a period of 5-15 months (Bernspång, 1999; A. G. Fisher, 1993, 2003). Inter-rater reliability is accounted for by the calibration process adjusting for any differences in leniency between raters, as long as those raters are self-consistent and conform to the expectations of the Rasch model as determined in the calibration process. Rasch analyses have also been used in many studies during the development of the AMPS and subsequent testing to provide evidence regarding the consistency and validity of measures of a person’s motor and process skills. The fit of skill items, tasks, raters and persons to the expectations of the Rasch model supports that the AMPS is measuring the two related constructs (motor and process skills) as expected (e.g., A. G. Fisher, 2003; Goldman & Fisher, 1997; Park, Fisher, & Velozo, 1994).

The AMPS has been used and investigated with a wide range of people aged 3 and over and with a diversity of diagnoses (e.g., Bernspång & Fisher, 1995; A. G. Fisher, 2003). The activity of daily living tasks have been developed and standardised internationally to provide validity across gender (Duran & Fisher, 1996) and culture (e.g., Goldman & Fisher, 1997) by allowing the selection of relevant tasks from a very wide range that is still growing (Bray, Fisher, & Duran, 2001; A. G. Fisher, 2003; Robertson & Carswell, 2011). Test-retest reliability and alternate forms reliability (i.e., re-assessment where the person performs different activity of daily living tasks) have been investigated with groups of healthy adults and clients with a range of diagnoses over periods of 1 to 18 days. Reliability coefficients in these studies have ranged from .85 to .91, depending on the scale (motor or process skills) and particular study (A. G. Fisher, 2003; Kirkley & Fisher, 1999), which provides support for using the AMPS to measure change over time. Further examination of instances in which individuals' scores varied at retest has illustrated the importance of assessing at least two tasks and ensuring that tasks are not too easy (Kirkley & Fisher, 1999). Assessing the same individuals in their own homes and in an occupational therapy clinic has also demonstrated that the AMPS process skills scale is sensitive to differences in performance between settings, indicating that assessment should be conducted in the environment in which performance is expected (Park et al., 1994).

Examining the validity of the score interpretation, several researchers have worked to create cut points for each scale, below which individuals are likely to require substantial assistance to live in the community (Merritt, 2010, 2011). A cut-point of 1.5 is suggested for the motor skills measure, improving the predictive accuracy compared with the previous cut-point of 2.0 (Merritt, 2011). For the process skills

measure, a cut-point of 1.0 is suggested (Bernspång & Fisher, 1995; A. G. Fisher, 2003; Merritt, 2011). These cut-points have been established in retrospective studies that often have very large samples (i.e., tens of thousands), but that use the AMPS international database and therefore rely on global three-point ratings of need for assistance that are made by many different raters internationally and may not be used consistently (Merritt, 2010, 2011). More recent work has further tempered global recommendations with evidence that predictions based on each of the two skills scales are not equally accurate across diagnostic groups (Merritt, 2011).

Issues in categorically rating independence aside, the AMPS was intended to measure motor and process skills in activities of daily living, not independence (or participation), limiting the broader predictive power of the assessment (Merritt, 2010, 2011). Further, the AMPS does not take into account available support in the environment (e.g., the presence of family, caregivers or technology) that could influence an individual's independence (Merritt, 2010). None-the-less, the AMPS shows relatively good ability to predict whether an individual requires significant support to live in the community at the time of administration. The cut points are also significant in that while changes in scores above this level may be statistically significant, they could well reflect sensitivity to normal variation in performance rather than clinically significant change (Park et al., 1994).

When it comes to implementation in practice, more has been studied with regard to the AMPS than to other assessments, perhaps in part because of the significant investment of completing the 5-day training and 10 follow-up assessments for calibration before being able to use and score the AMPS. The limitations that occupational therapists most often raise regarding the AMPS relate to the training and standardisation that are

its strength. Specifically, occupational therapists report that implementing the AMPS in their workplace after training requires a change in the way they are thinking about what they are doing as much as in what they are doing (Chard, 2006).

Newly-trained therapists reported it particularly difficult to use the AMPS with low-functioning clients who were not engaged in activities (despite the AMPS including very easy tasks such as putting on socks and slip-on shoes or eating a snack), and with clients “who were difficult to manage because of psychotic symptoms or a lack of insight” (Chard, 2004, p. 58). Still, a small pilot would suggest that the AMPS can be used with clients still in or emerging from post-traumatic amnesia in the absence of agitation (i.e., Rancho Level V or higher of Hagen, as cited in Lange, Spagnolo, & Fowler, 2009), provided they have sufficient understanding of language to follow simple instructions and are physically and medically able to attend an appropriate environment to perform simple everyday tasks (Lange et al., 2009). The use of standardised tasks does, however, require that clients are given standard information in a standard format prior to initiation of the task, with the selections the client makes forming a “task contract” to which the client must then adhere (A. G. Fisher, 2003, p. 7). Thus, the standardisation of even observational assessments may place demands on clients’ cognitive functioning (e.g., comprehension and recall of verbal instructions) over-and-above that of naturalistic activity performance.

The AMPS manual, which is provided at the AMPS training, gives occupational therapists information on planning interventions following an AMPS assessment. As that manual highlights, because Rasch analyses have been used to develop and score the AMPS, “knowledge of the relative difficulty of tasks can provide a sequential guide for planning and grading intervention programs” (A. G. Fisher, 2003, p. 17).

Further, the use of Rasch analysis in scoring individuals' performances allows the calculation of individual standard errors of measurement for each score and it is therefore possible to determine at a later date if an individual's score has changed beyond chance (A. G. Fisher, 2003; Park et al., 1994). However, the nexus between these features of the assessment and intervention planning has not been widely described, utilised or debated in studies reported in the literature.

Descriptive studies of differences in performance on the AMPS of people with left versus right hemisphere stroke (Bernspång & Fisher, 1995), or of longitudinal change in performance over the first twelve months after stroke (Ekstam, Uppgard, von Koch, & Tham, 2007), provide suggestions of performance profiles to which interventions may be targeted. These have not, however, been taken forward in intervention studies. For example, a retrospective pre-post design study reported by the AMPS author and a colleague (Wæhrens & Fisher, 2007) indicated that the multidisciplinary team's rehabilitation intervention was based in part but not solely on AMPS assessment outcomes, but does not describe the intervention further. Another study (Ahlström & Bernspång, 2003) prospectively recruited people with stroke on discharge from hospital to home for a longitudinal investigation of AMPS scores over two years of follow-up. During that time some received usual occupational therapy intervention, but the authors described that intervention as explicitly *not* based on the AMPS assessment. Therefore these issues largely remain to be explored by most occupational therapists and researchers using or considering the AMPS.

#### *Perceive, Recall, Plan and Perform (PRPP) System of Task Analysis*

The Perceive, Recall, Plan and Perform (PRPP) System of Task Analysis is an observational assessment of information processing in the context of the performance

of a familiar activity of daily living task (Chapparo & Ranka, 1997). It was specifically designed to enable the engagement of clients with cognitive impairments, including those in post-traumatic amnesia who are exhibiting agitation (i.e., Rancho Level IV; Chapparo & Ranka, 1997; Fry & O'Brien, 2002; Nott & Chapparo, 2008, 2012). This client group is able to be engaged because the PRPP uses familiar everyday tasks that are personally relevant to the client and performed in realistic contexts in response to task and environmental cues rather than verbal instructions (Fry & O'Brien, 2002; Nott & Chapparo, 2008).

The tasks observed when using the PRPP are not standardised as they are in the AMPS. Rather, the PRPP involves performing a two-stage task analysis to first break the task down into component steps, and second identify on a three-point scale (effective, questionable, not effective) the effectiveness with which the client applies information processing in performing each step of the task (Nott, Chapparo, & Heard, 2009). It was developed to address the cognitive component of occupational performance within the Occupational Performance Model (Australia) (Chapparo & Ranka, 1997).

Since the earliest stages of development, the PRPP has been used with (but not restricted to) adults with traumatic brain injury, particularly in the early stages of recovery when assessment and intervention options are particularly limited by clients' post-traumatic amnesia and agitation (Chapparo & Ranka, 1997; Fry & O'Brien, 2002; Nott & Chapparo, 2008, 2012; Nott, Chapparo, & Heard, 2008). It was developed in Australia, but has been used internationally (e.g., Steultjens, Voigt-Radloff, Leonhart, & Graff, 2012).

Inter- and intra-rater reliabilities have been investigated in a few studies with different groups. One of those studies reported on the reliability of the PRPP with clients with brain injury showing agitation and confusion, finding moderate inter-rater reliability and good test-retest reliability when nine raters who were trained 1-6 years prior scored video recordings of the performance of five adult clients (Nott et al., 2009). Intra-rater reliability (i.e., re-scoring of one of the same videos two weeks later) measured in the same study showed a tendency to lower scores the second time and also that therapists tended to allocate the same scores to multiple items within each quadrant (Nott et al., 2009). This and other possible contributions to limitations in reliability require further investigation.

Another inter-rater reliability study with three French-speaking Canadian raters who had recently been trained in English found substantial agreement ( $ICC = .63 - .69$  for quadrant scores and  $.77$  overall) for ratings of video recordings of clients with schizophrenia cooking in the occupational therapy kitchen. A third study included 25 Dutch raters, most of whom had trained 1-3 years prior, and 30 observations video recorded in the baseline phase of a German intervention study for clients with mild dementia living at home (Steultjens et al., 2012). Inter-rater reliability for this cross-cultural scoring was fair-to-moderate ( $ICC = .26 - .39$  for sub-quadrant and quadrant scores, and  $.46$  for the overall information processing score) for individual scores, and excellent ( $ICC = .78 - .87$  and  $.90$ , respectively) for average scores (Steultjens et al., 2012).

Whilst a number of these inter-rater reliability results are modest, they address a common criticism that individualised, criterion-referenced, observational assessments lack inter-rater reliability. Further, two of the three studies had a cross-cultural



element, and two of the three studies included raters volunteering from those trained to score the PRPP 1-6 years prior and working with a range of client groups at the time of the study, which is a more realistic scenario for clinical use than a homogeneous group of recently trained raters.

The PRPP is explicitly intended to inform intervention planning by identifying areas of relative strength and weakness. Single case studies incorporating the repeated use of the PRPP with people with brain injury have illustrated areas of strength and weakness within and between activities and over time (Fry & O'Brien, 2002; Nott & Chapparo, 2008). The use of the PRPP to structure observations of performance has been credited with allowing occupational therapists to choose relevant interventions for clients in the early stages of recovery after brain injury, and also to observe incremental changes in performance in the absence of improvements in overall independence (Fry & O'Brien, 2002; Nott & Chapparo, 2008). That is, the PRPP has been used to explicitly apply the principles of task analysis to identify and guide intervention to address difficulties in the cognitive component of occupational performance (Chapparo & Ranka, 1997).

Intervention after the PRPP is directed to learning and implementing information processing strategies identified as difficult, with client training occurring within the task context (Fry & O'Brien, 2002; Nott & Chapparo, 2008). The client training addresses a global strategy of Stop, Sense (Perceive), Think (Recall and Plan), Do (Perform), supplemented with specific prompts and strategies to address components of each quadrant with which the individual has particular difficulties, with the therapist's mediation between the client and task faded over time to enable performance with fewer supports and more self-initiated strategies (Nott et al., 2008). The tasks are chosen to be individually-relevant to the client, but are limited to tasks

that can feasibly be broken down into sequential steps small enough for the performance analysis of information processing. Examples include eating, drinking, grooming, dressing, showering, or preparing a sandwich or salad (Nott & Chapparo, 2012).

Overall, the information processing difficulties defined by the 34 PRPP descriptor items have been analysed using a Rasch measurement model and observed to range from the easiest of recall of basic task-related knowledge; through perception of sensory input, basic processing of sensory input, recall of procedures, active seeking of sensory input, and processing strategies to direct attention and performance through to the end of the task; to the more difficult complex processing strategies that regulate performance; and the most complex executive processing skills for monitoring the safety and efficacy of performance (Nott & Chapparo, 2012). This hierarchy aligns with information processing theory and would suggest a sequence for training clients in cognitive strategy use (Nott & Chapparo, 2012), but this has not been explicitly tested.

### *Dynamic Performance Analysis*

Dynamic Performance Analysis is another client-centred, top-down, occupational therapy assessment of clients' performance of everyday activities (Polatajko et al., 2000). The purpose of Dynamic Performance Analysis is to evaluate occupational performance rather than impairments and abilities, and to do so in a means that accounts for the interactions between the person, occupation and environment, thus avoiding normative assumptions about performance (Polatajko et al., 2000). To achieve this, Dynamic Performance Analysis formalises occupational therapists' observations of their clients performing meaningful tasks and activities in everyday

environments. Occupational therapists are guided by Dynamic Performance Analysis to consider the detailed information that observations yield to determine if and when occupational performance breaks down for the individual client without first making any assumptions about ‘typical’ steps in and requirements for performance (Polatajko et al., 2000).

Rather than observing for the purpose of rating pre-determined items, in Dynamic Performance Analysis the occupational therapist analyses each breakdown in the task performance. The Dynamic Performance Analysis framework highlights where in the task the performance breakdown occurred, whether the client had the knowledge of what was required, whether the client was willing to do what was needed, and whether the client was able to perform as required, considering the demands and supports of both the occupation and environment (Polatajko et al., 2000).

Because neither the tasks observed nor the performance difficulties identified in Dynamic Performance Analysis are standardised, Dynamic Performance Analysis relies on occupational therapists’ clinical reasoning to apply the guidance from the framework and determine whether performance difficulties arise from factors related to the client, the occupation, or the environment (Polatajko et al., 2000). This contrasts with assessments such as the AMPS and PRPP, which are based on theories of functioning and require experienced occupational therapists to undertake extended training to be able to make links between observed occupational performance and the underlying components of functioning (A. G. Fisher, 2003; Nott & Chapparo, 2012). Thus, while the Dynamic Performance Analysis approach provides freedom from the constraints of other standardised assessments, it increases the demands on occupational therapists’ judgements.

When it comes to using Dynamic Performance Analysis to plan intervention, occupational therapists are instructed to analyse each performance breakdown and then use that information to identify and prioritise the discrepancies between clients' abilities and demands and supports of their occupations and environments (Polatajko et al., 2000). Occupational therapists can then consider potential interventions from the perspective of whichever theoretical approaches they have adopted (Polatajko et al., 2000). There is little published on Dynamic Performance Analysis itself, let alone its intersect with intervention planning. Having said that, however, Dynamic Performance Analysis was developed hand-in-hand with an intervention now known as the Cognitive Orientation to Occupational Performance (CO-OP; Polatajko et al., 2000).

The CO-OP approach is based on theories of learning and problem-solving, motor learning and control, client-centred practice, and cognitive strategy use (Missiuna, Mandich, Polatajko, & Malloy-Miller, 2001). Originally developed for children with developmental coordination disorder (Polatajko et al., 2001), it has subsequently been adapted and used by occupational therapists with adults with impairments of executive functioning following traumatic brain injury (Dawson, Binns, Hunt, Lemsy, & Polatajko, 2013; Dawson, Gaya, et al., 2009) and stroke (Henshaw, Polatajko, McEwen, Ryan, & Baum, 2011; McEwan, Polatajko, Davis, Huijbregts, & Ryan, 2010; Skidmore et al., 2011).

Sometimes referred to as occupation-based strategy training when used with adults (Dawson et al., 2013), this approach involves a structured, one-to-one program that progresses from identification of client-centred goals and baseline performance, through teaching of a global strategy (namely, Goal-Plan-Do-Check) and guided

discovery of task-specific strategies, to consolidation of strategies and generalisation across environments and to other activities (Dawson, Gaya, et al., 2009; Polatajko et al., 2001). Occupational therapists use the Canadian Occupational Performance Measure (Law et al., 2005) to have clients identify and self-rate their performance and satisfaction with activity-based goals. Throughout the intervention, Dynamic Performance Analysis is then used to iteratively analyse performance and identify where tasks break down, and from that information guide clients to identify solutions.

At the other end of the spectrum to the PRPP System, application of the CO-OP is a verbally-mediated intervention used with clients with no evidence of language impairments, who are typically living in the community and often involved in work or study (Dawson et al., 2013; Dawson, Gaya, et al., 2009)—although it has been successfully piloted in inpatient stroke rehabilitation (Skidmore et al., 2011). Clients living in the community in the chronic phases of brain injury in particular may relish the autonomy to set and work toward more challenging goals than in therapist-directed interventions (McEwan et al., 2010) or more acute stages (Skidmore et al., 2011).

It has been suggested that, given the nature of brain injury, the involvement of significant others as a key component of the intervention may lead to valued outcomes if those significant others are able to acquire skills to facilitate clients' participation (Dawson, Gaya, et al., 2009). The practicality of this recommendation has, however, been questioned by adult participants with brain injury (McEwan et al., 2010). With a view to better identifying who may benefit from this approach, alone or with significant others' support, the level of coaching required by clients to acquire the CO-OP strategies has been suggested as a topic for further investigation (Dawson, Gaya, et al., 2009). Similarly, it has been suggested that systematic approaches to

monitor clients' potential for increased autonomy, and then to support their attainment of increased autonomy, should be built in to the CO-OP approach (McEwan et al., 2010).

### *COMPLEAT*<sup>®</sup>

*COMPLEAT*<sup>®</sup> is a novel, observational assessment of participation as defined in the ICF (Veitch & Brentnall, 2011a; Veitch, Brentnall, Bundy, Madden, & Morath, 2009). It is as yet unpublished, but is described in further detail in the following chapter with respect to the procedures for data collection in this study, and in Appendix A with respect to the process of its development. The assessment is based around the observation of the client completing a series of approximately three to five activities that are connected as a purposeful routine with an endpoint that represents a meaningful accomplishment for the client (Veitch & Brentnall, 2011a, 2011b; Veitch et al., 2009).

The routines in *COMPLEAT*<sup>®</sup> are very general, with the specific activity and task details negotiated with the individual clients depending on their needs and circumstances (Veitch & Brentnall, 2011b). For example, the “meal preparation” routine involves travel, shopping, meal preparation, and housework to clear up afterwards. Options within this routine include travel by walking or by public transport, and simple or more complicated meals. Specific details, such as the meal to prepare, are left to the individual.

Being based upon the ICF, *COMPLEAT*<sup>®</sup> is intended to have broad applicability to multiple populations (Brentnall, Veitch, & Bundy, 2013b; Veitch & Brentnall, 2011b; Veitch et al., 2009), but it has been developed with occupational therapists and clients

in long-term and community brain injury rehabilitation services (Brentnall, Veitch, & Bundy, 2013a; Brentnall et al., 2013b; Veitch et al., 2009). Being observational and based on familiar and meaningful activities that are specified and conducted as negotiated to be relevant to the individual client, *COMPLEAT*<sup>®</sup> is able to be implemented with clients with cognitive (including memory) and communication impairments (Brentnall et al., 2013a, 2013b; Veitch et al., 2009).

Throughout the routine the occupational therapist provides support to the client as needed, which is taken as part of the assessment providing valuable data about effective supports to participation for that individual (Brentnall, Bundy, Veitch, & Oddy, 2014; Brentnall et al., 2013a). As such, the client does not need to be able to accomplish every task and activity in a routine for *COMPLEAT*<sup>®</sup> to be used. Combined with the wide range of difficulties covered by the various activities and routines, *COMPLEAT*<sup>®</sup> can therefore be used with clients with wide-ranging abilities (Brentnall et al., 2013b; see also Appendix B). Clients do, however, need to be able to access the community locations relevant to the routine (e.g., a store to buy ingredients), even if they require maximal support to do so. In research to date it has been used with clients who are long-term disoriented due to amnesia with little or no agitation, and with clients on restricted leave passes under mental health treatment legislation, but not with clients in post-acute inpatient rehabilitation or post-traumatic amnesia with agitation.

*COMPLEAT*<sup>®</sup> is divided into three parts: Part I records the environmental barriers and supports, Part II rates the client's performance on activities and tasks in the routine, and Part III rates the client's performance on a set of support activities and tasks that are common to all routines (Veitch & Brentnall, 2011a). Each routine activity (Part II)

and support activity (Part III) is derived from the ICF Activities and Participation component, broken down into component tasks to create parallel items within *COMPLEAT*<sup>®</sup> (Veitch & Brentnall, 2011a). The component tasks to routine activities address planning and initiation, preparation and organisation, execution, and completion and transition.

Each activity and component task (Part II or Part III item) is scored on a rating scale derived from the ICF 5-point qualifier for participation restriction (Brentnall et al., 2013a, 2013b; Veitch & Brentnall, 2011a). The rating scale ranges from 0 for independent to 4 for complete participation restriction, with descriptors for the ratings instructing the administrator to take into account of (i) assistance and adaptations relative to the clients' 'usual' environment, (ii) time and effort, (iii) the impact on progression of the routine, and (iv) the safety of persons and objects (Brentnall et al., 2013a, 2013b). The prompts to describe the barriers and supports in the environment (Part I) are also derived from the ICF, but these are not rated (Veitch & Brentnall, 2011a, 2011b).

While the meal preparation routine is similar to the main activities in the IADL Profile, and individual *COMPLEAT*<sup>®</sup> activities are similar to a number of other assessments, *COMPLEAT*<sup>®</sup> is unique in assessing participation via the ICF-based rating scale with descriptors focussed on functional impacts of performance (Brentnall et al., 2013a, 2013b; Veitch & Brentnall, 2011a, 2011b). For example, a client may make use of available environmental supports, including other people, to efficiently progress a routine and safely meet their needs, thus not impacting participation despite not demonstrating fully independent performance. This differs markedly from focusing only on independence/assistance or focussing on underlying impairments of cognitive



or executive functioning. *COMPLEAT*<sup>®</sup> also supports client-centred and goal-directed rehabilitation, since it allows a choice of routines (Brentnall et al., 2013a, 2013b; Veitch & Brentnall, 2011b) rather than prescribing the client shop and prepare a meal for the administrator and assistant (and fulfil two other tasks) as in the IADL Profile, or complete specified activities or use standardised approaches as in other assessments.

*COMPLEAT*<sup>®</sup> total scores represent a measure of participation restriction (see Appendix B) and are derived from Rasch analysis (see Appendix C). The Rasch model applied to *COMPLEAT*<sup>®</sup> includes facets accounting for (i.e., measuring) the clients' participation restriction, the relative difficulty of the routines, and the relative difficulty of the items (activities and tasks; Brentnall et al., 2013b). Completed observations that have so far been quantitatively analysed have been scored collaboratively by each client's occupational therapist and me, neutralising the impact of inter-rater variation. It is likely, however, that individual raters do vary. Experience would suggest that it will be possible to account for differences in severity between raters through another facet of the Rasch analysis (Bond & Fox, 2007; A. G. Fisher, 2003), eliminating the need to train raters to achieve a common level that may not be natural for them and may result in drift over time after training.

Limited preliminary analyses suggest that with the current scoring most *COMPLEAT*<sup>®</sup> items form a unidimensional measure, and that the hierarchy of these items accord with what is known about the difficulties clients are observed to have with occupational performance, including from the Rasch hierarchies of items from the AMPS and PRPP (Brentnall et al., 2013b; Appendix B). The range of items and five-point scale was shown to be more than adequate for measuring the participation

restriction of clients in this group (Brentnall et al., 2013b; Appendix C). Further psychometric properties including test-retest reliability remain to be investigated, but being conducted in dynamic environments and enabling variations within activities and between routines, *COMPLEAT*<sup>®</sup> offers the opportunity to retain inherent complexity and novelty on re-assessment occasions measured against each other, unlike assessments such as the MET and IADL Profile.

Ecological validity of *COMPLEAT*<sup>®</sup> observations arises from the inclusion of tasks and routines that are realistic, familiar, and meaningful (like the AMPS and PRPP; Veitch et al., 2009). The tasks and activities, being combined into routines, have sufficient complexity to demand higher cognitive functions arising from the fact that they are loosely defined and interleaved with each other (similar to the IADL Profile), rather than from rules or constraints (as in the MET or EFPT). *COMPLEAT*<sup>®</sup> allows clients to use their own preferred approaches, strategies and supports, which ensures the observations are relevant to interventions that may address skills, compensatory strategies, task and activity demands, and environmental supports and barriers (Veitch & Brentnall, 2011b; Veitch et al., 2009). Likewise, the supports that the occupational therapists provide clients during the assessment are not rigidly prescribed on the basis of a cue and prompt hierarchy, but rather draw upon the occupational therapists' clinical reasoning regarding the nature of supports that best suit the individual client in that activity and environment (Brentnall, Bundy, Veitch, et al., 2014; Brentnall et al., 2013a).

These design features of *COMPLEAT*<sup>®</sup> allow the observations to be interpreted qualitatively in relation to the needs and potential interventions for the individual clients (Brentnall et al., 2013a; Veitch & Brentnall, 2011b; Veitch et al., 2009). For

example, the occupational therapist has the opportunity within the assessment to observe the clients' responses to different kinds of support and thereby determine the features of interventions that are likely to be effective. The further development of the scoring will allow further interpretation of relative performances over time and between observations, as well as how observed *COMPLEAT*<sup>®</sup> performances relate to other client and intervention characteristics (Brentnall et al., 2013a, 2013b).

### **Comparative Features of Observational Assessments for Occupational Therapy**

Occupational therapists have been encouraged to overcome a reluctance to use standardised assessments, to turn to standardised assessments developed by and for occupational therapists, and to marry these with personal, contextual, and qualitative information to describe clients' occupational performance (Doucet, 2014). Common to most occupational therapy assessments and a criterion for the selection of assessments to review here is an emphasis on providing data regarding clients' performance in context, which has been highlighted in this thesis as consistent with both occupational therapy models and the ICF.

While information on contextualised occupational performance is commonly gathered by self-report, including using occupational therapy assessments such as the Canadian Occupational Performance Measure (Law et al., 2005), it was highlighted in the previous chapter that observational assessments are preferred to provide the depth of information for planning rehabilitation interventions with clients with cognitive impairments. While drawing upon different theoretical perspectives, occupational therapy assessments based on observed occupational performance (AMPS, PRPP, Dynamic Performance Analysis and *COMPLEAT*<sup>®</sup>) have in common a core assumption that occupational performance is underpinned by familiarity with and motivation for

the task (Chapparo & Ranka, 1997; A. G. Fisher, 2003; Polatajko et al., 2000). This differs from performance-based assessments of impairment and capacity, even where those have been developed or adopted by occupational therapists. It is particularly the case that familiarity with and motivation for the task are generally not features of executive functioning assessments in order to challenge the client with complex and novel tasks (as in the MET, EFPT, and IADL Profile).

The assessments reviewed above feature varying degrees of standardisation and individualisation, with implications for interpreting the observed performance and any difficulties. Assessments of impairments such as executive functioning are necessarily standardised because they seek to assess for the presence of characteristics relative to a healthy population. The observational assessments reviewed above that focus on executive functioning (i.e., the MET, EFPT, and IADL Profile) are set in naturalistic contexts to evaluate the impact on functioning, but they are none-the-less intended to identify an unusual level or pattern of difficulties that suggests the presence or impact of impairments. This requires standardisation of each task and delivery in order to understand performance.

Assessments of occupational performance (the AMPS, PRPP, Dynamic Performance Analysis, and *COMPLEAT*®) are instead interested in functional performance in the activities and contexts that are of direct relevance to the individual client. With the criterion of functional performance in mind, they do not require a normative sample for interpretation of the observations. The AMPS and PRPP both seek to understand particular skills underpinning functional performance, and therefore feature fixed assessment items that have been developed and scaled to represent those skills.

However, they necessarily exclude other skills such as multi-tasking because these are beyond the scope of the standardised approach and items (Bottari et al., 2009b).

In the approach taken with the AMPS, by standardising both the skills and the tasks in which the skills are observed, and accounting for the relative difficulty of both in the scoring, it is possible to place performance on different tasks on a common scale. This allows the AMPS to be used to compare performance over time and between individuals, and to predict if a client is likely to be able to live independently. Similar calibration has started to be developed at the routine and activity level for *COMPLEAT*<sup>®</sup> in order to assist comparison and interpretation of scores, whilst leaving some freedom in specific details and activity procedures (Brentnall et al., 2013b).

The development of the PRPP has not pursued this task standardisation, but has focussed more explicitly on identifying the barriers to functional performance and matching those with appropriate interventions. To compare performance over time or between individuals the task must therefore be held constant. Scores of performance on one task with the PRPP cannot be compared with another task or predict overall functioning. The same can be said of Dynamic Performance Analysis. Indeed, given the purpose of Dynamic Performance Analysis is to understand why an individual's task performance breaks down rather than to measure an underlying skill, the process has not been standardised and no scores have been developed at all.

*COMPLEAT*<sup>®</sup> has in common features of some of these other assessments, but is the only one to address participation as defined in the ICF (Brentnall et al., 2013b; Veitch & Brentnall, 2011b). While there are other occupational therapy assessments that address concepts occupational therapists know to be similar to participation, the use of

occupational therapy terminology means that these assessments and their findings are often not recognised by other rehabilitation team members (Doucet & Gutman, 2013). Addressing participation as defined in the ICF provides the opportunity to speak directly to the focus of brain injury rehabilitation, and to do so in the international and inter-disciplinary language of the WHO classification and model. Coming from an occupational therapy perspective and using direct observation, *COMPLEAT*<sup>®</sup> seeks to provide the detailed information to guide occupational therapy interventions for clients with brain injury that is not gathered using generic measures of participation that provide only an overview of functioning without the occupational perspective (J. M. Fleming et al., 2000; Parkinson, Shenfield, Reece, & Fisher, 2011), but that the AMPS, PRPP and Dynamic Performance Analysis have demonstrated potential to do.

### **Intervention Planning from Assessment in Occupational Therapy**

Intervention planning and monitoring is the ultimate purpose or consequence of assessment and evaluation in the clinical setting. Considering the occupational therapy scope of practice and intervention approaches, “the choice of appropriate treatment model for clients with cognitive disabilities relies on a thorough evaluation process which provides information pertaining to cognitive strengths and weaknesses, as well as the occupational performance and environmental factors” (Hartman-Maeir et al., 2009, p. 3). However, occupational therapists nominate the use of assessments to predict performance in everyday environments and to plan intervention strategies as among the top challenges to using the standardised assessments that are available to them in cognitive rehabilitation settings (Sansone & Hoffmann, 2013). As has been highlighted above, little has been written of specific features of the interface between many published assessments and intervention planning.

With respect to the executive functioning assessments reviewed above, there is limited literature related to intervention planning. Most publications on the MET have focussed on developing and validating different versions. While the purpose for this has been to identify executive functioning difficulties as they impact in more naturalistic tasks, implications for intervention have barely been considered in the traditional versions, except for speculation about contrasting performance profiles (Alderman et al., 2003). Testing and providing intervention in the same virtual reality environment may have potential to guide intervention (Rand et al., 2009), but this version of the MET may not be an equivalent assessment and is also not widely available.

The links between the EFPT and potential interventions are equally speculative, but the very recent development of an alternate form (Hahn et al., 2014) may facilitate progress by enabling re-assessment, to the extent that the two forms can be compared. The IADL Profile is similarly lacking in research into interpretation and links to intervention and cannot be used for re-assessment, although the recent studies of self-generated and occupational therapist-provided strategies in given tasks within this assessment (Bottari et al., 2014; Le Dorze et al., 2014) have provided a great deal of detail to further investigate.

Turning to the occupational therapy assessments of observed performance, the use of Rasch methods offers the potential of quantitative indicators matched against detailed illustrations of the nature of clients' performances on the assessments. The PRPP item hierarchy addresses only the effectiveness of information processing (Nott & Chapparo, 2012), and the AMPS item hierarchies address only motor and process skills (A. G. Fisher, 2003). While the AMPS also has a hierarchy of tasks (A. G.

Fisher, 2003) that could be applied to the selection of intervention targets at the level of activities and participation (as has been suggested on occasion for other assessments; Badge & Brentnall, 2007; Badge, Brentnall, & Gillis, 2008), this has not been taken forward in discussions of intervention planning in the literature.

Notably, two of the occupational therapy assessments reviewed above are already associated with the two most clearly defined occupational therapy interventions to train cognitive strategy application during task performance that have been described in the literature. First, the PRPP System of Task Analysis and Intervention (Chapparo & Ranka, 1997; Fry & O'Brien, 2002; Nott & Chapparo, 2008; Nott et al., 2008), which has been used predominantly with people in the very early stages of rehabilitation after traumatic brain injury when still in post-traumatic amnesia with agitation. Second, the CO-OP (Dawson, Gaya, et al., 2009; Polatajko et al., 2001), which was developed for use with children with developmental coordination disorder but has subsequently been used with adults with brain injury who have insight and capacity for learning and applying verbal mediation strategies. Both of these interventions utilise task analysis,<sup>5</sup> apply variations of self-instruction techniques, and are associated with specific performance assessments that focus on information processing and strategy-use respectively (Dawson, Gaya, et al., 2009; Nott et al., 2008). However, these two interventions are both very specifically targeted and not widely known by occupational therapists who have not received training in their use.

In another tact, the least-to-most cue, prompt, and assistance approaches that form part of the EFPT and IADL Profile assessments (Baum & Wolf, 2013; Bottari et al.,

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<sup>5</sup>“Task analysis” and “activity analysis” are used somewhat interchangeably in the occupational therapy literature (Polatajko et al., 2000). They are sometimes used to refer to different levels of detail or processes, but no clear distinction is made in this thesis.



2010b), or that are observed in clients' self-generated strategies and occupational therapists' assistance with the IADL profile (Bottari et al., 2014; Le Dorze et al., 2014), might highlight potential interventions. Similar cognitive strategies have previously been arranged—based on observation of and reflection on practice, rather than assessment—in the Four-Quadrant Model of Facilitated Learning (4QM; Greber, Ziviani, & Rodger, 2007c).

In the 4QM, potential strategies for facilitating cognition are conceived of as lying along both a facilitator-learner initiation continuum and a direct-indirect continuum (Greber et al., 2007c). The resulting combinations comprise four sets of strategies (Greber, Ziviani, & Rodger, 2007a, p. S32):

1. Task specification that is facilitator-initiated and direct (e.g., explicit instruction, demonstration, lower order questions),
2. Decision-making that is facilitator-initiated and indirect (e.g., higher order questions, feedback, physical prompts, non-verbal prompts, verbal modelling),
3. Key point strategies that are learner-initiated and direct (e.g., priming, mnemonics, self-instruction and self-prompting, visual cues), and
4. Autonomy that is learner-initiated and indirect (e.g., mental imagery, self-instruction, self-questioning, self-monitoring, problem-solving and automaticity).

These sets progress in sequence, with bridges between each. The bridge from task specification to decision-making is “leading” but not completing the information, the bridge from decision-making to key point strategies is “orienting” the client to the need for self-regulated strategies, and the bridge from key point strategies to autonomy is “fading” strategies (Greber, Ziviani, & Rodger, 2007b, p. S41). This is not an

assessment or intervention per se, but rather a model to guide intervention by ordering a wide range of cognitive strategies that occupational therapists (or other facilitators) apply according to their own clinical reasoning, and measure the effectiveness of using standardised assessments such as the PRPP System of Task Analysis (Greber et al., 2007c).

While the examples of PRPP and CO-OP interventions presented above establish the principle of linking assessment to intervention, and the 4QM provides a supporting conceptual framework, the literature lacks discussion of efforts to match interventions to performance on assessment other than by training the skills or activities directly addressed by the assessment. There are, however, examples of assessment of clients' potential to gain from intervention (cf. impairment, capacity or performance) in other fields, most notably using dynamic assessment.

#### *Dynamic assessment for intervention planning*

Dynamic assessment is a style of assessment<sup>6</sup> that seeks to identify an individual's current level and the level that can be attained with support or scaffolding (i.e., immediate intervention), which represents learning potential (Haywood & Lidz, 2007). Dynamic assessment tools and procedures differ from traditional assessments in that they are specifically developed to integrate within one process the evaluation of both the client's status (i.e., traditional assessment) *and* possibilities for intervention (Katz, Bar-Haim Erez, Livni, & Averbuch, 2012). They explicitly gather client-specific knowledge from observed immediate responses to interventions that the administrator introduces into the assessment, to add to general knowledge of intervention effectiveness (e.g., from research and prior experience).

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<sup>6</sup>As distinct from Dynamic Performance Analysis, which is a specific assessment.

The concept of dynamic assessment has been formally applied in occupational therapy with the development of assessments such as the dynamic adaptations of each of the Lowenstein Occupational Therapy Cognitive Assessment (LOTCA) versions (Katz, Averbuch, & Bar-Haim Erez, 2012; Katz, Bar-Haim Erez, et al., 2012; Katz, Golstand, Bar-Ilan, & Parush, 2007).<sup>7</sup> In this form of dynamic assessment, clients are first presented with an item or item set to identify their current status (e.g., the LOTCA object identification subtest). If they give an incorrect response, they are then provided with a graded mediation strategy to measure change and learning potential (e.g., the Dynamic LOTCA uses a general intervention, then general feedback, then specific feedback highlighting the error, then a structured cue to the key point, then a model or simplified item; Katz, Bar-Haim Erez, et al., 2012). This type of formal dynamic assessment is based on learning and development theories including Vygotsky's *zone of proximal development* (Katz, Bar-Haim Erez, et al., 2012). This is fitting with the application in the LOTCA, initially in the LOTCA for Children who are presumed to be in a stage of development, and subsequently in the other versions that similarly assess isolated cognitive functions on discrete tests for which strategies can be learned.

The most pure and formal approach to dynamic assessment is this process of presenting the material, providing graded mediation, and allowing the client to re-attempt the material. This is most widely used form of dynamic assessment, and is commonly applied in developmental and educational settings, particularly by psychologists. There are, however, a variety of approaches to dynamic assessment (Haywood & Lidz, 2007). Whatever the approach, while there are examples with LOTCA versions and other mentions in the occupational therapy literature, the

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<sup>7</sup>Versions of the LOTCA were not reviewed above because they are batteries of cognitive tests rather than assessments of performance of everyday activities in naturalistic environments.

concept is relatively new in occupational therapy and the theory is not familiar to most occupational therapists working in adult brain injury rehabilitation.

While the theory underpinning dynamic assessment and the formal approaches to its implementation are not familiar to most occupational therapists, very similar methods are applied by most occupational therapists during informal, observational assessments of functional capacity. For example, interaction with clients in the course of assessment is common to most of the home-grown, non-standardised assessments therapists describe a preference for using (Sansonetti & Hoffmann, 2013; White et al., 2014).

The need for ‘intervention’ to support performance in order to ascertain a realistic evaluation has also been formally recognised to some extent in setting out the process for the Dynamic Performance Analysis (Polatajko et al., 2000). As a result, when undertaking Dynamic Performance Analysis the occupational therapist is instructed to establish whether the client has sufficient task knowledge to initiate performance, and to continue performance after difficulties. The occupational therapist provides intervention to address gaps in task knowledge as needed for the assessment to continue (Polatajko et al., 2000). Likewise, the PRPP System has complementary Task Analysis and Intervention components, whereby the assessment framework maps directly to intervention strategies. In this System, the supports that the occupational therapist provides during the task serve as the measure of information processing as a “dynamic assessment” on a criterion-referenced measure (Nott et al., 2008, p. 673).

In another fashion, by basing scoring on the EFPT and IADL Profile on a less-to-more hierarchy of cues that are implemented to allow the client to complete the task, these

assessments are also to some extent dynamic. This is unlike the AMPS, for example, where intervention at any level attracts the worst rating on the scale such that the effectiveness of one intervention over another cannot be ascertained.

In many cases though, the purpose of interaction with the client is to enable performance in order that the occupational therapist may conduct the evaluation, after which the occupational therapist may plan and begin intervention (Polatajko et al., 2000). This is the case during Dynamic Performance Analysis or assessment with the PRPP, EFPT or IADL Profile. Likewise, many of the interactions and supports that occupational therapists already provide in the course of carrying out all kinds of (mostly non-standardised) performance evaluations are directed toward supporting and motivating their clients to continue to engage in the task so that the evaluation can be completed (White et al., 2014).

The mediation employed during dynamic assessment is explicitly to promote change in performance that is then measured as a parameter of the assessment. That is, mediation represents a deeper engagement between the administrator of the assessment and the client in which the administrator intends to facilitate performance and thus create change (Haywood & Lidz, 2007). This is the intent with mediation in the dynamic LOTCA versions. Similar mediation built into a wider range of assessments would enable occupational therapists to directly investigate the impact of interventions within their assessments, extending on their typical approaches to enable assessment prior to intervention.

Creating dynamic assessments in which clients' responses to interventions that occupational therapists introduce requires knowledge of appropriate mediation

strategies. These strategies must align with the construct being assessed, the performance difficulties that clients may demonstrate, and the domain of occupational therapy. The item hierarchies from relevant assessments that have been subjected to Rasch analyses (see Appendix B; Brentnall et al., 2013b; A. G. Fisher, 2003; Nott & Chapparo, 2012), and the recent investigations of the nature of supports and strategies in the course of assessment (Bottari et al., 2014; Le Dorze et al., 2014) pave the way for further developing the concept of dynamic assessment as it applies to participation and to occupational therapy interventions (cf. to discrete cognitive subtests as in the LOTCA above).

Formalising the provision of support within the administration of assessments using dynamic assessment has the potential to guide the selection of interventions and the interpretation of observed outcomes. Recent research into the strategies occupational therapists use with clients with brain injury outlined above has just begun to illustrate the nature of understandings that might, if embedded in the process of dynamic assessment, enable connections to be made between occupational therapists' evaluations and their plans for interventions.

Further detailed investigations are required, given that even very experienced occupational therapists are notoriously poor at correctly attributing clients' performance errors when observed in isolation and out of context (Bottari & Dawson, 2011; Bottari et al., 2007). It is also not sufficient to rely on occupational therapists' clinical reasoning to understand what drives their responses in situ as this is a largely tacit process (Mattingly & Fleming, 1994). As a result, occupational therapists are likely not to be fully aware of the range of strategies they employ even when implementing an explicit, occupational therapy-specific, intervention approach

(Mandich, Polatajko, Missiuna, & Miller, 2001). Detailed descriptive research including observation is needed to provide insight into the complex processes of assessment and clinical reasoning for intervention planning in occupational therapy with clients with brain injury (White et al., 2014).

### **Summary and Study Aim and Questions**

The assessments reviewed in this chapter have highlighted features that demonstrate how, with careful selection of relevant assessment tools, it is possible to reconcile the tension between the application of standardised assessments in support of evidence-based practice, the perspectives of clients in support of client-centred practice, and the use of meaningful activities in support of occupational therapy frames of reference (Kristensen et al., 2012). It was highlighted in the previous chapter that occupational therapists value collaborating with clients to build a working relationship, take a holistic view, and establish and prioritise areas for intervention toward meaningful and contextualised outcomes (Copley et al., 2008; Guidetti & Tham, 2002; Kristensen et al., 2012). The different observational assessments reviewed in this chapter have taken different approaches to standardisation, allowing occupational therapists more or less freedom in ensuring their assessments are meaningful to their clients, and drawing more or less on occupational therapists' knowledge and clinical reasoning for interpretation.

Where detailed analyses of the implementation of assessments that incorporate some degree of occupational therapist intervention have been conducted, these have revealed that a seemingly simple set of ordered intervention categories (e.g., verbal assistance, physical assistance, or both) belies a complex suite of individualised and

contextualised actions by occupational therapists. Applying a learning perspective, cognitive strategies alone are purported to be multidimensional.

In other fields, dynamic assessment principles have been used to recognise and derive data from interventions provided during assessment processes. Whilst the specific approaches and interventions from those dynamic assessments are not applicable to assessment in brain injury rehabilitation that involves occupational performance in context, broader recognition of their concepts might reframe the approaches occupational therapists already take in non-standardised assessments. In this way standardisation might be maintained (or established) whilst capitalising on the expertise that occupational therapists already apply in administering assessments such as those reviewed above, and the potential of the information that is therefore available but not captured.

Finally, task analysis is common to many occupational therapists' approaches to evaluate and then retrain performance in everyday activities, including most formally and notoriously the PRPP and CO-OP, but also many less formally defined and recognised interventions. The preliminary reports of the data that are potentially available from assessments like those above would suggest that dynamic assessment might allow the better recognition of occupational therapists' roles, and formalisation of their actions in order to examine and improve the quality of many occupational therapy interventions. Occupational therapists' task analyses and their consequent, individualised, responses to clients' difficulties speak to their (often tacit) clinical reasoning.



The aim of this study was to examine occupational therapists' implementation of *COMPLEAT*<sup>®</sup>: a novel, observational, dynamic assessment of participation for use in different settings and stages of brain injury rehabilitation for younger adults. Included was the process from when the occupational therapists were introduced to *COMPLEAT*<sup>®</sup> and provided basic training, through to interpreting their observations of each client assessment. Particular emphasis was placed on the implementation with clients and implications for planning interventions that are consistent with a valid measure of the participation outcomes that rehabilitation seeks to improve. The study sought to investigate:

- (i) how the occupational therapists applied their expertise and reasoning to implement *COMPLEAT*<sup>®</sup> in their rehabilitation settings;
- (ii) what strategies the occupational therapists applied to facilitate the participation of clients throughout the dynamic assessment; and
- (iii) how the strategies the occupational therapists applied varied among clients of different levels of participation restriction in ways that might inform rehabilitation intervention planning.

## **Chapter 3:**

### **Methodology and Methods**

This chapter outlines the methodological framework for the larger instrument development project in which this study was embedded, followed by the mixed methods design of the project and study. The chapter then goes on to describe the selection and recruitment of settings and participants, and outline *COMPLEAT*<sup>®</sup> in some detail as a data collection tool. Following this is a description of the data collection and analysis methods employed throughout the study, before the chapter concludes with discussion of key ethical considerations in the data collection.

#### **Methodological Framework**

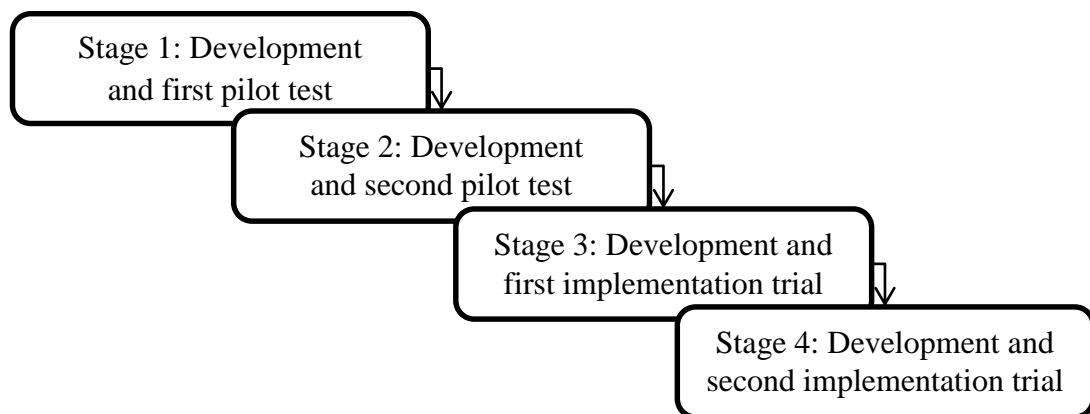
The broader instrument development project in which this study was embedded was approached from a measurement perspective and applied a Rasch model of measurement (Bond & Fox, 2007). Recognising the need for meaningful and practically useful measures of participation, the measurement perspective integrates aspects of both qualitative and quantitative methodologies with a view to generating measures that are both qualitatively meaningful and quantitatively precise (W. P. Fisher, Jr. & Stenner, 2011). This perspective was applied in a staged, developmental, process in which the qualitative and quantitative aspects were not clearly separated.

Unlike many mixed method designs described in the literature (Clark, 2000; Johnson & Onwuegbuzie, 2004; Leech & Onwuegbuzie, 2009), the stages did not correspond to sequential applications of qualitative and quantitative methods, and nor was there one dominant methodology. Rather, the measurement perspective promotes methodological pluralism in a uniform, mixed methods approach to the problem of measurement (W. P. Fisher, Jr. & Stenner, 2011). Accordingly, the study reported in

this thesis also integrated qualitative and quantitative data. As applicable to the aim, the emphasis in this study was on qualitative aspects of the occupational therapists' implementation of the assessment, but the study also drew upon the quantitative findings of the broader project to frame understanding of the qualitative data.

### **Project and Study Design**

The instrument development project was conducted in a series of four stages along the instrument development process. Each stage of the project represented a recursive cycle of development, working between levels of detail from individual clinicians' and clients' situations to generalised experiences (Angelillo, Rogoff, & Chavajay, 2007). Each stage employed mixed methods to develop the concept of participation and the approach for the next stage (Greene, Caracelli, & Graham, 1989). The first two stages involved instrument development and pilot tests, with the third and fourth stages continuing minor developments to the instrument and introducing implementation trials (see Figure 3.1).



**Figure 3.1: Stages of the Instrument Development Project**

*Note.* The project stages are further described in Appendix A

On one hand, experience-based methods such as interviews and observations were used in each stage to elicit the perspectives of different stakeholders. On the other hand, score-based methods such as Rasch analyses of ratings were used to identify and quantify patterns across participants and settings. While they produced different types of data, these different methods were able to be combined on the basis that they had in common the measurement perspective. This integration of qualitative and quantitative data and methods is neither new nor uncommon in studies applying Rasch measurement models (Bond & Fox, 2007; W. P. Fisher, Jr. & Stenner, 2011). In this case, the overall approach sought to identify features of the implementation of *COMPLEAT*<sup>®</sup> across levels of participation restriction, participants, and settings, with the research occurring in settings in which the assessment is ultimately intended to be used.

This study specifically drew upon data from across all four stages of the instrument development project that occurred concurrently with the study. The emphasis in this study was on the practical application and interpretation of the assessment as occupational therapists worked with clients in their own settings (Clark, 2000), while the process of developing the measure in the broader project emphasised how the construct could be expressed on a scale with scores that might be replicated and generalised (see Appendix C). The inclusion of a strong qualitative element and the cyclical development of the project was a critical feature in this study, with the instrument development serving as the context for this particular study and the emerging findings in this study in turn contributing to the instrument development project. Specifically, the inclusion of a qualitative element in the approach encouraged interaction with the participants rather than maintaining separation (Clark, 2000),

grounding the development of *COMPLEAT*® in the context of ongoing rehabilitation for clients with brain injury.

### **Settings and Participants**

Given the intensive nature of data collection and engagement of rehabilitation team members in the instrument development project and this study, the partner organisations initially involved in developing *COMPLEAT*® as part of a new service partnership offered the best settings for the research. These organisations were able to release team members to engage fruitfully in the project and study. It is acknowledged that organisations that come to be involved in instrument development through service partnerships, and the occupational therapists they employ, may differ from others, but there were distinct advantages of recruiting these participants in terms of the depth and quality of data in this exploratory study.

Participants in this study were primarily occupational therapists, and secondarily their clients with brain injury. Characteristics of the settings and participants are detailed below. There were other participants in the instrument development project, particularly in the early stages, not included in this study. These included rehabilitation team members from other disciplines, managers, researchers, and participants from two other services employing occupational therapists who did not recruit client participants to this study—all of whom contributed to the development of the assessment and training as applied in and modified throughout this study.

#### *Settings*

Both of the partner organisations are comprised of a number of services. Particular services were selected as the settings for each stage of the project according to

expressions of interest in the assessment, the purpose of the particular stage of instrument development, convenience of location, and timing for potential participants.

The first organisation, based in Australia, was an established rehabilitation and support provider in a stage of reorganisation and redevelopment. Two different services were involved in Stages 1 and 2 respectively, the first being a newly developing service providing residential neurobehavioural rehabilitation and the second being an established service providing community outreach in a general rehabilitation model. Both services employed more than one occupational therapist and provided multidisciplinary rehabilitation to clients with brain injury, although in the case of the community outreach service rehabilitation also to other client groups. The residential neurobehavioural rehabilitation service received referrals from a mix of post-acute inpatient rehabilitation and community services, taking clients at any time post injury. The community outreach service received referrals predominantly from post-acute inpatient rehabilitation services.

The other organisation, based in the United Kingdom, was a well-established rehabilitation and support organisation with a large network of services. Involved in Stages 3 and/or 4 of this project were three residential/transitional and two community outreach neurobehavioural rehabilitation services in England. The organisation also provides accommodation and support services in the community in which some of the clients receiving community outreach neurobehavioural rehabilitation services reside. All services were multidisciplinary, with teams in the residential/transitional services involved in this study each employing two or three occupational therapists depending

on size, and the community outreach services each employing one occupational therapist.

### *Occupational therapist participants*

Occupational therapists were the primary participants in this study. To be eligible for recruitment, an occupational therapist needed to work for one of the two organisations involved in the project, in one of the services involved in the study, *and* conduct initial and/or review evaluations with younger adults (<65 years) with brain injury. The first approach to eligible occupational therapists was through a senior manager in the organisation or service, who then arranged for the researcher to meet with the relevant occupational therapist(s).<sup>8</sup> While each of the occupational therapists individually provided informed consent for their participation, they did so with the knowledge that their managers supported, even encouraged, their involvement.

Fourteen occupational therapists contributed significantly as participants individually and often in small group situations. Ten of these occupational therapists worked in residential/ transitional settings, reflecting that four of the seven services involved were residential/ transitional services and that these services generally employed two or three occupational therapists. Conversely two of the three community-based services only employed one occupational therapist each.

All occupational therapists who were approached by the researcher agreed to participate to some degree, and the researcher is not aware of any occupational therapists approached by managers who chose not to be involved at all. That said, the

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<sup>8</sup>In a single exception, one occupational therapist who worked in a community-based service in England was informed of the project by colleagues in a residential service with whom she worked closely. She then met with the researcher to learn more of the project and was included and agreed when invitations to participate in the next stage were sent.

project and study involved periods of intensive data collection that targeted different sites, all data collection was conducted alongside usual clinical practice, and engagement by any individual occupational therapist was largely dependent on recruitment of suitable client participants. Individual occupational therapists' involvement therefore varied over time. One service with three occupational therapists chose not to be involved in a second round of data collection, citing competing demands coinciding with the time of the researcher's visit.

As a group, the occupational therapists involved in this study were relatively experienced. Their experience working as occupational therapists ranged from approximately three years to in excess of twenty years. Experience with their current organisations ranged from minimal (three had less than three months experience in their current position at the time of recruitment), to almost twenty years in various occupational therapy positions within the one organisation. While there are no data on the characteristics of occupational therapists working in this field, this is consistent with anecdotal reports that brain injury rehabilitation is a demanding and specialised area of practice, and there is a tendency for therapists to either leave the area of practice within the first two-to-three years or to remain in the area much of their careers.

In the services involved in this study, the basic grade positions had some turnover as therapists advanced their careers, but sole therapist and senior positions were observed to have stable occupancy. Because of this, at any time most occupational therapists in these services were relatively experienced. Over the course of the study, one basic grade (team) therapist in Stage 3 had moved on prior to Stage 4 and so was replaced by the next therapist to take the position (one of the three with minimal experience in their



current position at the time of recruitment). The senior occupational therapist in that service was involved in both stages.

In addition to the occupational therapists being relatively experienced as a group, those with the least experience were involved in the later stages of the study when entire teams of occupational therapists were recruited wherever a service employed more than one therapist. In these stages the perspectives of both experienced senior therapists and less experienced, but very well supported, therapy team members were included. Different perspectives were also gained from occupational therapists with diverse background experiences, including other qualifications prior to occupational therapy (e.g., arts or psychology), and experience in different areas and settings of occupational therapy practice.

#### *Client participants*

The client<sup>9</sup> participants were a convenience group of younger adults (<65 years) recruited to the study via the participating occupational therapists for the purposes of trialling *COMPLEAT*<sup>®</sup>. Clients could be asked to participate if (i) they had any type of acquired, including traumatic, brain injury; (ii) they were currently within the remit of the participating organisations' rehabilitation or support services and therefore could be identified and contacted by an occupational therapist recruited to the study; (iii) participation in community activities was relevant to their rehabilitation goals or support programs; and (iv) they were able to engage, independently or with assistance, in any part of the *COMPLEAT*<sup>®</sup> assessment outlined below (not necessarily the entire

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<sup>9</sup>These participants are referred to as clients, rather than people with brain injury, recognising that they were all in some way connected with the one of the two partner organisations and may not represent the broader population of people with brain injury.

assessment). Where these inclusion criteria were met, there were no exclusion criteria pertaining to characteristics of the clients, their injuries, or other health conditions.

In most cases the occupational therapists recruited clients from those to whom they were actively providing services, with the remainder recruited from support services within the organisations to which the occupational therapists provided input. Clients who were referred to services for either assessment only, or a one-off, limited service (e.g., home modification only) were not recruited to the study on the basis that the constraints on the referral (i.e., stipulation of “assessment only” or limitations on the service) would be likely to restrict the implementation of any client evaluation and the utility of the information derived.

Clients were initially informed about the study by their occupational therapist and/or care staff. The occupational therapist arranged for the client to meet with the researcher, who provided further information, addressed any questions, and obtained informed consent. If required, the client’s legal representative was provided with information and gave informed consent, with those clients asked to provide assent and given the option to decline participation. Family members and carers present with clients were peripherally involved on a voluntary basis, at the discretion of the occupational therapist, though they were not actively sought nor formally recruited to the study. Most clients were seen alone.

Clients were not excluded on the basis of factors such as language or communication, or the presence of co-morbidities. As the focus of the study was on the practical implementation of the assessment in rehabilitation settings, and not all clients were seen in clinical settings where reasonably accurate records of personal data were kept,

information about personal, injury, and health-related factors was not formally collected. It is known, however, that a substantial proportion of clients of the neurobehavioural services had concurrent or prior mental health or substance use problems. Each client's level of participation restriction was determined during the course of the project by assessment with *COMPLEAT*<sup>®</sup>, as described below (i.e., after recruitment and participation in this study). Clients' levels of participation restriction and contributing factors are described throughout this thesis in functional terms consistent with the ICF, rather than using diagnostic or impairment labels.

The occupational therapists recruited 29 clients (see Table 3.1). Not surprisingly, 22 were male. In total, 20 were recruited from the four residential/transitional services, and nine from the three community-based services. The recruitment of clients in the community-based services was largely influenced by the occupational therapist with the longest experience being involved in both of the main stages of the study (Stages 3 and 4) and having the flexibility in her position to recruit six clients—five of whom were residing in supported houses managed by the partner organisation. Other than that, recruitment from community-based services was restricted by the low intensity of occupational therapy services in these settings and external demands on occupational therapists' time. As a result it was difficult to recruit clients who were available (and who then actually attended the appointment) when the researcher was available in that stage of the study and geographic area, considering the relatively small pool of potential participants (clients of these occupational therapists with relevant goals and service parameters) and time constraints on data collection in any one study stage.

**Table 3.1: Settings and Participants**

<b>Organisations</b>				<b>2</b>
By Stage & Location	<i>Australia</i>	<i>England</i>	Row Total	
<i>Stages 1 and 2</i>	<i>1</i>			<i>1</i>
<i>Stages 3 and 4</i>		<i>1</i>		<i>1</i>
<b>Services</b>				<b>7</b>
By Setting & Location	<i>Australia</i>	<i>England</i>	Row Total	
<i>Residential Rehabilitation</i>	<i>1</i>	<i>3</i>		<i>4</i>
<i>Community Outreach</i>	<i>1</i>	<i>2</i>		<i>3</i>
<b>Occupational Therapist (OT) Participants</b>				<b>14</b>
By Gender & Location	<i>Australia</i>	<i>England</i>	Row Total	
<i>Female</i>	<i>2</i>	<i>10</i>		<i>12</i>
<i>Male</i>	<i>1</i>	<i>1</i>		<i>2</i>
By Setting & Location	<i>Australia</i>	<i>England</i>	Row Total	
<i>Residential Rehabilitation</i>	<i>1</i>	<i>9</i>		<i>10</i>
<i>Community Outreach</i>	<i>2</i>	<i>2</i>		<i>4</i>
By Seniority of Position <sup>a</sup> & Location	<i>Australia</i>	<i>England</i>	Row Total	
<i>Team OT position</i>	<i>3</i>	<i>6</i>		<i>9</i>
<i>Senior OT position</i>	<i>-</i>	<i>3</i>		<i>3</i>
<i>Sole OT position</i>	<i>-</i>	<i>2</i>		<i>2</i>
<b>Client Participants</b>				<b>29</b>
By Gender & Location	<i>Australia</i>	<i>England</i>	Row Total	
<i>Female</i>	<i>-</i>	<i>7</i>		<i>7</i>
<i>Male</i>	<i>3</i>	<i>19</i>		<i>22</i>
By Setting & Location	<i>Australia</i>	<i>England</i>	Row Total	
<i>Residential</i>	<i>1</i>	<i>19<sup>b</sup></i>		<i>20</i>
<i>Community</i>	<i>2</i>	<i>7</i>		<i>9</i>
By Participation Restriction & Setting	<i>Residential</i>	<i>Community</i>	Row Total	
<i>Severe</i>	<i>-</i>	<i>1</i>		<i>1</i>
<i>Moderate</i>	<i>7</i>	<i>1</i>		<i>8</i>
<i>Mild-to-Moderate</i>	<i>7</i>	<i>3</i>		<i>10</i>
<i>Mild</i>	<i>5<sup>b</sup></i>	<i>1</i>		<i>6</i>
<i>Not Measured<sup>c</sup></i>	<i>1</i>	<i>3</i>		<i>4</i>

*Notes.* <sup>a</sup> Team OT positions have a Senior OT within the team for supervision; Senior OT positions include supervision of Team OTs within the same team; Sole OTs do not work with other Team OTs, but both were mentors to Team or Senior OTs in other services, similarly to the Senior OTs. <sup>b</sup> One of the residential/transitional services in England included an on-site house in which clients, including one in this study who is counted in these cells, resided long term with permanent care but minimal rehabilitation support. This arrangement was in that respect similar to the community houses served by the community services. <sup>c</sup> The level of participation restriction was not measured for the three Australian clients with whom COMPLEAT<sup>®</sup> was piloted in Stages 1 and 2 of the study, nor for one participant in Stage 4 who was assessed on a routine on which there was insufficient linking data to obtain a reliable estimate of participation restriction (see Appendix C).

### **COMPLEAT®: The Assessment Tool to Examine Participation**

This study applied to data collection the version of *COMPLEAT®* that was in use at the respective stage of the instrument development project. What follows is a brief description of the features most relevant to data collection in this study, which involved both direct implementation of *COMPLEAT®* and supplementary interactions with the occupational therapists that anticipated or built on the *COMPLEAT®* observations.

#### *Features of COMPLEAT®*

In terms of design, *COMPLEAT®* has five key features common to each version. Namely, the (i) use of observational methods, (ii) focus on performance, (iii) application of ICF categories, (iv) consideration of environmental factors, and (v) assessment designed around routines. These five features form the basis for the operationalisation of the concept of participation and are detailed in Appendix A.

Most pertinent to data collection in this study, the use of *observational methods* in *COMPLEAT®* is generally familiar to occupational therapists. Formalising this observation provided the occupational therapists the opportunity to collect detailed information that could then be directly related to the individual client's participation restriction, using a dynamic assessment framework. It is this dynamic feature of *COMPLEAT®* that is the focus of much of the investigation of its implementation and implications for intervention planning in this study, which also speak to the feasibility and utility of *COMPLEAT®* as it is developed.

Second, the *focus on performance* in *COMPLEAT®* comes from the implementation of a rating scale based on the ICF Activities and Participation performance qualifier (see Table 3.2). This rating scale directed the occupational therapists' attention to

**Table 3.2: COMPLEAT® Rating Scale**

Level	General Description	Interpretation Note
0: None Independent (0-4%)	The person is able to complete the activity or component with no assistance or adaptation, no increased time or effort, enabling the routine to progress, <i>and</i> ensuring the safety of all persons and objects.	... equivalent to independence in an environment that might be regarded as usual considering the client's context and culture
1: Mild Modified or Questionable (5-24%)	The person is able to complete the activity or component using only permanently available adaptations and usual supports as defined as part of the usual environment (modified independence). <i>Or</i> the person spends a little more time and effort. <i>Or</i> the impact on progression of the routine or safety of persons or objects is questionable.	... equivalent to modified or questionable independence in the client's own environment with usual supports (and barriers). A Mild Problem is observed to have virtually no functional impact in the client's usual environment. However, a Mild Problem would need to be accounted for were the usual environment to change.
2: Moderate Fair Assistance/ Adaptation (25-49%)	The person requires assistance that goes beyond the usually available environmental supports, but may be required for less than half of the step or activity. <i>Or</i> there is a moderate impact on time and effort, or progression of the routine. The performance demonstrated is somewhat adapted relative to the demands and expectations of the activity and environment.	... indicate increasing levels of assistance and adaptation required in the client's usual environment.
3: Severe High Assistance/ Adaptation (50-95%)	The person requires a high degree of assistance or adaptation beyond the usually available environmental supports. <i>Or</i> there is a severe impact on time and effort, or progression of the routine. <i>Or</i> there is an undesirable impact on the safety of persons or objects. The performance demonstrated is highly adapted relative to the demands and expectations of the activity and environment.	... indicates the client is unable to complete the activity or component. A Complete Problem is a barrier to the routine progressing without total assistance and prevents participation.
4: Complete Total Assistance/ Adaptation (96-100%)	The person is unable to complete the activity or component without total assistance or adaptation. Without such assistance or adaptation the routine or activity could not continue or the safety of persons and objects would be clearly at significant risk.	... indicates the client is unable to complete the activity or component. A Complete Problem is a barrier to the routine progressing without total assistance and prevents participation.

*Note.* Extracted from the COMPLEAT® manual; percentages are from the ICF and are a guide only—the descriptions are prioritised.

(i) assistance and adaptations the client required relative to the ‘usual’ context, culture and ordinarily available supports; (ii) time and effort; (iii) the impact on progression of the routine; and (iv) the safety of persons and objects. Thus, *COMPLEAT*® did not address component skills, independence, or satisfaction.

Third, the *application of ICF categories* guided the scope and definitions for items relevant across clients, settings, and cultures. For the purposes of *COMPLEAT*®, a set of ‘routine activities’ represent substantive activities the client carries out as part of the assessment (e.g., shopping and meal preparation). These are broken down into detailed ‘component tasks’ based on a structured activity analysis. Another set of ‘support activities’ represent ICF Activities and Participation categories that can be observed in every assessment irrespective of the routine activities. These activities, which are also broken down into ‘component tasks’ based on ICF category blocks, are use information (ICF chapter d1), manage resources (d2), communicate (d3), interact (d7), move (d4), and self-care (d5). They provide a structure to the occupational therapists’ observations of these aspects of performance.

Fourth, the *consideration of environmental factors* prompted the occupational therapists to consider contextual features external to the client that impacted on performance and needs. These are also guided by the ICF and include features of the physical and sensory environments, and also the interpersonal environment.

Fifth and finally, the *assessment designed around routines* is unique in *COMPLEAT*®. By connecting three to five routine activities into a purposeful unit, *COMPLEAT*® represents participation—as distinct from activities—in terms of performance that relates directly

to meaningful outcomes that are personally relevant to individual clients and their rehabilitation programs.

### *Administration and scoring*

Each occupational therapist and client dyad decided to conduct an evaluation incorporating a *COMPLEAT*® assessment on a routine relevant to the client's situation and goals, and for a purpose to which the client was aware and agreed. The *COMPLEAT*® manual includes directions for occupational therapists regarding how they might provide clients with information on which to base the decision to engage in the evaluation without providing specific directions regarding the execution of the routine so that planning and problem-solving can be observed. As part of *COMPLEAT*®, clients are required to make decisions about the specifics of the routine they have agreed to carry out for the evaluation (e.g., what to prepare as the meal), and then plan their assessment session/s with their occupational therapists and within realistic constraints that are made known to them. Clients are provided with information they reasonably request to support their planning without penalty. Clients are then required to carry through their plans, making adaptations as required in response to their circumstances, as part of the assessment of participation restriction. The observation can be conducted in one session or in multiple shorter sessions, depending on the clients' needs and routine.

Based on their observations, occupational therapists then fill out the *COMPLEAT*® assessment forms for the particular routine. In Part I of these forms, which is common to all routines, the occupational therapist records the environmental barriers and supports observed, which are documented against specific prompts. In Part II, which is specific to the routine observed, the occupational therapist records clients'



performance on the routine activities and component tasks. Part II items are scored using the 0-4 qualifier scale with documentation of any examples or justification and specific interactions with the environment. In Part III, which is common to all routines, the occupational therapist records clients' performance on the six support activities and their components (e.g., use information, manage resources). Again Part III items are scored using the 0-4 qualifier scale with documentation of any examples or justification, and notation of specific interactions with the environment. The total score is derived from Rasch analysis (as described in Appendix C) and was not developed until after the data collection for this study was completed.

### **Data Collection and Handling Procedures**

The common features of *COMPLEAT*® across versions, including the common process of administration, allowed for data from all stages to be included for the purposes of this study. Likewise, the same combination of data collection methods was drawn upon irrespective of the stage of the study. Those methods included occupational therapist training, briefing prior to each client assessment, observation and application of *COMPLEAT*®, debriefing after each client assessment, the researcher's observations of usual processes and activities in each service, and informal exchanges with the occupational therapists throughout the study.

Within the general process, the specific procedures and involvement of the occupational therapists in the study varied somewhat according to participant availability and the practical arrangement of the service and team. For example, residential rehabilitation services featured regular team meetings and formal reports of intensive interventions, whereas the occupational therapists in community-based rehabilitation services worked with greater independence and less intensity and

consequently had less formal communication. Other variations largely peripheral to this study, such as the time and emphasis on briefing and debriefing regarding the utility of *COMPLEAT*<sup>®</sup>, reflected the maturation of *COMPLEAT*<sup>®</sup> and the evolution of the instrument development project methods according to the emerging findings and developing context, influenced by the staged, developmental project design (Clark, 2000).

### *Clinician training*

Following their introduction and recruitment to the project, the occupational therapists were trained to use *COMPLEAT*<sup>®</sup> primarily for the practical purpose of preparing them to engage in the research, and secondarily to inform the instrument development project and this study. The training started with an introduction to *COMPLEAT*<sup>®</sup> that was conducted in a small group within the workplace where possible (individually with the sole therapists) and lasted approximately one hour. This session began with an outline of the *COMPLEAT*<sup>®</sup> Framework as a depiction of participation as defined by the ICF, and the structured observation as an intervention planning and measurement tool. Key to this was to introduce the concept of routines and the connection to function in everyday life where activities are not conducted independently of each other. Because the instrument development project originated from some of the regular but informal observations the occupational therapists made in conducting evaluations of clients' function, resources permitting, the emphasis was able to be on the structure and interpretation. The researcher then introduced each part of *COMPLEAT*<sup>®</sup> and the rating scale. Participants worked through two written case studies, one of which addressed Part I and Part II of *COMPLEAT*<sup>®</sup>, and a more detailed case study addressing all three

parts. During the training the nature of cues and prompts was specifically discussed, including types of cues and prompts that may be easily overlooked.

The researcher conducted each training session with the awareness that the goal of the instrument development project was to develop a valid, reliable, and clinically useful tool. It was anticipated that achieving this goal would ultimately require training and a manual so that *COMPLEAT*® could be implemented as intended, consistently, and with respect to occupational therapists' and clients' situations and needs. A product of the project to partially address these requirements was therefore basic training materials and a manual. In Stage 3 and 4 the training utilised the manual, and in Stage 4 also a workbook enabling participants to apply core concepts to their own settings.

The second aspect of the training was a joint implementation of *COMPLEAT*®, which also initiated the data collection. For each client, a routine was devised or adapted, providing the occupational therapist the opportunity to explore the activities and tasks in greater detail with a context in mind. The session briefings and debriefings described below worked through application of the concepts that would inform interpretation of the observations.

For the purposes of this study, the issues identified in training the occupational therapists to use *COMPLEAT*®, and the information and strategies to successfully overcome these through training and the manual, speak to the meanings (intended and unintended) that the occupational therapists attributed to the assessment. The detail is of most relevance to the instrument development, but the issues are cumulatively summarised in the most recent training materials and manual, and identified over the course of development in the researcher's notes on the training materials, in the

instrument development diary and through the documentation of team consultations. These documents therefore contributed data for this study.

#### *Assessment session briefing*

For the purposes of informing the instrument development project and this study in particular, briefing sessions were conducted with the trained occupational therapists prior to each *COMPLEAT*<sup>®</sup> assessment session. These briefings were conducted with individual therapists and pertained to the individual clients and routines about to be evaluated. They were informal and short, often conducted between appointments in the occupational therapists' schedules on the way to meet with the respective clients. The briefings focused on the source and nature of information about each client already known to the occupational therapist, and particularly any anticipated support needs or potential risks. Where relevant, occupational therapists were asked about the intervention goals of the team and/or individual therapist. Specific to *COMPLEAT*<sup>®</sup>, they were also asked the degree and nature of any difficulties they might anticipate their clients to have over the course of the assessment, and the confidence they had in making those predictions, based on their prior knowledge of the client. The content of these briefings formed the basis of the respective debriefings following each assessment, which are described below.

#### *Observations of participation*

The occupational therapists and researcher together conducted assessments of the occupational therapists' own clients using *COMPLEAT*<sup>®</sup>, after briefing together. With the permission of the clients, occupational therapists, and relevant organisations (e.g., the sites the clients visited), the assessment sessions were video recorded as unobtrusively as possible. Consistent with a dynamic assessment, the occupational therapists using

*COMPLEAT*<sup>®</sup> were instructed to apply their clinical reasoning and, over the course of the assessment, investigate support strategies to facilitate participation, which were captured on the video recordings.

In the course of this study, the occupational therapists completed 32 *COMPLEAT*<sup>®</sup> assessments with the 29 client participants. Of these, 30 observations were completed with the researcher present, with the other two observations being of clients who consented to their occupational therapists forwarding anonymous data from the assessment in order to contribute to the broader instrument development project and study, and for the therapists to obtain individualised feedback for their evaluations. One of these two clients was subsequently recruited to the study for a second assessment session whilst the researcher was present, albeit without permitting video recording, leaving only one anonymous participant (known only to be male).

#### *Assessment session debriefing*

As soon as practical following each observation session, the occupational therapist and researcher debriefed together about the observation, in light of the information revealed in the session briefing. In these debriefing sessions the occupational therapist and researcher worked through the *COMPLEAT*<sup>®</sup> assessment forms, agreeing on the ratings for each item (except where the researcher had not been present, in which case reasons for the ratings and any queries were discussed to arrive at a consensus). This process of collaborative scoring furthered the occupational therapists' brief training in a practical and unobtrusive manner whilst addressing any concerns with reliability of scoring that may otherwise have influenced the use of the data to obtain scores for the purpose of grouping clients for qualitative analysis. The occupational therapist and researcher also discussed and recorded clinically-relevant examples to illustrate the

item ratings and provide details that might inform subsequent rehabilitation reports; these included reflection on the issues identified as having particular relevance in the session briefing. With the ratings completed for each item, including the identification of particularly relevant examples, the researcher then led the occupational therapist in a discussion of the qualitative pattern of raw scores and the interaction between support activities and routine activities that might be relevant to intervention, again in light of the briefing session.

The occupational therapist and researcher each kept a copy of the *COMPLEAT*<sup>®</sup> forms and any written summaries of the assessment. The researcher also recorded clarifications arising through discussion on the manual and training materials, adding to those identified in earlier steps, and further added to reflections and the instrument development diary and team consultations. Finally, the occupational therapists were encouraged to further consult with the researcher regarding the interpretation and application of the *COMPLEAT*<sup>®</sup> assessment as issues or insights arose whilst they continued planning and implementing rehabilitation with their clients. This was especially the case in Stage 1, but continued throughout the project and study.

#### *The researcher's observations and informal interactions with participants*

Throughout the entire process, the participants were encouraged to provide feedback on any topic, at any time, by whichever means they found most convenient. The researcher also sought to meet with a senior occupational therapist on the first visit to each service for an orientation to the service and occupational therapy within that service. Between data collection sessions, the researcher also observed artefacts such as occupational therapists 'usual' assessment and intervention sessions, team meetings, and documents used for formal communication.

Both occupational therapist and client participants provided information and feedback outside of the structured activities outlined above, such as in conversations around other activities at the residential/ transitional rehabilitation units and supported houses, and in corridors and vehicles between activities. The information provided in these contexts was often rich, being triggered by the relevant context and free from the pressures of a formal, face-to-face, recorded interaction. The researcher also observed the participants' engagement in each of the above activities with the knowledge of ongoing research and other participants' engagement as a point of reference. These data were recorded in field notes during or as soon as practical after the respective conversations and activities, with outlines and quotes noted from document sources.

#### *Completeness of data*

For the 30 observations completed with the researcher present, data were available from the pre- and post-assessment briefings with the occupational therapists, observations made by the researcher during the session, and the assessment forms and scores. For the remaining two observations only the assessment forms and scores and short debriefings by Skype or email were available. Some clients had incomplete routines because some items were not relevant, the client was unable to perform some activities, or there was insufficient time or opportunity for observation to score the item. These were treated as missing data.

Four clients declined to allow video recording of most or all of the assessment session, with one of these permitting audio recording alone. One additional client requested the recording be stopped part-way through a session but permitted the observation to continue. Otherwise, clients generally were only concerned for being recorded whilst eating, which did not result in any missing data as this was only requested in Stage 1 of

the project before the revisions to the handling of the support activities in *COMPLEAT*<sup>®</sup>. Where clients declined video recording it was due to privacy concerns, particularly in public places, and/or due to anxiety. A number of clients mentioned or demonstrated they were conscious of the video at the beginning of the session, but most thought little of it once engaged in the activities. A few appeared to enjoy performing for the camera and one enjoyed explaining his performance with documentary-style commentary, which his occupational therapist explained may have related to a particular interest in a popular reality television program at that time. Occasionally clients were reminded to ignore the camera so as not to interfere with their performance, but no recording needed to be stopped for this reason.

No occupational therapists objected to video recording, given that they clearly understood and trusted the confidentiality arrangements. They were, however, more inclined than clients to express self-consciousness with video recording (though not with audio recording). As with clients, the occupational therapists adjusted quickly to the presence of the camera once they began to engage with their clients.

The primary issue with obtaining video recorded data in community settings was gaining permission from other organisations not involved in the project to record on their premises (e.g., supermarkets). Since the assessment sessions were client-directed, this permission at times had to be obtained at short notice depending on the configuration of the specific assessment session planned by the client with the occupational therapist. Most organisations were willing for the video recordings to be taken, given the focus of the recordings on the individual client and occupational therapist participants and the confidentiality of the recordings that were created. Those who did not give permission immediately generally sought to refer the matter to a



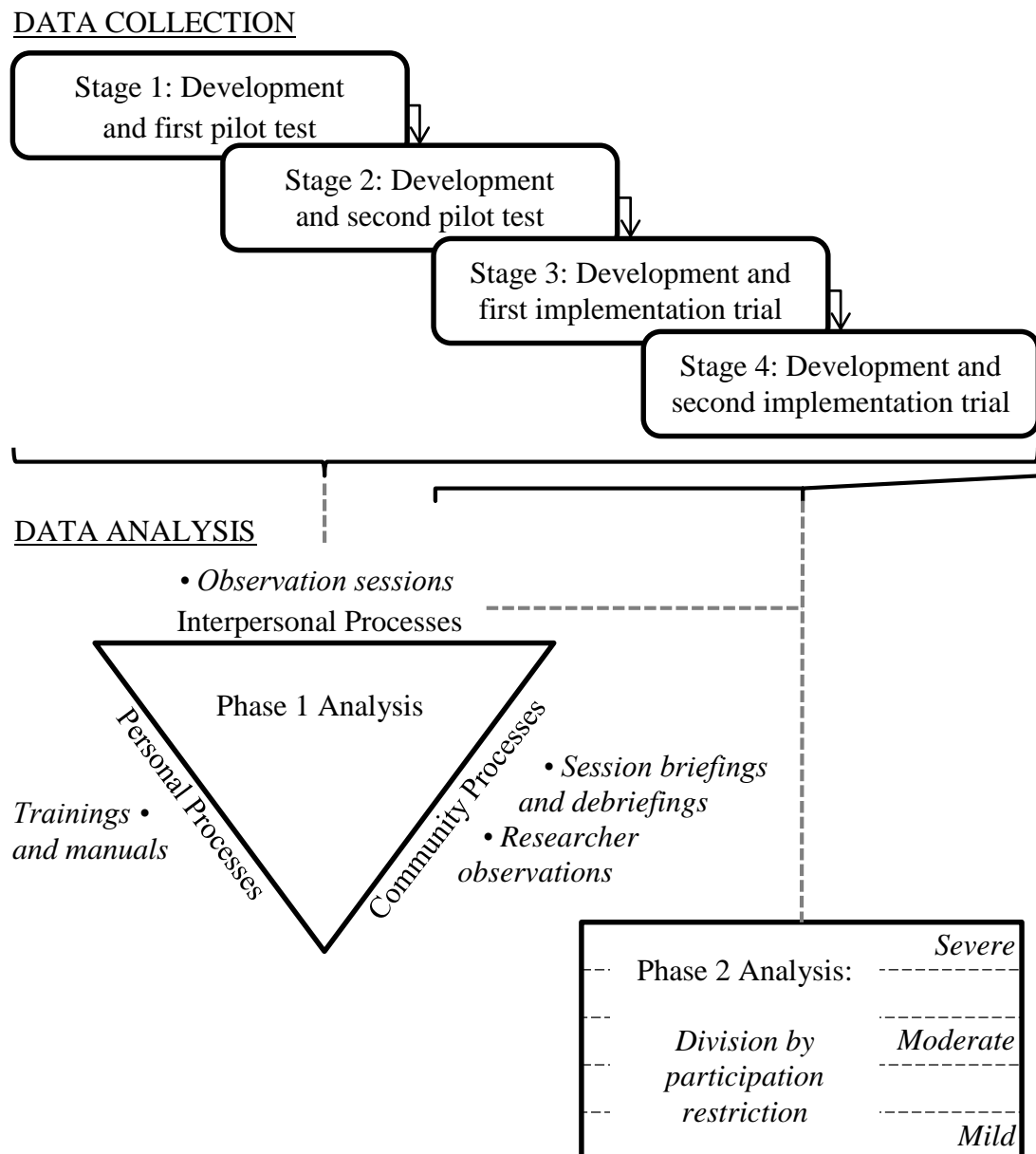
higher level of management, or to obtain additional documentation such as insurance details. In several situations concerns were able to be resolved in discussion with the respective managers in person or over the phone, but from time-to-time sites were reluctant to consent in the short timeframe required of the client assessment data collection sessions and therefore parts of some sessions were not able to be recorded. Unfortunately one of these sites was a supermarket and department store close to a residential rehabilitation service that was used by three clients otherwise permitting video recording. None-the-less the observation sessions and assessment paperwork were able to be completed by the occupational therapists and researcher, and the available data were included in this study.

### **Data Analyses**

Arising from the in-depth, multi-step, data collection procedures described above were the following data that were used to address the aims of this study: training materials and assessment manuals; instrument development materials including a process diary and records of team consultations; *COMPLEAT*<sup>®</sup> score forms and written summaries of assessments, briefings and debriefings; audio and video recordings of *COMPLEAT*<sup>®</sup> observations; participant feedback and researcher reflections on training, briefing, assessment and debriefing sessions; and Rasch analyses of *COMPLEAT*<sup>®</sup> data from the instrument development project. These sources included data relevant to the instrument development project as well as this study, so were interrogated for data pertaining to the aim of this study as guided by the analyses.

The data analyses for this study occurred in two phases. The first phase of analysis applied a sociocultural perspective (Rogoff, 2008) to gain an understanding of the processes in the practical implementation and interpretation of the assessment sessions

with clients by the occupational therapists. The second phase took a subset of findings regarding the occupational therapists' actions as they implemented the dynamic assessments and related these to the measurement framework of the broader instrument development project. These two phases of analyses, and the data contributing to them, are summarised in Figure 3.2 and outlined here.



**Figure 3.2: Overview of Data Analyses**

*Phase 1 analysis: Interpersonal, personal, and community processes in the implementation and interpretation of COMPLEAT®*

Implementing and interpreting a *COMPLEAT®* assessment session is a sociocultural activity in that it is a joint activity (between the client and occupational therapist, and in this case the researcher), in a social context (a rehabilitation program, and in this case a research study), that draws upon clinical reasoning that is contextual and situated (Ajjawi, 2006). Therefore, a sociocultural approach was applied in this phase of analysis of the study data, involving the consideration of planes of analysis that were each the focus at different times and yet inseparable as they foregrounded different but interrelated processes (Rogoff, 2008).

Specifically, this study considered the implementation and interpretation of *COMPLEAT®* in three planes of analysis (Rogoff, 2008), as viewed from the position of the occupational therapists: (i) the *interpersonal plane*, investigating the interpersonal processes as the occupational therapists applied their expertise and reasoning to implement the assessment and support their clients' participation in dynamic situations; (ii) the *personal plane*, encompassing the personal processes as the occupational therapists engaged in the study, implementing *COMPLEAT®* and the concept of participation; and (iii) the *community plane*, acknowledging the community processes in which the occupational therapists were engaged given the broader sociocultural contexts of their evaluations. Taking a qualitative perspective on the sociocultural processes of implementing *COMPLEAT®* in this way complements the consideration of its psychometric properties in the broader project to inform the instrument development and, importantly, how *COMPLEAT®* might be applied in occupational therapy practice situations (Clark, 2000).

***Interpersonal Processes.*** The interpersonal plane of analysis addressed the interpersonal processes as the occupational therapists, clients and other incidental participants engaged in shared activities in order that the client might successfully accomplish the routine (Rogoff, 2008). In the context of this study, the interpersonal plane of analysis investigated the interpersonal interactions, predominantly between the occupational therapists and clients, as the occupational therapists applied their expertise and clinical reasoning to implement *COMPLEAT*<sup>®</sup> and particularly to support their clients' participation over the course of the session. In what Rogoff (2008) referred to as *guided participation*, cultural and social values as well as participants in the activity each shape the involvement of individuals in observation and hands-on activity. Thus the analysis of interpersonal processes included direct interaction, but also side-by-side involvement, and choices not to involve other people and strategies, all of which are guided by understandings of the context and sociocultural values and roles held by the occupational therapists, clients, and other parties directly and indirectly implicated in the activities (Rogoff, 2008).

The primary data for the interpersonal plane of analysis were the video recordings of the observation sessions between the occupational therapists and clients. The video recordings were processed using Studiocode (Sportstec, 1997-2015), a software program for video coding, analysis and management. In this study, Studiocode was used to identify, categorise, and transcribe the segments of video that depicted instances in which interpersonal processes were observable. These instances were the unit of analysis (Rogoff, 2008; Rogoff, Mistry, Göncü, & Mosier, 1993). Thus the focus was on elements that were observable moment-to-moment, as opposed to the ICF-based components that form the items of *COMPLEAT*<sup>®</sup> rated in light of the

observation overall. In this way, the qualitative analysis revealed findings complementary to but different from the scoring and quantitative analysis of the broader instrument development project.

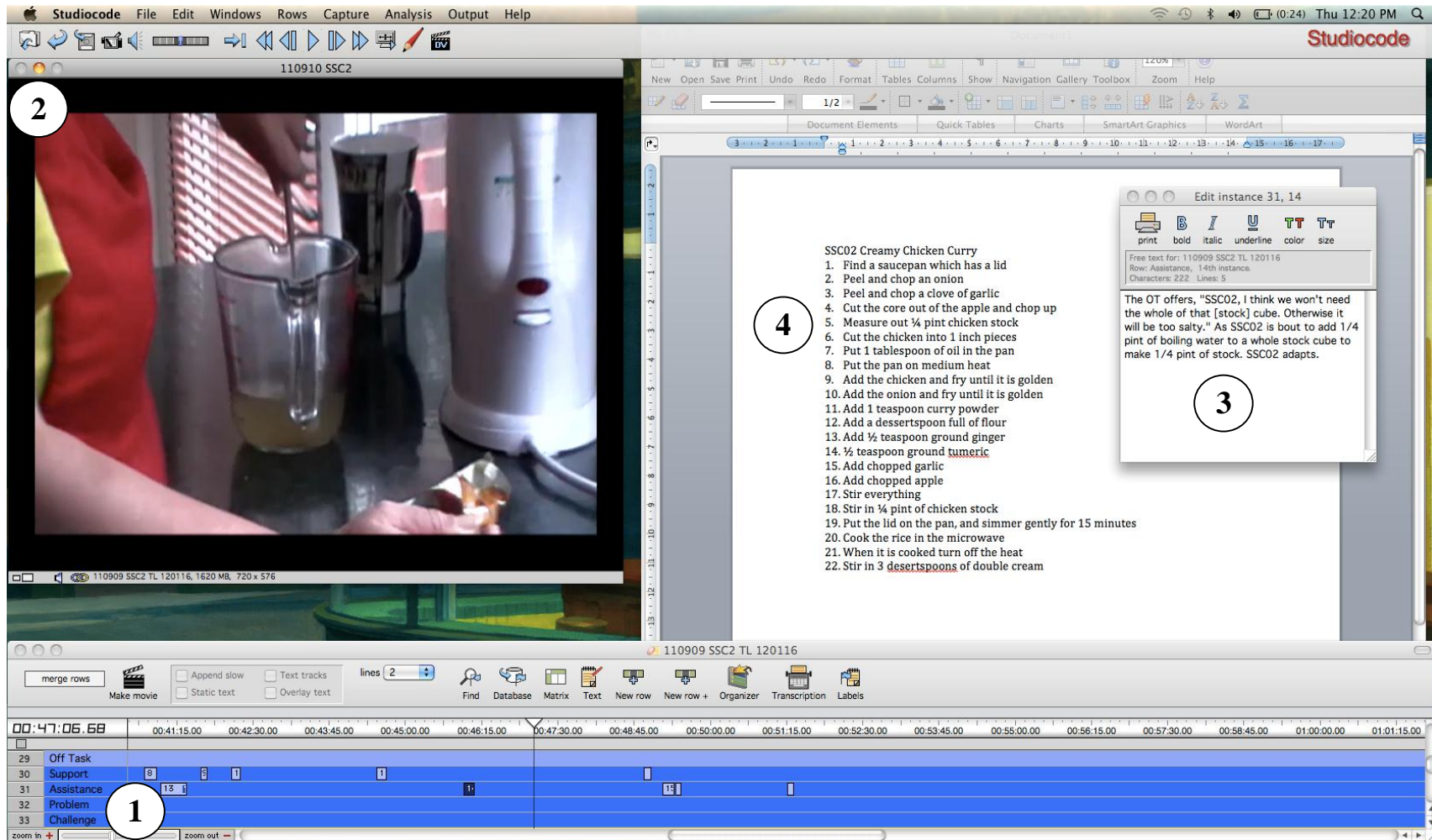
Using Studicode, all instances in which interpersonal processes were observable were initially identified and categorised as the video played (see Figure 3.3, note 1). A recursive process was used to identify these categories, resulting in refinement hand-in-hand with the research focus (Angelillo et al., 2007). The initial categorisation was based on the *COMPLEAT*<sup>®</sup> items. These categories based on *COMPLEAT*<sup>®</sup> items enabled the progression through the routine activities and component tasks to be successfully tracked. However, it was apparent that the support activities and component tasks were not possible to categorise moment-to-moment as clients drew continuously on most of these, and the nature of restrictions leading to specific difficulties were not clearly observable in each instance.<sup>10</sup>

Further, categorisation based on the *COMPLEAT*<sup>®</sup> items would not capture the nature of involvement between the occupational therapist and client (the interpersonal processes of particular interest in this plane of analysis). Therefore, as observable instances were identified, a new set of broad categories was defined to group the instances. The development of the categories continued until all the instances were grouped as shown in Figure 3.3.

After identification and categorisation, the content of each instance was transcribed, also within Studicode (see Figure 3.3, note 3). The transcription included the

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<sup>10</sup>For example, restrictions in planning are internal and inferred rather than directly observed. Likewise, it might only be possible to judge the nature of a difficulty with a multi-step task after observation of several other instances calling on similar elements.



**Figure 3.3: Screenshot of Coding and Transcribing in Studicode**

*Notes.* 1. The coded video timeline, here showing only the lines for the final categories of observable instances coded onto the video in real time. Each small box in the row represents one instance of that code. 2. The video for coding and playback. 3. The transcription of the instance. 4. For reference, this client was using a customised recipe as a compensatory strategy, not part of *COMPLEAT*®.

dialogue, non-verbal communication and other suggestions of non-literal meanings, actions, and/or a description of the situation, including a summary of relevant details leading up to the instance. Where necessary other artefacts collected alongside the assessment session but not part of *COMPLEAT*<sup>®</sup> were referred to while interpreting the video (Figure 3.3, note 4). Sufficient detail was included to allow understanding independently of the video material (Angelillo et al., 2007), although the transcription function in Studiocode itself retains links to the original footage via the timeline (Figure 3.3, note 2). The original categories for the activities and component steps (i.e., the whole video) were not transcribed since these were applied according to *COMPLEAT*<sup>®</sup> definitions and for relating to the assessment rather than the plane of analysis.

The output from Studiocode was a timeline for each video that identified both the progression through each routine activity and component task and the observed instances of relevance to the sociocultural analysis. The timeline could be navigated visually with direct links to the segments of video. The timeline was also exported as tabulated, textual data that included a timestamp for each instance and the descriptive transcriptions. Working from these transcriptions, the recursive process of analysis was continued as the initial categories of instances were further refined to identify themes and sub-themes that described the interpersonal interactions through which the occupational therapists supported their clients' participation. At this step, the instances within each category were compared against the developing themes to identify common features and discrepancies until the data were fully described by the themes and sub-themes.

**Personal Processes.** The personal plane of analysis addressed the personal processes of engagement in the shared activity (Rogoff, 2008). In this study, this plane of analysis encompassed the occupational therapists' engagement with *COMPLEAT*® as an assessment tool, and with the concept of participation that *COMPLEAT*® portrays, as they implemented and interpreted the assessment sessions with their clients.

The occupational therapists in this study approached the assessment activities personally holding knowledge and expectations built from their prior encounters. Of particular relevance were their prior encounters with their clients, with assessments of these and similar clients, with *COMPLEAT*® through the training and prior trials, and with other similar and different assessments they knew directly or indirectly. These prior encounters were part of the personal process of each individual that influenced the joint activities, including the actions investigated in the interpersonal plane (Rogoff, 2008). The implementation and interpretation of each assessment session was therefore part of a 'conversation' between the occupational therapist and *COMPLEAT*® (including the assessment and training materials, and the researcher conveying those materials).

The primary data for the personal plane of analysis were recorded in the *COMPLEAT*® training materials and manuals developed for the purpose of conveying the concepts of interest. Over the course of the study, these materials were developed and revised to build on occupational therapists' existing understandings. Those developments were based on the ongoing, cumulative interpretation of occupational therapists' individual and collective responses and feedback, as well as the researchers' reflections in the implementation of the trainings and assessment sessions, and were tracked through evolving versions and with the instrument development diary and consultations with



the *COMPLEAT*<sup>®</sup> development team. Being written for the purposes of instrument development and for the assessment, however, those documents covered a wide range of other content.

Reported in this study is a thematic view of the issues most relevant to the implementation and interpretation of the assessment sessions in light of the data from the other planes of analysis. The interpretation of these documents was supplemented by all the related materials including the documentation of participant feedback and researcher reflections on the training, briefing, assessment and debriefing sessions. Reflecting the interdependence of the planes of analysis (Rogoff, 2008), and respecting the limits to the scope of this study in relation to the broader instrument development materials, the relevant issues were identified by reading through the materials in light of the observations. Materials were selected where they aided the understanding of the occupational therapists' implementation and interpretation of *COMPLEAT*<sup>®</sup>, or illustrated examples of how issues identified in the primary data had developed and been responded to in the course of the broader instrument development project.

***Community Processes.*** Finally, the community plane of analysis addressed the implementation and interpretation of assessment sessions by occupational therapists as culturally organised activities (Rogoff, 2008). The emphasis in this plane was on acknowledging that the occupational therapists engaged in the process for purposes that carried broader meanings in their social and institutional communities with professional, organisational and profession- or sector-wide influences (Rogoff, 2008). Understanding those contexts would therefore inform the development of the assessment and trainings, incorporating the occupational therapists' existing drivers or

highlighting the need to explicitly acknowledge and perhaps challenge drivers running counter to the intent of the new assessment.

The primary data to identify these issues were transcripts and field notes from the discussions with and observations of the occupational therapists' in light of the observed usual practices and documentation within their teams, organisations and sectors, and their responses to the *COMPLEAT*<sup>®</sup> training and assessment forms. Particular to this context and the instrument development process, this plane of analysis was also able to draw upon the assessment summaries constructed and discussed with the occupational therapists. These summaries identified the features of the client observations that the occupational therapists prioritised and the interpretations they most valued in the unusual situation of having an assessment that did not, at the time of data collection, offer a pre-determined overall score and interpretation.

These data were, as with the other data, analysed in light of the findings in the other planes of analysis and, given the focus of this plane on the broader social context, also in light of the literature. The purpose of this approach was to understand the main findings in relation to the implementation and interpretation of the assessment, not to comprehensively represent the situations of the occupational therapists or to generalise to other situations. Caution was also applied since the field notes and summaries documented the situations in less detail and more subjectively than the video recordings and formal materials, and were therefore influenced by the ongoing evolution of *COMPLEAT*<sup>®</sup> and the data collection procedures.

*Phase 2 analysis: Occupational therapists' actions from a measurement perspective.*

Phase 2 of the data analysis returned to the framework underpinning the broader research project in which these data were collected, recalling that the purpose of this study pertained to the need for practically useful measures of participation. This phase of analysis was guided by the representation of participation restriction as a measurable construct reflected in the hierarchy of items by difficulty and clients by observed performance (see Appendix B). The supports the occupational therapists provided to clients were further investigated to understand the relevance and potential of *COMPLEAT*® as a dynamic assessment to identify clients' needs and inform the process of intervention planning.

Data from observations of clients assessed in the implementation trials in Stages 3 and 4 of the instrument development project were used in this phase, making use of the *COMPLEAT*® total scores only available from these later stages. These clients were grouped into five levels representing mild to severe participation restriction. In this way data were analysed in relation to the clients' levels of participation restriction irrespective of the nature of their specific brain injuries and impairments. (See Appendix B for discussion of the evidence for the validity of these score interpretations, and Appendix C for details of how total scores were calculated for *COMPLEAT*®.)

Data on the occupational therapists' supports from the interpersonal plane of the Phase 1 analysis were analysed within and between the five levels, with reference to the *COMPLEAT*® item hierarchy, in order to relate the occupational therapists' supports to the overarching construct of participation restriction. In this way the occupational therapists' supports could be understood in terms of a hierarchy of interventions to

facilitate clients' participation. Understanding the hierarchy of interventions during the dynamic assessment addresses the aim of this study to examine the practical application of *COMPLEAT*<sup>®</sup> to planning occupational therapy interventions in brain injury rehabilitation settings.

### **Ethical Considerations**

The broader instrument development project and this embedded study were conducted according to the values and principles outlined in the *National Statement on Ethical Conduct in Human Research* (National Health and Medical Research Council, Australian Research Council, & Australian Vice-Chancellors' Committee, 2007 [Updated May 2013]). The design of this study took into account a number of ethical considerations, particularly considering the potentially vulnerable population and intrusive methods. The University of Sydney Human Research Ethics Committee approved the project protocol and each modification (protocol number 12461), and monitored the research throughout the whole project. The human research ethics committees of the two partner organisations also reviewed the application approved by the University of Sydney and approved the conduct of the research at their sites. In the case of the partner organisation in England, an application was made on the application form of that committee and with a local chief investigator (an auxiliary supervisor of the candidate), to which the University of Sydney ethics application protocol and approval were attached for expedited review. In each case the same wording was used on the participant information statements and consent forms, and the same primary organisations involved with the research were named. The different versions of the form featured the logo and specified the name of the organisation

through which the participant had been recruited, and provided a local human research ethics committee contact with which to raise any concerns or complaints.

The study was conducted according to the values of respect for human beings, research merit and integrity, justice, and beneficence (National Health and Medical Research Council et al., 2007 [Updated May 2013]). Specifically, the right of participants to make their own informed decisions with regard to initial and ongoing involvement in the study was respected, even where managers or treating therapists had provided consent. Clients in particular were provided with information in multiple and appropriate formats to enable their decision-making, supported by advice from trusted others and formal consent by legal representatives as relevant. Further, inclusion and exclusion criteria were based on each client's capacity to engage in the project, which was in turn designed to be flexible to different levels of contribution by participants and to enable the meaningful inclusion of participants with a range of capacities irrespective of the ability to engage without adaptations to the research procedures (Kroll, 2011).

The privacy of participants and others implicated in the research was respected with data collected discreetly and then held confidentially. For example, video recordings in public places were made as unobtrusively as possible to minimise attention drawn to the participants, and wherever possible the camera was directed away from people other than the participants in the environment. When possible the agreement of other organisations such as stores a client may visit during the session was sought, with the relevant decision-maker advised that the videos being taken were for use in relation to a rehabilitation exercise and would be held in strict confidentiality (the exact nature of the research not being disclosed so as not to imply personal health information

regarding the client participants).<sup>11</sup> To protect confidentiality in reporting the data that were collected, measures such as the reporting of only group data and de-identified information have been taken. Pseudonyms are used throughout, and potentially identifying details have been removed or substituted as appropriate (e.g., the occupational therapist participants are referred to using only female pronouns in examples throughout the results to prevent cross-referencing that may identify or attribute particular data to the minority of male occupational therapists).

With regard to merit and integrity, the data collection was intensive and, whilst potentially intrusive, the use of video recording allowed the collection of highly detailed information regarding the occupational therapists' implementation of the assessment without the need for participants to attain and articulate awareness of their moment-to-moment actions. This and the use of researcher observation and informal 'interview' were efficient methods of data collection since they occurred as the activities were performed in the usual rehabilitation context, minimising the additional burden to participants. Being conducted in the development stage of the assessment, this was a particularly important consideration given many benefits that might be obtained by using the assessment will not be realised until it is further developed and therefore could not offset the burden of participation. These data were supplemented by the inclusion of both formal and informal feedback to accommodate the needs and preferences of participants, as well as the researcher's own observations.

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<sup>11</sup>As described above, consent was not always readily obtained from those other organisations. Interestingly there were vast differences in issues raised at each site, highlighting a wide range of perspectives on sensitivities and other concerns in the use of video recordings despite the research ethics clearances. These concerns ranged from the privacy of those organisations' respective constituents and stakeholders (e.g., staff and shoppers), to protection of third party intellectual property on display (e.g., product packaging), to liability for the safety of a person operating a handheld video camera whilst moving about.

Finally, a balance was sought between the need for consistency in application of the data collection across participants and the issues involved in asking occupational therapists to adopt a particular approach with clients—in this case the *COMPLEAT*<sup>®</sup> measurement framework and assessment—when the validity and impacts of that approach had not yet been tested. To minimise these issues, *COMPLEAT*<sup>®</sup> was developed through a collaboration between the researchers and service providers, drawing upon both clinical expertise and the theoretical and empirical literature. This researcher's own background as an occupational therapist with experience in brain injury rehabilitation, and the occupational therapist participants' active involvement in the development of the approach, sought to ensure *COMPLEAT*<sup>®</sup> remained in touch with current practice as well as research evidence. Particularly in the early stages of the project, a large proportion of the researcher's time was spent gathering and reviewing feedback in depth with small numbers of participants, with developments incorporated throughout the process and substantial revisions made between each stage of the project, which in turn started out with pilot trial stages before introducing small implementation trial stages.

### **Summary: Mixed Methods Study Embedded in a Broader Project**

The focus of this thesis is on occupational therapists' implementation of *COMPLEAT*<sup>®</sup> as a novel, observational, assessment of participation to inform intervention planning with younger adult clients in different settings and stages of brain injury rehabilitation. This chapter has described the design, settings and participants, and methods for this study, and reflected on the ethical considerations involved. In summary, this study can be described in relation to the mixed methods framework outlined by Greene, Caracelli, and Graham (1989). In relation to the characteristics described in that framework, this

study employed different methods, investigating the same or similar phenomena, using different paradigms, given equal weight. The methods have interacted cyclically over the course of the study, with one stage informing the next. Though the qualitative and quantitative data were collected simultaneously, in the same settings, and with the same participants, the timing and interaction in the analyses varied across the study. Throughout the instrument development project the data were analysed alongside each other for the purposes of development. For this implementation component, the data were collected simultaneously but analysed in distinct stages with the different methods combined for the purpose of initiating findings not evident from one method alone.

This study highlights features of the implementation of *COMPLEAT*<sup>®</sup> that represent participation restriction and implications for intervention planning most saliently to the occupational therapist and client participants, and to the occupational therapist and research observers, considering their contexts and backgrounds, given the structure of the observation provided by the assessment. The measurement data, on the other hand, were collected and analysed with a view to standardising observations across people, time, and place; identifying the indicators that define the construct; and describing indicators of relatively more and less of the construct. Convergence between features of the occupational therapists implementation of *COMPLEAT*<sup>®</sup> and the indicators from the measurement perspective provides insights into the validity and utility of the assessment, and implications for occupational therapy and brain injury rehabilitation, not available using only one of the methods. These insights are reported in the following two results chapters before discussion in light of the broader literature.



## Chapter 4:

### Results, Phase 1 – A Sociocultural Perspective on Implementing *COMPLEAT*<sup>®</sup>

This chapter, the first of two results chapters, presents the findings of the first phase of data analysis. This first phase emphasised the sociocultural nature of the processes as the occupational therapists implemented and interpreted *COMPLEAT*<sup>®</sup> to establish their clients' needs. Rogoff's (2008) planes of analysis—interpersonal, personal, and community—were applied for this purpose (see Figure 3.2). This study has particularly attended to the interpersonal plane, examining the interactions between the occupational therapists and their clients across environments and activities. The findings from this plane of analysis also formed the basis of the Phase 2 analysis, which related the occupational therapists' interactions with clients back to the measurement framework of the broader instrument development project. The three planes are, however, interrelated and inseparable (Rogoff, 2008), with the personal and community planes that are also presented in this chapter informing the interpretation of the interpersonal plane and discussion of all of the results in the later chapters of this thesis. This chapter therefore presents an overview of all the Phase 1 findings, before considering the findings of each plane of analysis in turn.

#### Overview of Findings by Plane of Analysis

In the *interpersonal plane of analysis*, the findings revealed three elements to occupational therapists' actions to facilitate their clients' participation: (i) responses to situations arising in the course of the dynamic assessment; (ii) enabling therapeutic supports available to the clients; and (iii) enabling everyday environmental supports (see Figure 4.1). The occupational therapists' responses to situations comprised the direct interventions occurring within the course of the dynamic assessment itself, and

are therefore the major focus of this thesis. The other therapeutic and everyday environmental supports also occurred in the course of the dynamic assessment, but represent indirect interventions that integrate features from the assessment context and environment. These illustrate other considerations factored in by the occupational therapists in the course of implementing the dynamic assessment. The occupational therapists had a role with respect to these other supports, described here as enabling, that ranged from actively or passively modifying their own responses to allow for the use of these other supports, through actively providing the clients with assistance to use these supports, to identifying and instituting new therapeutic and everyday environmental supports that would continue to facilitate clients' participation.

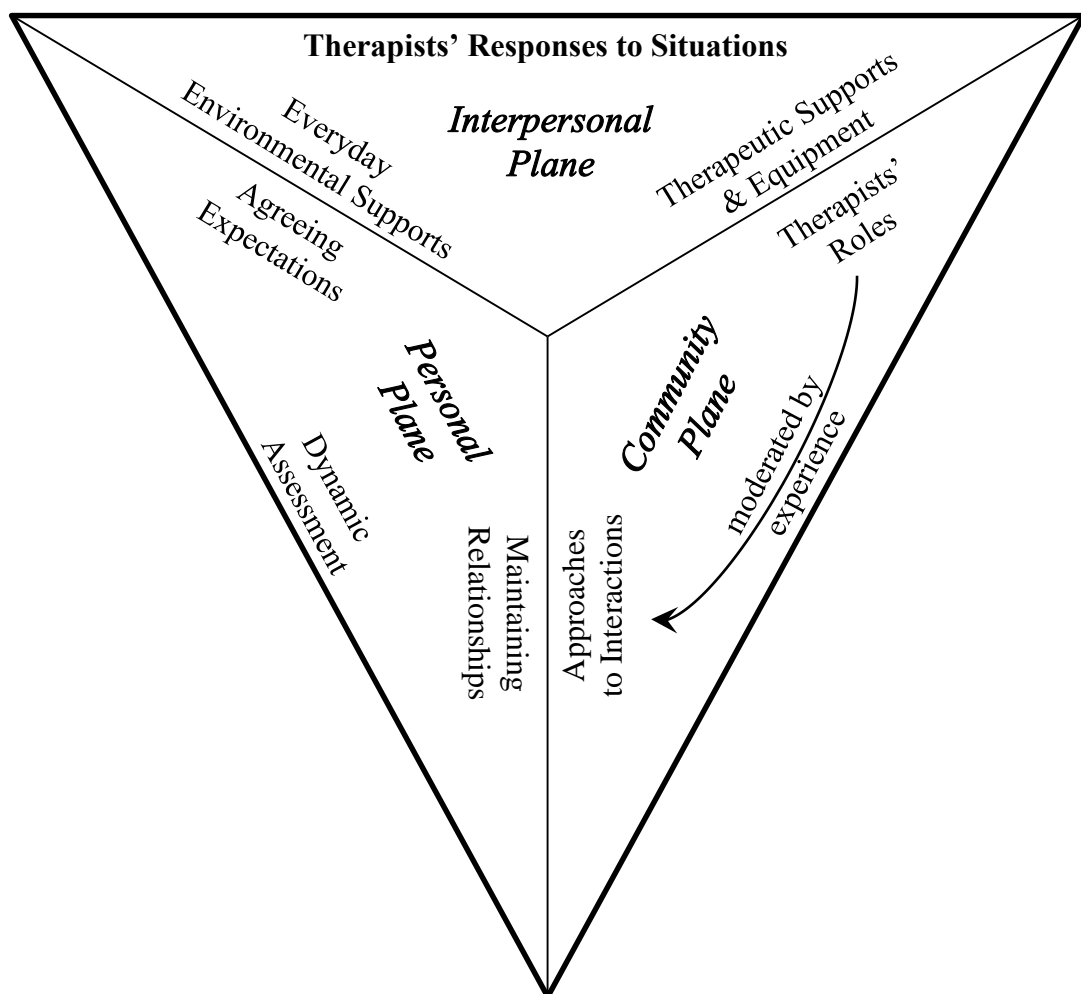


Figure 4.1: Elements in Implementing *COMPLEAT*®, by Plane of Analysis

The *personal plane* of analysis revealed three elements in the occupational therapists' deliberations on how to implement *COMPLEAT*<sup>®</sup>: (i) setting and agreeing expectations with clients; (ii) implementing a dynamic assessment; and (iii) building and maintaining relationships with clients (see Figure 4.1). These elements are described in this chapter as background to the more detailed examination of the occupational therapists' responses in Chapter 5 and reflection on all of the findings of this study in Chapter 6.

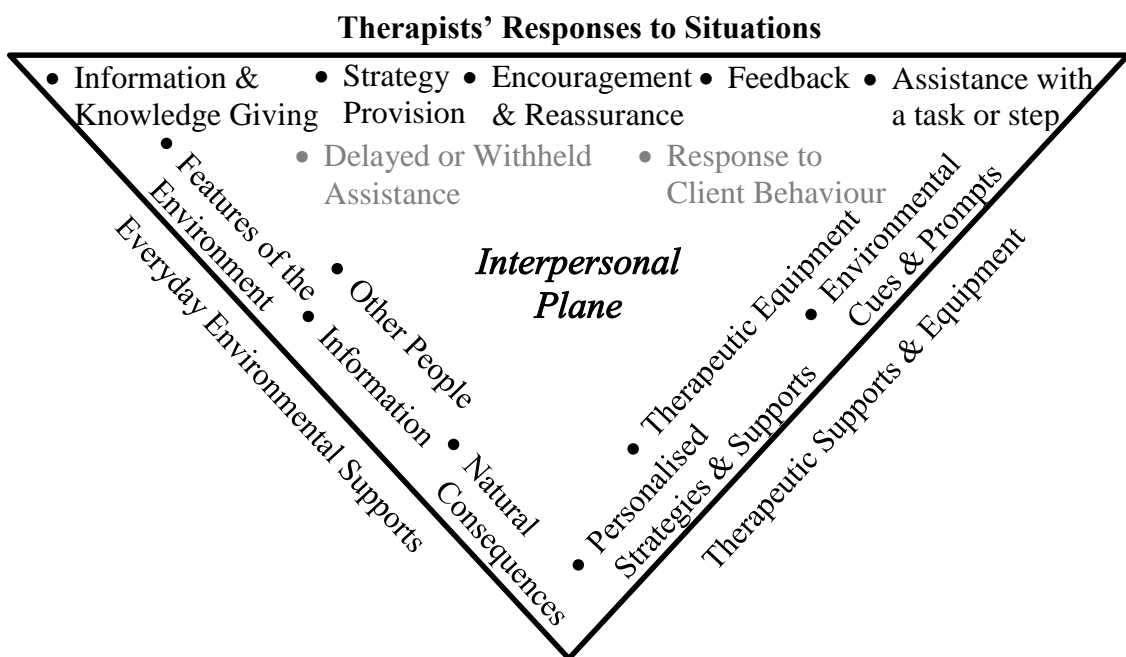
The elements of the personal plane encapsulate the occupational therapists' engagement with *COMPLEAT*<sup>®</sup> at a personal level as they prepared for, implemented, and reflected upon the assessment sessions, and are considered to the extent that they interact with the interpersonal plane findings that are of primary interest. This is particularly relevant given the departure of *COMPLEAT*<sup>®</sup> from the formal assessment approaches familiar to the occupational therapists. Specifically, during the *COMPLEAT*<sup>®</sup> assessment sessions the occupational therapists were required to apply their learning from the *COMPLEAT*<sup>®</sup> materials and training, their understandings of and beliefs about which informed their approaches to facilitating clients' participation within the dynamic assessment.

The *community plane*, which was the third and final plane of analysis, identified that the occupational therapists' roles, moderated by their levels of experience, impacted on their approaches to implementing and interpreting *COMPLEAT*<sup>®</sup> to support clients' participation (see Figure 4.1). These impacts were evidenced in the occupational therapists' approaches to interactions and their deliberations when interpreting *COMPLEAT*<sup>®</sup> and specific implications for each client's rehabilitation.

Of particular interest to this study were the sociocultural contexts external to the occupational therapists that dictated the scope and guided the focus with which they applied their expertise and reasoning to the interpersonal interactions identified in the interpersonal plane. As with the personal plane, the community plane findings provide background to the detailed consideration of the occupational therapists' strategies to facilitate clients' participation in Chapter 5, as well as insight to the subsequent discussion of the findings in relation to the literature in Chapter 6.

### **Interpersonal Plane: The Application of Expertise and Reasoning**

The three elements in occupational therapists' actions to facilitate their clients' participation—their responses to situations, enabling therapeutic supports, and enabling 'everyday' environmental supports—were identified in the observable instances of supports and assistance (see Figure 4.1 and Figure 4.2). These elements emerged from an iterative process, with the thematic analysis revealing the final set of elements and themes within those illustrated in Figure 4.2.



**Figure 4.2: Themes Identified Within Each Element of the Interpersonal Plane**

The process of arriving at these elements and themes started with the initial coding of the video recordings using Studiocode (described in Chapter 3 and illustrated in Figure 3.3). This process identified four categories of instances of interpersonal interaction observable during the *COMPLEAT*<sup>®</sup> assessment sessions with clients. These covered clients' interactions with barriers ('challenges') or facilitators ('supports') in the activities or environments, and when the occupational therapists acted in response to the scenarios arising ('assistance') or, conversely, did not act despite scenarios presenting overt opportunities for intervention ('problems'). With the focus of this study on how the occupational therapists implemented and interpreted the dynamic assessment, the challenges and problems categories were only considered in relation to the supports and assistance and were not further analysed and reported in their own right. For example, problems were markers for instances in which occupational therapists delayed or withheld interventions (not otherwise observable as no action), but the nature of problems was not independently investigated. Similarly, the extent to which challenges and problems pertained to characteristics of the clients, activities, and environments was not examined, although challenges and problems relating to supports and assistance instituted by occupational therapists and their colleagues has been afforded some comment and drew attention to some enabling supports.

The final three elements and themes within those, illustrated in Figure 4.2, were derived from the thematic analysis of the instances initially identified in Studiocode. These elements and themes illustrate how the occupational therapists facilitated their clients' participation, and are examined further in this section with examples from the assessment session data. Examples and quotes are referenced throughout by client (all names are pseudonyms), stage of the study and rehabilitation setting (S1 for Stage 1,

etc.; C for community and R for residential rehabilitation setting), and the source, including where applicable the timestamp for the *start of the instance* from the video ([hours:]minutes:seconds).

*Element 1: Occupational therapists' responses to situations*

Given the data collection method and focus, the vast majority of observable instances were related to occupational therapists' responses to situations arising in the course of the assessment sessions. The first five themes relate to the apparent purposes for the responses observed in these instances: (i) information and knowledge giving, (ii) strategy provision, (iii) encouragement and reassurance, (iv) feedback, and (v) assistance to execute a task or step. In addition to these, a further two themes were identified in the instances, capturing when (vi) occupational therapists delayed or withheld interventions in response to a situation, or (vii) the response was to manage client behaviours and in doing so indirectly rather than directly facilitate participation.

***(i) Information and knowledge giving.*** The most commonly observed responses by occupational therapists had information and knowledge giving functions. Five variations on information and knowledge giving interventions were observed, ranging from relatively unobtrusive interventions to promote clients' access to their own information or to highlight information in the environment, through confirmation of information held by clients, to more involved interventions to provide information and to scaffold performance by structuring information provision to match the immediate demands of a task.

The occupational therapists frequently used the least intrusive of these interventions, promoting clients' access to existing knowledge. In an exemplar of this, and the most

common intervention in this group, the occupational therapists would often ask clients questions that drew on knowledge the clients would be expected to already hold. Clients were expected to retrieve the relevant knowledge and either respond verbally or in action. In this way the occupational therapists could assist recall and retrieval of knowledge, or indicate to clients particular factors that were relevant to task performance or decision-making. The occupational therapists also provided hints such as raising a topic in conversation, or using questioning gestures, to prompt clients to bring relevant information to the fore.

The occupational therapists similarly intervened to highlight information available in the immediate environment or from the task itself, often prompting attention to natural cues that would ordinarily be expected to guide action. For example, the occupational therapist drew Miri's attention to the fact that the grill element was turning red once the grill was successfully turned on and getting hot (S3C, 52:28). While this cue had previously been discussed, abstractly, when the grill was not turned on correctly and not heating, highlighting it again in the context of the task performance emphasised the natural cue that could be used when encountering the situation again (c.f., only being provided the information verbally). Similarly, the occupational therapists often drew their clients' attention to cues in the environment that suggested the next action or appropriate strategy.

A related information and knowledge giving intervention was for the occupational therapists to confirm information that clients had raised. Usually this was in response to clients' initiations, such as directly seeking confirmation from the occupational therapists. Sometimes confirmation was provided as a follow-up when prompts to access known information were insufficient to facilitate performance despite clients

being able to identify the information required. For example, Skye (S4C) responded to her occupational therapist's prompt to recall that a particular ingredient was available, but that was insufficient for her to locate the item and continue with the activity (40:59). The occupational therapist therefore confirmed that Skye's recollection was correct and was able to sufficiently prompt Skye's performance without needing to direct her next action. Overall, whether initiated by the clients or occupational therapists, confirmation was used to facilitate participation by expediting progress (such as by preventing clients from dwelling on questions), and to encourage generalisation by highlighting clients' specific skills or behaviours.

The fourth variation on information and knowledge giving interventions was for occupational therapists to, one way or another, provide the required information. As a first-line intervention, information was provided by the occupational therapists when clients demonstrated an incorrect response in a situation, did not respond to natural cues in tasks, approached tasks in a manner inconsistent with previously established criteria (e.g., when Simon, S3R, forgot and was reminded of the criterion, 7:54), or were perceived to be at risk of undesirable outcomes (e.g., when Skye, S4C, was told of the risks when she went to return to the jar some spice that had been spilled on the chopping board previously used for raw chicken, 1:09:39).

When clients directly requested information this was also often met with provision of the information rather than 'testing' their knowledge or strategies to obtain information. Likewise, information was also provided where clients may not have known particular facts or details so that they could draw upon that same information at another time and thus improve performance in the future, or to support the position an occupational therapist had taken on an issue (e.g., the occupational therapist tells



Simon, S3R, “you've got a bedroom down there but it doesn't have a kitchen, so, you could make [a cup of tea] here”, 53:30). Similarly, information was provided to expand on clients’ ideas or give alternatives for decision-making and problem-solving, after which the occupational therapists were able to observe the application of the information to these skills. Finally, occupational therapists also provided information as an escalation in a less-to-more hierarchy of interventions. For example, Miri (S3C) did not succeed in providing the expected response to the questions her occupational therapist had intended would draw her attention to alternate considerations for problem solving. After three attempts, the third of which resulted in an indication from Miri that she did not know, the occupational therapist provided the information (49:56).

In these diverse situations—promoting clients’ access to knowledge, highlighting information, confirming information, or providing information—the occupational therapists’ interventions had in common the core purpose of enabling the clients to access information or knowledge that was needed for successful performance and to facilitate participation. For clients experiencing more difficulties or tackling more difficult tasks, the occupational therapists provided a higher level of assistance by scaffolding information, drawing on several of the above techniques in a step-by-step process. For example, Simon’s occupational therapist (S3R) provided a piece of information and then asked a question to prompt Simon to apply that information, prioritising it as a factor in considering options to make a choice (1:04). By scaffolding information the occupational therapists broke cognitive tasks into manageable steps, enabling the clients to be actively involved in accomplishing the tasks and in doing so providing learning opportunities.

*(ii) Strategy provision.* The second group of interventions by occupational therapists was to provide clients with strategies. In distinguishing these from other interventions, strategy provision was considered to include interventions with the purpose of providing clients with a means to solve a problem or approach a task or activity. That is, a strategy is a means or approach that the client has to take and apply to the particular situation, compared with information to consider in a problem or knowledge to execute a task, or a direction for performance.

Fittingly, strategy provision was usually in response to difficulties with planning and problem-solving. Despite the frequency of difficulties with planning and problem-solving, however, the use of strategy provision was uncommon and tended to be reserved for clients experiencing fewer difficulties. Further, even when strategy provision was used with a client it was only used occasionally throughout a session.

When providing strategies to clients, the occupational therapists usually did so verbally by suggesting alternative approaches to facilitate their clients' performance or reinforcing strategies previously addressed in rehabilitation sessions as clients implemented these in practice. Further, the occupational therapists often introduced strategies in a conversational manner, making gentle suggestions that were likely to present less of a challenge to clients' autonomy and to recognise more of clients' capacities than direct instruction and assistance. For example, Lazzaro's occupational therapist (S4R) introduced a strategy by saying, "[Lazzaro], do you think it might be better to ...?", to which the response was a favourable "Good thinking" and adjustment of the approach (58:24). The use of verbal communication in the provision of strategies may, however, have limited the applicability of this intervention with

clients for whom communication was a difficulty. Only occasionally did occupational therapists model strategies for clients to replicate.

*(iii) Encouragement and reassurance.* In some situations, occupational therapists used encouragement and reassurance as a direct response and intervention to overcome difficulties and facilitate performance and participation. Though the point at which encouragement and reassurance crossed the threshold from an incidental support in the assessment process to the provision of a specific form of assistance was not clear from instance-to-instance, the frequency of encouragement and the nature of the actions that drew encouragement from the occupational therapists indicated the purpose was different.

Sometimes the impact of encouragement and reassurance was directly observable in the instance, particularly when directly sought by clients. For example, an instance was described in which Owen (S4C) ‘picks up the milk and makes a move toward putting it away but looks toward the occupational therapist. The occupational therapist reinforces, “Brilliant, yeah.”’ (59:32). The impact of this encouragement was made immediately evident as Owen continued the activity he had paused. At other times it was the cumulative impact of encouragement and reassurance that clearly impacted on performance. For example, in the debriefing following an assessment session with Robbie (S3R), the occupational therapist explicitly commented on the extent to which she had used encouragement and reassurance as an intervention to facilitate performance. She commented on the effort the frequent provision of encouragement and reassurance had required, and the impact that intervention was judged to have had on Robbie’s performance, which needed to be reflected in the scores awarded.

In general, providing clients with encouragement and reassurance appeared to function as an intervention to expedite progress by preventing clients from dwelling on questions and seeking assistance or reassurance, and to encourage generalisation by highlighting clients' specific, adaptive, skills or behaviours. In each of the examples above the encouragement and reassurance could be interpreted in light of the whole routine to be a significant intervention: for Owen to generalise his gains from an errorless learning program where he was provided frequent guiding interventions to independent performance, and for Robbie persistently throughout the routine as a positive intervention to facilitate participation given the number of difficulties he faced.

*(iv) Feedback.* As well as encouragement and reassurance, occupational therapists provided direct and indirect feedback on clients' performance. In the context of this study, feedback was considered to be intervention for the purpose of modifying the precipitating behaviour. That is, feedback was intended to modify behaviour on the next occurrence, whereas encouragement was to promote the continuation or repetition of previous positive performance in the future.

The occupational therapists were observed to provide clients with feedback in relation to performance not matching the agreed requirements of the task, social expectations, or environmental demands. Depending on their clients' levels of awareness and resistance, feedback was at times short and direct, and at other times extended and reasoned. For example, Ryan (S3R) demonstrated limited awareness of difficulties with his performance. His occupational therapist took a number of attempts to get him to wash the knife he had used to cut raw meat in hot soapy water, starting with feedback pointing out his error, adding her reasoning, and proceeding to provide direct

instruction on the required actions (54:09). In this and many other examples, feedback pertained to the (in)appropriateness of clients' actions and the rules or social expectations with which they were expected to comply. Many of these were situations in which the context or outcome did not itself provide immediate feedback.

Less frequent were examples of feedback on physical and cognitive performance. In one prominent example of this form of feedback, Lachlan's occupational therapist (S4R) stopped to provide him with extended feedback on his use of strategies to manage the cognitive (particularly information processing) demands of shopping in a supermarket as he learned to use a power wheelchair to move about. This interaction between the two included the occupational therapist commenting,

*I think we've got to acknowledge though... that it's actually quite tiring, what you just did... That's why it's really useful to stop. ... But maybe what you weren't doing as you went down the aisle was that a bit quicker. ... maybe you didn't, but you could have missed something on the other side... What was good though ... you kind of got into a rhythm... this was the first time you've done it like that, so it needs to get into more of a habit I think..*  
(25:25)

The strategies the occupational therapist provided feedback on were an emphasis in his rehabilitation program at the time, including those emphasised earlier in the assessment. In this and similar examples, the occupational therapists appeared to take up the opportunity to intervene with feedback during the routine in order to make it easier for clients to see the relevance, accept the feedback, and integrate changes into future performance. It seemed they reasoned that this was a more effective response

than to delay feedback, in which period details could be forgotten or sub-optimal approaches justified by clients because the task worked out in the end.

*(v) Assistance to execute a task or step.* The final purpose with which the occupational therapists responded directly to situations was to provide assistance to execute tasks and steps. Assistance entailed the occupational therapists progressing tasks or steps on behalf of or in conjunction with their clients, as opposed to the other strategies in which the occupational therapists facilitated their clients' performances. Assistance with physically executing a task or step was relatively clear to identify. However, given the pervasiveness of cognitive difficulties, most assistance was with cognitive elements of task performance such as planning, problem-solving, and regulating performance. For example, the occupational therapists provided assistance with cognitive steps by drawing their clients' attention back to the task, facilitating cognitive processes, or giving solutions to problems the clients had difficulty solving.

Occupational therapists were most often observed to provide direct assistance to clients learning to use items of therapeutic equipment or personalised strategies and supports (which are themselves discussed under the theme on therapeutic supports). For example, having prompted Lachlan (S4R) to refer to his program, the occupational therapist requested specific information required for planning the routine, gave Lachlan a chance to respond, and then assisted him by pointing to the timetable, saying, "So try and look through it methodically, [Lachlan]. Start with Monday and work down." (1:20). This assistance continued throughout the planning, which reflected another feature of assistance by the occupational therapists: providing assistance up front to allow the assessment to focus on another element of the activity

by reducing other task demands (in this case Lachlan's use of the information for planning whilst still learning a strategy for organisation and memory).

Direct assistance was also provided to clients who had previously attempted a task or step or been provided some intervention and had not succeeded. That is, assistance was reserved for situations in which an escalation of interventions was required or in which the situation and likely outcome warranted such intrusion. For example, the occupational therapist intervened to directly assist Peggy (S3R) with planning her meal preparation by drawing her attention back to the task and providing her with assistance to identify the next step (6:24 and 8:09), which escalated the interventions provided in the previous minutes that had sought to have Peggy access information that might facilitate planning and provided a strategy to reduce distractions as she tried to plan (5:13 and 5:30).

On rare occasions where the occupational therapists considered there was a potential risk involved, they would rapidly escalate intervention or provide the most intrusive assistance of all, physical contact. For example, Miri (S3C) went to step off the kerb to cross a side street when a car was set to turn right off the main road into that street, across a stream of oncoming traffic. In response, the occupational therapist placed a hand on Miri's shoulder rather than providing an alternative form of assistance that might not have resulted in Miri halting, or waiting to see if Miri would modify the behaviour, or if the driver would accommodate the behaviour in a natural support (11:02).

Finally, occupational therapists from time-to-time also provided assistance as a first-line intervention, particularly later in assessment sessions when the clients'

performances and need for assistance might reasonably be predicted from prior performance. In doing so, the occupational therapists described how interventions prevented clients unnecessarily experiencing repeated failure that may cause an emotional reaction such as humiliation or resistance in the face of a lack of insight. In these ways, the provision of assistance was in keeping with the intention of *COMPLEAT*<sup>®</sup> to assess the support and assistance that would allow clients to experience success, rather than to elicit task break down in order to identify the limits of clients' performance capacities.

*(vi) Delayed or withheld assistance.* In contrast to situations in which occupational therapists intervened, there were situations in which the occupational therapists did not provide any intervention, despite demonstrated opportunities to do so. The most obvious reason for the occupational therapists to delay intervention was to allow their clients opportunities to recognise difficulties or errors and formulate and implement strategies or corrections. Delayed or withheld intervention also provided clients with opportunities or needs to show their capacity. Many clients were observed, particularly in the initial stages of a session, to be apt to ask for assistance because the occupational therapists were present, without necessarily attempting to resolve the difficulties or needs themselves. In such situations, the occupational therapists tended to withhold the requested assistance, perhaps facilitating performance and participation by indicating to the clients that they should attempt tasks themselves or, in the case of information seeking, asking a return question (e.g., 'What do you think?' or similar). In withholding intervention in this way, the occupational therapists were also able to convey their expectations to clients. Withholding or delaying intervention was thus an indirect way to facilitate participation.



*(vii) Response to client behaviour.* Finally, a number of observable instances of interventions by occupational therapists were in response to clients' behaviours rather than in response to situations related to the activities and tasks. That is not to say that the situations giving rise to other interventions were not partially or wholly attributable to client behaviours. Rather, this group of interventions was distinct from other interventions and similar to each other in that the interventions responded directly to the behaviour rather than the functional performance.

These formed a significant minority of interventions, albeit very unevenly distributed between the occupational therapist client dyads. This is perhaps not surprising given many of the participants were in neurobehavioural rehabilitation services that aim to increase participation by decreasing particular inappropriate behaviours that present as barriers to receiving assistance, engaging in activities, exercising choice, and interacting with others. These instances tended to be in response to difficulties that indirectly impacted on performance and restricted participation, rather than direct responses to difficulties with performance. In this respect they contrast with the other instances described in this section and are not further examined in this study.

#### *Element 2: Enabling therapeutic supports*

The second aspect of supporting clients' participation, enabling therapeutic supports, included facilitating any adaptive or specially designed strategies and supports implicated in the assessment session. For the purposes of delineating therapeutic supports from other interventions, the definition of assistive products and technology in the ICF was applied. That is, therapeutic supports were defined as those "adapted or specially designed for improving the functioning of the disabled person" (WHO, 2001, p. 173). These included both commercially available assistive equipment and other

supports that were specifically designed for the clients. For the purpose of this study, all adapted and specifically designed tangibles or explicit strategies were included in this category, irrespective of the level of technology (i.e., pen and paper through to customised power wheelchair). Therapeutic supports were sub-divided into (i) therapeutic equipment, (ii) personalised strategies and supports, and (iii) environmental cues and prompts.

In many cases therapeutic supports that were introduced, or at least supported, by the occupational therapists extended beyond the occupational therapists' responses within the assessment sessions. They may also have involved interventions by others. For these reasons they are important to consider as part of the occupational therapists' overall implementation of *COMPLEAT*<sup>®</sup> and considerations in the application of supports to participation, but were not a primary focus of the subsequent analysis in this study.

**(i) Therapeutic equipment.** Therapeutic equipment the clients were observed to use to facilitate participation included walking aids and orthotic devices, manual and power wheelchairs, wheelchair adapted passenger vehicles, glasses and 'white canes', perching stools,<sup>12</sup> and kitchen aids such as one-handed chopping boards<sup>13</sup> and cutlery with built-up grips. This equipment was in some cases prescribed by the occupational therapists, in which case assessment and practical training in their use was of direct relevance to the occupational therapy program. For other clients the equipment had been prescribed by other team members, or by other professionals seen by the clients concurrently with or prior to the occupational therapists. In any case, the functional

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<sup>12</sup>A high, height adjustable, stool or chair, usually with handles, that is intended to allow a person to rest whilst working at a bench or sink, usually in the kitchen.

<sup>13</sup>Chopping boards with spikes or clamps to steady the food so that a person can chop with the use of only one hand.

use of therapeutic equipment in everyday activities was of interest to the occupational therapists in assessing and planning interventions for optimising participation.

The interactions between the occupational therapists and clients often considered the use of therapeutic equipment, directly or indirectly. These ranged through all stages of the equipment provision and training processes, irrespective of the team member ultimately responsible for the prescription of a given item of therapeutic equipment. When introducing items of therapeutic equipment to some clients, the occupational therapists demonstrated negotiation with the clients that considered the impact on functional performance but also acceptability and the possibility that facilitating performance in one way with a piece of equipment might in another way restrict performance. Lazzaro's occupational therapist (S4R), for example, offered him a choice around the use of a piece of small equipment by saying to him, "Do you want to just use ordinary chopping boards, or do you want to use one on which you can use to steady items. The adaptive one. It's up to you today." (38:21). Lazzaro's response was to consider the options at the time of this offer, and when he came to a relevant step in the activity take up the adapted (one-handed) chopping board option, commenting on his first use, "It works very well" (47:09). As he continued, the occupational therapist allowed him some inefficiency in problem solving as he independently worked out when and how it was best to make use of the adapted chopping board, thereby demonstrating to the occupational therapist that this piece of equipment could assist his performance without the need for additional assistance that may counter-productively limit his participation. This contrasts with the dynamic as Simon's occupational therapist (S3R) assessed and supported his use of a perching stool for resting when working in the kitchen. In that case, the occupational therapist

observed the benefit Simon gained from using the perching stool, the safety risks when he did not use it at all or used it inappropriately, and that Simon's "lack of awareness of both the environment and his own difficulties limited his use of compensatory strategies" (narrative summary of the assessment). With this in mind, this occupational therapist therefore maintained a quite directive approach with Simon. For example, she moved the stool in front of the oven at which Simon was working and directed him to, "Have a sit down there." (24:25). The occupational therapist's approach was consistent throughout the activity and Simon intermittently appreciated the impact of the equipment, despite periodic frustration with it.

Even when clients had mastered the use of equipment as intended, it was demonstrated that an item of therapeutic equipment was not itself a solution to a functional deficit. In an example of insight into the limitations of a piece of equipment and an accompanying strategy that was reinforced by the occupational therapist, Greg (S3R) recognised that use of his white cane could not be relied upon to cross a busy pedestrian thoroughfare in which there were also known to be cyclists. Greg volunteered that to successfully navigate this situation he needed to adjust for the fact that the cyclists were relatively quiet and were therefore easy to miss among the sounds of a large number of pedestrians, whilst at the same time he did not stand out in that situation as he did alone on the edge of a roadway. As a result, Greg approached the situation with caution, respecting that a cyclist weaving through the crowd may still be moving at sufficient speed to cause injury to one or both of them in the event of a collision (25:35). In this instance, Greg was able to recognise and respond appropriately to the difficulty with using the equipment without assistance, but situational awareness and strategy use as illustrated in this example was the subject of

occupational therapy interventions for a number of clients. For example, the occupational therapist reminded Lachlan (S4R) they had been working on strategies for him to confidently, safely, and effectively mobilise in his power wheelchair in environments where there were many people and he needed to take in information, considering he tended to neglect information to his left. She said to him just before they left his unit, “Before we go, do you remember the last time we went, we talked about-”, and Lachlan cut in, “stopping” (7:45). The interaction continued, with the occupational therapist offering a couple of alternatives and acknowledging that Lachlan had previously indicated he did not wish to try one of those, the two exchanging perspectives, and then the occupational therapist suggesting and reinforcing strategies to complement his use of the power wheelchair. Lachlan was clearly engaged in this exchange, even starting to rehearse his actions in gesture as they spoke.

*(ii) Personalised strategies and supports.* Whether or not in conjunction with therapeutic equipment, the occupational therapists’ interactions with clients also accounted for personalised strategies and supports. In many respects similar to therapeutic equipment, personalised strategies and supports included those that were not commercially available for either general or disability-specific use, and that were individually created or adapted for specific clients. Examples observed included timetables, weekly menu plans, structured activity planning sheets, prompted or structured shopping lists, simplified recipes and customised step-by-step directions or checklists, picture communication systems, and activity diaries. Again the personalised strategies and supports observed through the routines were usually though not always established by the occupational therapists, and they were always of

interest to the occupational therapists in terms of impact on functional activities and participation.

As with therapeutic equipment, personalised strategies and supports were implemented to varying degrees of success during the assessment sessions. To that end, *COMPLEAT*<sup>®</sup> provided occupational therapists with a formal opportunity to examine the functional impact of those strategies. In some cases the strategies were well integrated into the routine, with clients themselves initiating the use of a strategy or support to avoid the need for additional assistance, thereby facilitating participation in situations where such assistance may not be available. Many clients were, however, clearly still mastering the application of strategies and supports, sometimes because the strategies and supports were newly introduced and still being trialled and actively trained by the occupational therapists, and sometimes because the strategies and supports required adjustment to meet the demands of the activities and environments. Whether they were strategies and supports implemented by the occupational therapists or other team members, the functional application across activities and environments observed in the *COMPLEAT*<sup>®</sup> routine provided valuable feedback to both the occupational therapists and clients on progress and needs. For example, Robbie (S3R) experienced difficulty communicating the detail of his message using his communication folder, described in the transcription as follows.

*When he points to a picture of a ham and cheese sandwich and then to ham (but not to cheese), the occupational therapist interprets 'ham sandwich'.*

*He tries to point to the cheese in the picture of the ham and cheese sandwich, neglecting the picture of cheese next to the sandwich. The occupational therapist assists him to identify pictures [that correspond to*

*the intentions indicated in text attached to each picture] in his communication folder to communicate his plan. (3:18)*

In the debriefing following the session, Robbie's occupational therapist noted this difficulty, as well as the restricted situations in which it was practical for Robbie to use his communication folder at all, and highlighted the implications of these issues for his rehabilitation program and her interventions.

Even where clients demonstrated good use of strategies to compensate for specific deficits, the routine of interconnected activities provided the occupational therapists with opportunities to observe how most demonstrated limited ability to generalise those strategies from one situation to another, or to use the knowledge of strategies that had worked in one situation to identify strategies to overcome novel problems in another situation. For example, despite demonstrating good situational awareness and strategy application when opening familiar packaging or navigating familiar environments (e.g., navigating among cyclists, above), Greg (S3R) demonstrated difficulty with problem solving. This was evidenced in Greg failing to take a systematic approach nor to appropriately identify his needs and seek assistance when navigating a small convenience store with which he was less familiar, or trying to identify relevant features of items in the kitchen (e.g., the microwave buttons) where support staff usually led the activity. This exemplified Greg's pervasive difficulties with planning and organising resources, which was identified above as a difficulty many clients demonstrated and that was the target of many of the occupational therapists' direct interventions.

As with therapeutic equipment, given that personalised strategies and supports were not always effectively implemented by clients, and that most clients demonstrated

limited generalisation, these factors were important to consider in a functional context in order to assess clients' participation. This was highlighted for the occupational therapists through the use of *COMPLEAT*® in a number of instances. In addition to the directly observed considerations of personalised strategies and supports, the occupational therapists at times reflected back on the indications throughout the dynamic assessment that clients would benefit from new personalised strategies or supports, improvements to the functional application of current strategies or supports, or cessation of ineffective strategies or supports.

*(iii) Environmental cues and prompts.* Cues and prompts were also commonly employed to highlight features of the environment or to provide information to assist task performance. Common examples included labels on cupboards and drawers to indicate their contents, and the posting of instructions relating to the use of appliances such as ovens alongside those appliances. The need for these enabling supports by the occupational therapists demonstrated that the presence of an environmental cue or prompt often did not in itself facilitate participation.

Cues and prompts added to one environment did not always enable the application of a conscious strategy by which the clients might use cues and prompts available in another environment. For example, Samuel (S1R) was “able to use cupboard and drawer labels efficiently” during the meal preparation activity in the kitchen environment in which he had regularly engaged in activities, but was prompted to use aisle labels and “look for visual cues to locate shelves” during the shopping activity in the supermarket, which was a less familiar activity and environment (*COMPLEAT*® assessment form).



On occasion, a visual prompt in the environment intended to support safe participation by all clients interrupted the performance of a particular client. For example, Sean (S3R) was distracted from the task mid-way through his meal preparation by washing his hands when not required by the task, seemingly in response to a sign in the kitchen instructing clients to do so. After this initial distraction, he then continued with conversation and repeated drying of his hands until the occupational therapist intervened with a prompt to return to the task (observer notes [no video recording]). In this respect, *COMPLEAT*® illustrated for the occupational therapists the need to consider the likely impact on other clients when introducing cues and prompts to the shared residential rehabilitation and supported living environments commonly occupied by these clients.

### *Element 3: Enabling 'everyday' environmental supports*

The third and final element of supporting clients' participation encompassed enabling the 'everyday' environmental supports encountered by the clients. These were categorised thematically as (i) other people, (ii) features of the physical environment, (iii) information, and (iv) natural consequences. Whereas the interventions and supports described to this point have related to occupational therapists and other rehabilitation team members, this last element addresses the supports clients interacted with in the 'everyday' environments in which the assessment sessions occurred. As features of everyday environments, everyday environmental supports extended beyond the assessment sessions and remit of the occupational therapists. This section provides an overview to indicate the scope of supports identified in the assessment sessions for the occupational therapists to consider when selecting complementary

interventions and supports to implement themselves, scoring observed performance, and considering interventions and generalisation to other environments.

*(i) Other people.* Support from others was noted by the occupational therapists to be a frequent occurrence in everyday interactions, irrespective of whether or not a person has a visible disability. Supports of this nature observed with these clients included pro-social behaviours such as one person holding open a door for the next, or a driver stopping on the approach to an intersection or in a car park to allow a pedestrian to cross. Natural supports also arose when other people, including peers and occupational therapists who were engaged in shared or parallel activities, modelled behaviours that the clients could follow, such as queuing for service or procedures for the use of a self-serve checkout. Occasionally the behaviours modelled were not the most efficient or accurate, such as queuing when there was a counter free, which reinforced that there is a range of behaviour displayed in the general population and that people attend to the modelling of others as well as to features of tasks and non-human environments.

In addition to incidental social supports, the clients benefited from support provided by a range of people occupying paid support roles, from client- and disability-specific support personnel such as rehabilitation and support workers to general service staff in the community such as supermarket checkout staff. In some cases these staff anticipated or recognised clients' needs and provided support. In some cases staff and clients had an established routine of support that was provided on an ongoing basis without the need for a specific request, such as in the provision of medications by support staff at the required times. In other cases the client was required to instigate seeking support, such as by gaining the attention of and explaining the problem to a store attendant in order to resolve an issue with self-serve checkout technology, or to

access items such as hot beverages and foods, cigarettes, lottery products, stamps, and other products that need to be ‘ordered’ rather than accessed by self-serve in a store.

Finally, additional social supports were at times afforded to clients with visible disability or where there was otherwise some hint that there may have been some difficulty. Unfortunately some clients and occupational therapists reported clients feeling prejudiced against or having faced anti-social incidents because of visible signs of disability or difficulty. While no incidents were observed, the impacts of such experiences were noted by the occupational therapists to have influenced some clients’ choices with regard to engaging in activities in the community, as was observed with Lawrie’s (S4R) choice of location to shop, attire to wear, and behaviour while in the community (*COMPLEAT*® assessment form).

*(ii) Features of and products in the physical environment.* The accessibility of the environment and presence of “products and technology that are a support/barrier to this client’s performance” are noted on the *COMPLEAT*® forms and therefore attention to these is prompted in a *COMPLEAT*® assessment. From the observations, physical features and products often impacting on clients’ ability to navigate the environment included the width, gradient, surface, lighting, and marking of walkways and entrances in public spaces, as well as the presence of road markings, traffic islands, and traffic lights (and the accompanying driver behaviours) on busy streets. As a result of similar accessibility standards to support access to public places by people with a range of abilities and needs in both Australia and England, high traffic public spaces were often physically accessible, particularly if upgrades had occurred since access standards were adopted. These environments included features such as kerb cut-outs, smooth and graded concrete or paved pathways, handrails, ramps, escalators, lifts, accessible

bathrooms, accessible parking, audible and tactile alerts on pedestrian traffic lights, and tactile paving signalling hazards or navigation routes on walkways. However, it was observed in this study that accessibility could by no means be relied upon in areas constructed prior to the adoption of such standards, or in relatively low pedestrian traffic areas such as suburban streets between homes and transport routes or shops, where topography also had a significant impact on accessibility and whether accessible features had been constructed (a factor particularly noticed in hilly regions of Sydney).

Design for wheelchair accessibility and impaired gait was far more commonly observed than design for other difficulties with mobility such as endurance, speed, balance, or coordination, let alone design to accommodate other difficulties such as with vision and perception, information processing, memory, or anxiety. Individuals' needs also varied over time with fatigue, health, load carrying, the model and condition of therapeutic equipment being used, et cetera. Ultimately the participation of a given client in a particular space was dependent on the weakest link in accessibility with respect to the individual's needs in that situation. Impediments to access often included the absence of design features, but also included rarely noticed problems with implementation such as the angle at which a road and gutter cut-out met when the road had been upgraded since the original accessible design.

In some cases, the occupational therapists were interested in assessing their clients' decisions and appropriate uses of available supporting features and products in the environment that could be used selectively. For example, the occupational therapist indicated to Peggy (S3R) the expectation that she would "cross at a safe place" as she approached a particular road on her way to the store (10:57), and Peggy did cross

safely. On her return Peggy approached and waited at the other side of that same road before deciding that there were too many cars at that time and so she walked up to the intersection and used the traffic lights to cross (21:23). The occupational therapists were sometimes hesitant to draw conclusions about clients' safety in independently navigating community environments given the dynamic nature of clients' needs, activity situations, and environments.

Finally, features and products of the physical environment intended for one purpose were also at times used by clients for another purpose in support of specific needs. For example, Atid (S3C) used the sound emitted by checkout scanners as each item is processed, which is intended to acknowledge an item has been successfully scanned, to navigate in the supermarket using auditory rather than visual cues (24:28). This highlights yet again the dynamic and personalised uses of design features that can facilitate or restrict participation.

**(iii) Information.** Given the importance of information and knowledge in the performance of tasks and activities by these clients, the availability of information in the 'everyday' environment was noted as a particular support for a number of clients in this study. Clients were observed to access information, independently or with the assistance of the occupational therapists, from sources including bus timetables and bus stop route and timetable signage, shopping centre directory posters, aisle signage in supermarkets, advertising, directions on packaging, and through their own resources and the use of pen-and-paper to record shopping lists and other information. As with features and products of the physical environment, the occupational therapists noted the availability of information in the environment as a factor in the *COMPLEAT*®

assessment as it applied to the individual client and where it was noted to explicitly impact on performance.

Again, the design of products and environmental features was not always accommodating of the information needs of these clients, including those with impaired vision but also those with reading disability or other cognitive impairments. For example, the accommodating design of one brand's packaging compared with another became apparent when Ryan (S3R) had difficulty in identifying if a package of produce met his needs. He complained to his occupational therapist, who was trying to have him consider an alternative option, "I can't see what they [the produce items] look like", described in the transcript as 'referring to their packaging not being transparent' as was the packaging of another, more expensive, brand (20:13). This was a particular impedance to his performance as he was not able to problem-solve another way to ascertain the information he required to make his decision within the constraints on the task (particularly his limited budget) and therefore required intervention (20:31). Other clients required clear and obvious information such as signage and instructions to compensate for difficulties with memory, information processing, problem-solving, reasoning and so on.

*(iv) Natural consequences.* Finally, for some clients the natural consequences of their actions provided support to modify their performance. The opportunities for this to occur were remarkably limited, however. In many situations the consequences of clients' actions and/or the next opportunity to modify performance were delayed. Thus, even where clients were allowed to proceed to experience a consequence, the impact of that consequence on subsequent performance was unclear. For example, the occupational therapist several times clarified if Robbie (S3R) intended to make three

sandwiches for lunch (e.g., 22:46 and 36:30), but allowed him to go ahead and prepare a large meal and experience feeling very full having eaten it all (a feeling Robbie expressed at 1:16:24, a considerable delay). Given that there was a delay between him preparing the meal and experiencing the feeling of fullness, and then the next opportunity for him to prepare a meal and modify his performance was not until the following week, the impact of this approach on his learning and subsequent performance was unclear.

In many situations natural consequences were observed to be insufficient to support clients' participation. For example, the appliances used by a number of clients required multiple steps to set and then provided only delayed feedback. The combination of the task complexity and temporal disconnect between the particular error and the consequences was often a barrier to clients using the consequences as feedback to facilitate performance. As a result, clients required intervention to assist to operate such appliances in instances where they failed to recognise and/or respond to the problem given the delayed feedback (e.g., Prue, S3R, 21:54), or recognised but were not able to solve the problem (e.g., Greg, S3R, 32:35).

Finally, natural consequences may not be suitable to allow clients to experience at all in a range of situations in which they place the client at unacceptable risk of an undesirable physical, emotional, or activity outcome (e.g., physical injury, distress from a misadventure, spoiled or unsafe food, or insufficient time to finish a task or routine given other demands). The possibility of these outcomes occurring saw occupational therapists intervene before the opportunity for the client to experience the natural consequence on many occasions.

### *Main findings in the interpersonal plane*

The interpersonal plane of analysis examined the occupational therapists' interactions with clients in the context of their environments and activities through instances observed in video recordings of *COMPLEAT*® assessment sessions with clients, debriefing discussions with the occupational therapists, the *COMPLEAT*® assessment forms, and narrative summaries of the assessments. Three elements in occupational therapists' actions facilitated their clients' participation: (i) responses to situations arising in the course of the assessment; (ii) enabling therapeutic supports available to the clients; and (iii) enabling everyday environmental supports.

As direct strategies, the occupational therapists' responses to situations arising in the course of the assessment are the focus of this study on how occupational therapists facilitate their clients' participation. Five apparent purposes for these actions were identified and described (information and knowledge giving, strategy provision, encouragement and reassurance, feedback, and assistance to execute a task or step). Together these encompass the observed, direct interventions by occupational therapists to facilitate clients' participation. A further two responses by occupational therapists (delaying or withholding intervention, and managing client behaviours) indirectly facilitated participation. Finally, the occupational therapists also noted and enabled therapeutic and everyday environmental supports that intersected with their direct actions to facilitate clients' participation. The direct responses are of particular interest in this study and will be explored in more depth in the following chapter, with all of these findings together expanding the understanding of the occupational therapists' contributions in an inherently sociocultural activity in light of the personal and community planes to be examined in the remainder of this chapter.



### **Personal Plane: Occupational Therapists' Engagement with *COMPLEAT*<sup>®</sup>**

Since the observations examined in the interpersonal plane were collected during *COMPLEAT*<sup>®</sup> assessment sessions, they were dependent on how the occupational therapists applied *COMPLEAT*<sup>®</sup>. Specifically, *COMPLEAT*<sup>®</sup> being a dynamic assessment, the occupational therapists' individual skills and beliefs influenced the joint activities. How the occupational therapists reconciled their skills and beliefs with their new learning and with the *COMPLEAT*<sup>®</sup> assessment materials was the subject of the personal plane of analysis.

Many aspects of applying *COMPLEAT*<sup>®</sup> were familiar to these occupational therapists. The influence of the personal plane was most evident upfront in negotiating the *COMPLEAT*<sup>®</sup> approach to setting and agreeing expectations with clients, demonstrated more broadly in implementing the dynamic assessment, and further revealed in approaches to building and maintaining relationships with clients. These points of influence were addressed to varying degrees with the occupational therapists through the training and assessment session briefings and debriefings. They are important to this study as they impacted on the occupational therapists' interactions with clients while implementing *COMPLEAT*<sup>®</sup>, the subject of the interpersonal plane just examined. As an inseparable dimension of the sociocultural activity, the reconciliation of occupational therapists' individual skills and beliefs with their adoption of *COMPLEAT*<sup>®</sup> also informs the interpretation of findings in the following chapter, despite not being a continued focus in and of itself. Each element is therefore summarised in turn through this section.

### *Element 1: Setting and agreeing expectations with clients*

A topic all of the occupational therapists discussed extensively, particularly in the training, was the manner in which expectations for the *COMPLEAT*® assessment session were set and agreed with clients. Speaking from their knowledge and experience, occupational therapists explained that some clients resist becoming engaged in formal assessment. As a result the occupational therapists perceived there to be inequalities in the use of many standardised assessments with clients with memory and other cognitive impairments. The occupational therapists reported that these made it difficult to interpret findings of formal and standardised assessments, and led to a preference for informal observations. Looking ahead to implementing *COMPLEAT*®, they were keen to explore how to support client-centred practice by engaging clients in an evaluation of relevant aspects of performance in functional situations. They reflected on how the *COMPLEAT*® materials highlighted for them the need for clients to have some level of understanding of the purpose of the session in terms of their rehabilitation programs (as well as the research) as a basis for executing some degree of choice in the assessment. Therefore they were attentive to adequately setting and agreeing their expectations with clients.

The training and *COMPLEAT*® materials addressed the balance between providing clients with information for understanding, and the opportunity to observe cognitive aspects of performance relevant to participation beyond the assessment. The occupational therapists were provided guidance on the points about which each client should be briefed prior to the assessment, and the need to withhold some level of detail. For example, the *User Guide* noted, “It is important that clients are briefed with sufficient detail that their performance can be evaluated against the observer’s criteria, but

without so much detail that there is no opportunity to observe planning, decision-making, and problem-solving” (Version 2.6, p.7). For occupational therapists participating in later stages of the study, the flexibility of the approach was made explicit with the *User Guide* offering the express indication that, “these points can be communicated by any means the client can understand and use” (v2.6, p.7).

The occupational therapists identified with and expanded on the guidance presented, expressing that they placed high value on the perception that *COMPLEAT*<sup>®</sup> was fair to clients. They reflected on their perceptions of other standardised assessments, and those familiar with assessments such as the AMPS and MET were unanimous in volunteering their hesitancy in using them with particular clients in this group. In relation to these two assessments in particular, they indicated that the standardised tasks were often not appealing or familiar to clients, and therefore it was difficult to engage clients and to interpret whether difficulties arising were attributable to novelty in the assessment or difficulties with performance that had implications for participation. The occupational therapists were keen for any assessment requirements to be able to be interpreted in relation to clients’ participation in everyday activities in everyday settings. To aid their interpretation of assessment findings, they wanted to account for clients’ understandings of the expectations and familiarity with or preference for particular approaches to activities, as well as cognitive impairments. They were concerned that with many standardised assessments they were not able to make adaptations to the instructions provided for the purpose of the assessment, or that such adaptations were scored as assistance despite seeming to reflect ‘artificial’ requirements of the assessment the occupational therapist had chosen rather than clients’ participation. Further, they felt that clients should not automatically be

‘penalised’ simply for not conforming to occupational therapists’ requirements, since these may not be understood or immediately relevant to clients’ personal situations. The occupational therapists preferred to have flexibility in how they engaged their clients and provided any necessary instructions to minimise the likelihood clients would choose not to follow directions, or forget the directions and substitute familiar approaches. They liked the concept of meaningful routines and their dynamic involvement during the *COMPLEAT*® assessment. They felt these features of *COMPLEAT*® would simplify their interpretation of the impact of difficulties observed on functional performance and participation in clients’ usual contexts.

The occupational therapists’ approach to balance flexibility and evaluation needs in implementing *COMPLEAT*® was evident in therapist-led interactions during the assessment sessions with clients (cf. occupational therapists’ responses to situations discussed previously). The occupational therapists were observed to respond to their clients’ individual needs as they set and agreed the expectations against which performance would be assessed during each session. They applied individualised strategies with each client to convey the *COMPLEAT*® instructions and pre-emptively address the queries and problems they considered may arise during the session, accounting for the individual client, activities, and contexts. Applied according to the clinical reasoning of the individual occupational therapists, communication and negotiation around expectations was evident not only at the beginning of sessions, but at transitions between activities, and where individual and cultural interpretations might vary. For example, the occupational therapists would establish with clients if differences between observed and expected behaviour were deliberate choices.

Sometimes this led to explanations indicating a client's active choice and, in other cases, to agreement and modification of the behaviour.

Even though raising a matter to establish an expectation may itself serve as a cue or prompt, the occupational therapists were able to integrate these negotiations during the dynamic assessment such that they still felt able to rate their clients' performances. Whether or not leading to a change in behaviour, once the expectations were expressed by the occupational therapists and understood by their clients, the occupational therapists could assess performance in a manner consistent with the value they placed on fairness. Allowing this to occur throughout the assessment session enabled specific expectations to be established at a level of detail that could not reasonably be anticipated and negotiated prior to the session starting, and reduced the reliance on clients' recall of the instructions and agreements. The occupational therapists therefore felt comfortable and confident that they were able to assess clients' performances from a position where each understood the other's preferences and expectations; a position that the occupational therapists expressed made them feel reassured the assessment reflected their clients' life situations and preferences, consistent with client-centred practice.

Similarly, though not the subject of explicit discussion in the training, the occupational therapists were observed to use their interactions during the assessment sessions to seek information from clients regarding factors not directly observable. One scenario in which this was often evident was with occupational therapists probing for additional information regarding clients' intentions or expectations, often where clear expectations had not been negotiated, in order to understand clients' cognitive processes. Even though the act of probing could again assist the clients' planning

processes, this allowed the occupational therapists to assess functional performance with less reliance on assumptions about underlying cognitive processes. The occupational therapists (and researcher later coding the instances) then needed to weigh up the extent to which the support provided was incidental to the process of assessment versus providing assistance to compensate for difficulties. While such pre-emptive supports did not allow observation of the point at which clients initiated actions themselves, the occupational therapists weighed this against the value of assessing their clients on the basis of a greater understanding of the cognitive processes, and observing their clients' responses to their actions in a dynamic assessment.

#### *Element 2: Implementing a dynamic assessment*

Providing support and assistance during the course of a *formal* assessment was a novel approach for these occupational therapists. None raised the term 'dynamic assessment' and this term was not introduced by the researcher or in the training or manual. Nonetheless, the general principles of dynamic assessment were familiar to these occupational therapists since they made extensive use of observation and provided support to the performance of daily activities as a core component of their roles. They were generally cognisant of the need to weigh up the provision of supports to enable a successful outcome for the client (an immediate objective of the session) against the need to observe difficulties, self-generated strategies, and the use of available supports, in order to make an assessment of participation (the broader aim of *COMPLEAT*<sup>®</sup>). The implementation of a dynamic assessment, if not in those terms, was therefore a major point of discussion with the occupational therapists in the course of this study. The occupational therapists were keen to reconcile their values with their

expectations of formal assessment to understand how to use *COMPLEAT*® to assess clients' needs and to plan interventions, and sought additional guidance on the interventions they should provide their clients in the course of the assessment through the discussion of examples throughout the training and debriefing sessions.

As a first step, the *COMPLEAT*® *User Guide* offered the occupational therapists a checklist for pre-planning an assessment session that sought to identify “any specific concerns ... that would warrant preventing the client from attempting any aspect of any activity, or require specific assistance” (v2.6, p.6). The purpose of this checklist was primarily to ensure any safety concerns were addressed, with the occupational therapists specifically prompted to consider:

- Communication to receive instructions and assistance, and to express needs and ideas;
- Indoor mobility / gross motor skills, including carrying glassware, liquids, et cetera;
- Fine motor skills and safety (including cognitive/behavioural considerations) with sharp and/or hot objects;
- Outdoor mobility, including negotiation of uneven surfaces, crowds, traffic, et cetera;
- Management (including cognitive/behavioural considerations) in social, unfamiliar, stressful, or other situations;
- Negotiation of relevant transport;
- Swallowing, eating and drinking; and
- Day-to-day personal health management (medications, fatigue, seizures, etc.).

This early and explicit prompt was broadly consistent with usual approaches in many of the services and particularly the residential rehabilitation services where risks were

perceived to be greater and additional procedural requirements were sometimes needed, such as to formally request to vary restrictions on clients who were ‘scheduled’ for rehabilitation under mental health treatment legislation. The checklist in the *User Guide* ensured that every occupational therapist considered supports and assistance that may be required in each assessment session, yet did not guide the nature of those supports and assistance.

In discussing further the nature of interventions that might be provided during the course of the assessment, the emphasis was on the occupational therapists’ expertise and freedom to apply their clinical reasoning. To satisfy the occupational therapists’ desire for guidance, examples of the flexibility of approaches were given with reference to a discussion of cues and prompts, since these were generally familiar to the occupational therapists. Because these terms can be used slightly differently, information was appended to the *User Guide* on the definitions of terms. The training and *User Guide* then covered the variety and combinations of cues and prompts that an occupational therapist might provide a client, arranged roughly in a hierarchy from the least to most intrusive (see Table 4.1).

To illustrate the flexibility with which cues and prompts might be applied, a contrast in assessments and approaches to cognitive rehabilitation with which the occupational therapists would be familiar was given in the training and *User Guide*. Specifically, the occupational therapists were instructed to consider how cues and prompts are often suggested in a hierarchy from the least to most intrusive intervention, resulting in a client receiving the minimum necessary intervention in order to succeed in performance. The aim of such grading from least to most, it was suggested, is to have as few artificial cues and prompts as possible to facilitate fading these over time to



**Table 4.1: Definitions and Hierarchy of Cues and Prompts**

<b>Cue:</b> <i>A stimulus for action to occur</i>	
<b>Prompt:</b> <i>Further information or assistance to elicit an appropriate response to a cue</i>	
LESS INTRUSIVE <sup>a</sup>	
Types of cues and prompts	Examples observed in this study
Highlight	Contrast strip on the edge of a cupboard
Visual	A sign to remind a person to complete a step
Non-verbal / Gestural	Holding the required tool out to the person
Verbal <sup>b</sup>	A spoken cue or prompt
non-specific	‘Hmmm’
non-specific open question	‘What next?’ where there are multiple options
specific open question	‘What are you going to do now?’
specific closed question	‘Are you going to butter the bread?’
non-specific direction	‘Start preparing your lunch now.’
specific direction	‘Spread the margarine on the bread.’
Modelled	Demonstration of the required action
Physical	A nudge through to complete physical guidance
MORE INTRUSIVE <sup>a</sup>	

*Notes.* <sup>a</sup> While these are roughly in order of least intrusive to most intrusive, the amount of assistance provided by any given cue or prompt will depend on the task and the needs of the person, including skills, abilities, knowledge and learning and communication styles. <sup>b</sup> Cues and prompts, particularly verbal, are considered non-specific if they are general in nature with more than one possible response and specific if they have a defined correct response. Likewise, questions are considered open if they require the person to generate a response and closed if the response is limited by the question, as in a yes/no question.

optimise generalisation. In contrast, a hierarchy of most to least intrusive interventions is employed in other situations such as in ‘errorless learning’ protocols with clients with severe memory impairments<sup>14</sup>. The aim of that approach, it was discussed, is to increase the efficiency of learning by preventing mistakes the client then has to ‘unlearn’ in order to succeed. Discussing this contrast during the training reinforced to the occupational therapists the place of their clinical reasoning in implementing *COMPLEAT*<sup>®</sup>.

The occupational therapists used an adaptive approach during the assessment sessions, as demonstrated in the range of supports and assistance described in the interpersonal

<sup>14</sup>For example, as described by Wilson (2002).

plane, reflecting that *COMPLEAT*<sup>®</sup> is not intended to direct their clinical reasoning with respect to the interventions from which individual clients may benefit. In debriefing and scoring sessions with the occupational therapists, the focus on identifying the degree and nature of support and assistance required for successful performance—and implications for broader participation—was repeatedly emphasised. In this respect this dynamic assessment varied from traditional approaches to identify the extent of difficulty with (or point of failure in) an activity. Whilst the concept was comfortable for the occupational therapists, the application of the rating scale to quantify the impact rather than merely describe the performance was a new experience and it was at times difficult for the occupational therapists to appreciate the connection between trialling different interventions to support and assist clients within the assessment session, and implications for the assessment of participation and intervention planning.

### *Element 3: Building and maintaining relationships with clients*

Finally, the application of interactions with clients to build and maintain relationships for the purposes of ensuring engagement in the extended assessment sessions was discussed with the occupational therapists and observed in practice. Initially this concept was introduced to occupational therapists during the training to highlight that with *COMPLEAT*<sup>®</sup> employing an extended observation it was likely to be necessary to include some interaction with the client to maintain a comfortable yet professional, evaluative stance that would encourage continued engagement and avoid frustration with being ‘tested’ over an extended period. Specifically, an example of an occupational therapist wiping the dishes dry as the client washed was discussed in the training sessions, highlighting the opportunity for the assessment up to that point in the

routine to be used to ascertain the level of support the client required for wiping the dishes dry, but the potential need to leave the dishes for the client to put away in order to be able to assess that step.

In practice, many examples were observed where the occupational therapists prioritised engaging with their clients over observing every task, including the washing up example discussed in the training. In particular, the occupational therapists were observed to provide encouragement or reinforcement to foster engagement in the assessment and not only in response to situations and to overcome difficulties as previously described as an intervention. For example, after a series of instances in which assistance had been provided or when the occupational therapist had withheld assistance to challenge a client, the occupational therapist might later provide encouragement or reinforce an appropriate action or plan as a positive interaction. Unlike direct interventions, such interactions were not necessary to facilitate participation, but rather served to lighten the interaction and maintain a warm relationship between the occupational therapist and client. Likewise, where clients indicated that a task or step was difficult or had requested assistance that was withheld, and then proceeded to complete the step, occupational therapists were apt to reinforce their clients' performance. The reverse was also true in that occupational therapists would sometimes provide experiences of choice or success when it might reasonably have been anticipated that a difficulty would soon arise or assistance would be sought. Whilst undoubtedly supportive, these behaviours were nonetheless not direct interventions to situations in the assessment sessions. Still, they were likely a significant factor in maintaining relationships with clients for the duration of the

assessment sessions and throughout interventions to challenge and improve performance.

The significance of including incidental interactions during an assessment was expressed by the occupational therapists as they explained their hesitation in using formal assessments with a significant proportion of clients, including those who experienced anxiety, lacked insight, demonstrated challenging and controlling behaviours, or for some other reason were reluctant to engage with rehabilitation and in any activity that was not immediately meaningful. It was observed to often take focus and effort from the occupational therapists to achieve the balance to keep these clients engaged while allowing for assessment and this was achieved to varying degrees with the clients in this study. The impact of being able to support both the performance and relationship aspects of the assessment with *COMPLEAT*<sup>®</sup> was demonstrated as the occupational therapists on occasion explained they were able to recruit to the study and assessment (albeit sometimes without video recording) clients who had previously demonstrated reluctance to engage in formal assessments. While one client expressed that she could not see the relevance of the activities and asked for the video recording to be stopped, a similar reaction as she had to other occupational therapy sessions, none withdrew from a *COMPLEAT*<sup>®</sup> assessment with the occupational therapist once started. This included examples where occupational therapists reported that previous attempts at formal assessment had broken down due to the stress arising from the formal and distant nature of the interactions during tasks that lacked meaning for the client. That is, the occupational therapists were able to successfully apply their reasoning and skill when using *COMPLEAT*<sup>®</sup> with clients whose performance was otherwise challenging to assess.

### *Main findings in the personal plane*

The personal plane of analysis examined how the occupational therapists used *COMPLEAT*® given their personal skills and beliefs. There were three major elements uncovered in the topics on which the occupational therapists sought guidance and clarification, demonstrating their interpretation of the intent of *COMPLEAT*® and reasoning for their actions observed in the interpersonal plane. The first was setting and agreeing expectations with clients. The occupational therapists' interactions for this purpose were observed not only at the beginning of the assessment sessions but at various intervals throughout in order to pursue a common understanding of expectations as the basis for assessing performance. The second was the adaptive approach to the provision of supports and assistance as the occupational therapists implemented the dynamic assessment. Cues and prompts were the most frequently discussed support and assistance as well as being the most frequently observed in the assessment sessions. However, the flexibility for the occupational therapists to employ all kinds of supports and assistance in order to enable performance and assess from a dynamic perspective was valued. This contrasts with the intent of many assessments to identify the extent to which the client struggles and even fails to perform an activity, and was seen to add to the capacity to engage clients and interpret practical implications of the assessment. Finally, the occupational therapists also negotiated applying their discretion to interactions in order to build and maintain relationships with clients. As a result the occupational therapists were able to conduct *COMPLEAT*® assessments with a wide range of clients.

### **Community Plane: Occupational Therapists' Roles Implementing *COMPLEAT*<sup>®</sup>**

The third and final plane of analysis, the community plane, specifically considered the purposes the occupational therapists were fulfilling within their teams and professional communities as they engaged in conducting assessments of their clients using *COMPLEAT*<sup>®</sup>. Insofar as they shape these purposes, features of the occupational therapists' community contexts such as their teams and role expectations, influenced the sociocultural activity of engaging with their clients in the *COMPLEAT*<sup>®</sup> assessment sessions. Accordingly, this final section of the chapter describes observations of the occupational therapists' approaches to the dynamic assessment and facilitating participation, and their responses to *COMPLEAT*<sup>®</sup> throughout the study, considered in light of their positions and roles.

#### *Occupational therapists' roles*

The occupational therapists in this study operated in four broad roles as they worked with their clients and implemented and interpreted each *COMPLEAT*<sup>®</sup> assessment, the features and major tasks of which are summarised in Table 4.2. Those occupational therapists in the service with a general rehabilitation model were operating in a short-term rehabilitation role. In their positions, all clients were seen by at least two multidisciplinary team members, only some clients had brain injuries, and all clients were living in their own homes with minimal if any support beyond their families. The remainder of the occupational therapists were in services with a neurobehavioural rehabilitation model where the clients all had brain injuries and typically had multiple and complex needs. Occupational therapists in community settings with a neurobehavioural rehabilitation model were in low-intensity services but, unlike their general rehabilitation peers in community settings, they were typically in consultant

**Table 4.2: Occupational Therapists' Roles**

<b>General Rehabilitation</b>		<b>Neurobehavioural Rehabilitation</b>		
<i>Short-Term Rehabilitation</i>		<i>In-depth Assessment</i>	<i>Medium-to-Long-Term Rehabilitation</i>	<i>Community Rehabilitation Consultant</i>
<b>Setting</b>	<ul style="list-style-type: none"> <li>• Not diagnosis specific</li> <li>• 6-weeks following hospital discharge</li> <li>• Multidisciplinary team</li> <li>• Clients' homes</li> </ul>	<ul style="list-style-type: none"> <li>• Neurobehavioural focus</li> <li>• 12-week comprehensive assessment</li> <li>• Multidisciplinary team</li> <li>• Residential rehabilitation unit</li> </ul>	<ul style="list-style-type: none"> <li>• Neurobehavioural focus</li> <li>• 12-week rehabilitation cycles repeated according to need</li> <li>• Multidisciplinary team</li> <li>• Residential rehabilitation unit</li> </ul>	<ul style="list-style-type: none"> <li>• Neurobehavioural focus</li> <li>• Low intensity outreach service</li> <li>• Team with support workers</li> <li>• Clients' homes and supported houses</li> </ul>
<b>Major Tasks</b>	<ul style="list-style-type: none"> <li>• Provide goal-directed rehabilitation</li> <li>• Prescribe equipment and arrange minor home modifications</li> <li>• Record activities &amp; outcomes</li> <li>• Contribute to team meetings</li> <li>• Communicate with primary &amp; community care providers</li> </ul>	<ul style="list-style-type: none"> <li>• Evaluate client function/needs</li> <li>• Identify, evaluate, &amp; suggest guidelines for safety risks</li> <li>• Guide care &amp; support staff, including with formal guidelines</li> <li>• Contribute to team meetings</li> <li>• Contribute designated sections to comprehensive reports</li> </ul>	<ul style="list-style-type: none"> <li>• Implement pre-approved goal-directed rehabilitation plans</li> <li>• Individual &amp; group interventions</li> <li>• Guide care &amp; support staff, incl. with formal guidelines</li> <li>• Contribute to team meetings</li> <li>• Contribute designated sections to comprehensive reports</li> </ul>	<ul style="list-style-type: none"> <li>• (Re-)Evaluate function &amp; needs, update support arrangements, consider clients' new activities</li> <li>• Consult with &amp; support those working with clients regularly</li> <li>• Oversee rehabilitation programs implemented by support workers</li> </ul>

rather than direct rehabilitation roles. These occupational therapists may have been the only team members working with their clients. Occupational therapists in residential rehabilitation settings with a neurobehavioural rehabilitation model, who constituted the majority of occupational therapist participants in this study, were in higher intensity services performing in-depth assessment and medium-to-long-term rehabilitation roles. In most cases they were switching between these roles depending on the status of the particular client. These occupational therapists were in multidisciplinary, psychology-led, rehabilitation teams.

#### *Influences on their approaches to implementing the assessment*

Across all of the occupational therapists, two general approaches to interacting with clients around assessment and evaluation were observed, marked by differences in style during usual practice and while implementing and interpreting *COMPLEAT*<sup>®</sup> assessments. Specifically, some occupational therapists adopted a neutral stance to observation, shadowing and supervising clients and interacting only when required to ensure clients' safety or the successful progression of the routine. Other occupational therapists assumed a participant-observer approach, interacting with clients throughout the assessment, seeking additional information, engaging clients in considering opportunities for interventions, and actively working on their relationships with clients. These differences distinguished the processes the occupational therapists took to appraising the particular supports they would provide to their clients during the dynamic assessment, and to making plans for interventions after reflection and interpretation of the *COMPLEAT*<sup>®</sup> assessment. The occupational therapists' supports as they implemented *COMPLEAT*<sup>®</sup> (as examined in the interpersonal plane) were similar in nature irrespective of their approaches, being influenced by the



*COMPLEAT*® training and their engagement with the concepts as outlined in the personal plane as well as their shared experience and knowledge as occupational therapists. The occupational therapists' approaches did, however, influence their reflection and interpretation of the implications of *COMPLEAT*® for intervention.

In describing their own approaches, the occupational therapists spoke of being influenced by how well they knew their clients. They felt more comfortable with a participant-observer approach when they had some knowledge of their clients on which to base their levels of support and to make judgements about the levels of necessary versus incidental supports or interventions. Experience was also observed to be an influence, with more experienced occupational therapists more comfortably adopting a participant-observer approach than less experienced occupational therapists with equivalent knowledge of their clients. However, self-described knowledge of their clients and experience did not alone fully explain the occupational therapists' preferred approaches to observation. Rather, role appeared to influence approach, to some extent moderated by experience.

Occupational therapists in the constrained short-term rehabilitation role tended to adopt a neutral stance in observation of their clients; who also tended to be more independent and less familiar to the occupational therapists than other clients in this study. Observation was less common in the usual practice of these occupational therapists, and they relied more on discussion with clients and families, supplemented by information from other team members.

Occupational therapists in in-depth assessment and extended rehabilitation roles, on the other hand, frequently used participant and incidental observation to gather

information while building and maintaining relationships with their clients, whether or not they were implementing *COMPLEAT*® at the time. These occupational therapists were in intensive and extended therapeutic relationships with clients who typically had a large number of complex needs. They spoke of clients' resistance to formal assessments, particularly of 'simple' and 'everyday' activities, and the need to build and maintain relationships with clients over time, as reasons for commonly using informal and participant observations. The alignment between their role and the approach to interacting with clients that they employed was, however, moderated to some extent by experience. Less experienced occupational therapists in these in-depth and extended roles were observed to maintain more distance and formality in their relationships with clients, including during observational assessment.

Finally, occupational therapists working in community consultation roles in the neurobehavioural model engaged in participant observation similarly to their residential assessment and rehabilitation peers. These occupational therapists also demonstrated that they valued their relationships with clients, representing themselves as aligned with the providers of daily support with whom the clients already had existing trusting relationships and seeking to preserve and strengthen those relationships, whether or not they expected to be involved in ongoing rehabilitation themselves. They were observed to interact with clients similarly to their neurorehabilitation peers, despite often having even less familiarity with their clients than their short-term rehabilitation peers.

The same pattern was repeated and exaggerated when it came to interpreting *COMPLEAT*® and considering implications for rehabilitation. Those occupational therapists not accustomed to spending an extended period in an assessment phase with their clients

saw opportunities as they implemented *COMPLEAT*<sup>®</sup> to look at participation as a broader concept of relevance to brain injury rehabilitation but not often directly examined in their traditional occupational therapy roles. However, without the opportunity to continue working with clients to realise an effect on participation more broadly, the impact this view had on those occupational therapists in short-term rehabilitation roles was limited. Their interpretations of *COMPLEAT*<sup>®</sup> assessments continued their usual focus on discrete and usually indirect interventions through education and simple environmental changes such as equipment and minor home modifications. In usual practice they were observed to not pursue a range of topics perceived to be beyond the scope of their role, even when these were raised by clients. Similarly, they questioned the difference between observations when using *COMPLEAT*<sup>®</sup> and usual occupational therapy, and did not identify with opportunities arising from using *COMPLEAT*<sup>®</sup> and following through on the findings that would warrant its implementation with most clients.

Those occupational therapists who were given the opportunity to continue with medium-to-long-term rehabilitation programs with clients, but who were still not experienced in spending an extended period in an assessment phase (because they were new to their role in either a newly established or existing service), found that *COMPLEAT*<sup>®</sup> validated their focus on whole activities and structured their interpretations of observations. They were, however, at times uncomfortable with incidental and participant observations, erring on the side of caution and seeking to be confident in their assessments of clients' capabilities and potential risks. They gained some confidence from the structure that *COMPLEAT*<sup>®</sup> provided to their observations, but only to the extent that their hypotheses were able to be directly observed and tested during the

routine. Using *COMPLEAT*<sup>®</sup> highlighted some broader implications of performance difficulties on participation—particularly in activities and environments they had not previously directly observed—that were typically not apparent to these less experienced therapists. In interpreting the implications for their situations, however, their focus remained on familiar discrete interventions to address specific barriers to performance of particular activities. Generalisations to inferences about participation restriction more broadly were limited.

For those occupational therapists in in-depth assessment and extended rehabilitation roles who had more experience, taking a broad view of clients' functioning and impact on participation was familiar. They were accustomed to extended multidisciplinary rehabilitation with a view to establishing holistic supports for clients with many and complex needs, taking intervention to be a broad and sometimes indirect approach to achieving participation gains. They were comfortable with using incidental and participant observations to gather information on the quality of performance, nature of support needs, and performance across activities and over time, which they adeptly considered alongside clinical indicators such as prior functioning, injury, rehabilitation history, other assessments, and likely supports in future environments. For these occupational therapists the opportunity in using *COMPLEAT*<sup>®</sup> was to understand and communicate the assessments they would make from observation, and the corresponding occupational therapy contributions to multidisciplinary teams led by psychologists.

Similarly, occupational therapists in community rehabilitation consultant roles saw the opportunities *COMPLEAT*<sup>®</sup> provided to consider, in a structured way, their clients' performances and abilities to make use of available supports, as well as to test out

some immediate interventions that might support participation. Familiar with the neurobehavioural model and wealth of information obtained through extended in-depth evaluation, these occupational therapists' concern for the time taken to implement *COMPLEAT*<sup>®</sup> centred on the potential for the assessment to be set up and executed in their work schedules, given their often indirect rehabilitation roles, the travel required to visit clients, and the unfamiliar and unpredictable environments that strongly influenced their usually highly flexible approaches to assessment and evaluation. These occupational therapists appreciated that *COMPLEAT*<sup>®</sup> provided a different perspective on clients' performances but, as with their short-term community rehabilitation colleagues, found it more difficult than those in extended rehabilitation roles to appreciate a place for *COMPLEAT*<sup>®</sup> within their role, given the barriers to implementation that made it difficult to plan a routine relevant to the individual's goals. A place for *COMPLEAT*<sup>®</sup> in examining how clients are typically supported through their routines, in line with the consultative aspects of these occupational therapists' roles, was mooted in Stage 4 but not pursued in this study.

#### *Main findings in the community plane*

The community plane of analysis examined aspects of the occupational therapists' community contexts influencing their implementation and interpretation of *COMPLEAT*<sup>®</sup>. While each service had few occupational therapists and each occupational therapist was observed to implement *COMPLEAT*<sup>®</sup> very few times, across the group it was possible to make general observations about the interaction between occupational therapists' contexts and their approaches to the dynamic assessment and supporting clients' participation. The commonalities in their supports to clients during the *COMPLEAT*<sup>®</sup> assessment sessions are consistent with the assumption that there are shared

occupational therapy approaches to facilitating participation that may relate to clients' brain injury rehabilitation needs, the nature of which will be explored in the following chapter. There were, however, general differences in the style of dynamic assessment the occupational therapists used, and particularly in their focus as they interpreted individual clients' *COMPLEAT*<sup>®</sup> assessments and considered the implications for rehabilitation. These community aspects of the sociocultural experience must therefore inform interpretation of the findings and implications of this study, including considerations for further research with a focus on the impact of the community plane and influences beyond the implementation of a dynamic assessment and into ongoing rehabilitation.

### **Chapter Summary**

Of specific interest in this chapter has been how the occupational therapists implemented and interpreted *COMPLEAT*<sup>®</sup> with a view to facilitating their clients' experience of participation in meaningful life situations, immediately within the dynamic assessment and in anticipation of planned rehabilitation interventions. Respecting the sociocultural nature of this topic, in this chapter analysis along Rogoff's (1995) three planes was presented to understand the occupational therapists' application of *COMPLEAT*<sup>®</sup> with clients across activities and settings. This was examined directly in the interpersonal plane, revealing three aspects: the occupational therapists' (i) responses to situations arising in the course of implementing *COMPLEAT*<sup>®</sup>, (ii) enabling of therapeutic supports, and (iii) enabling of everyday environmental supports. Given the aim of this study, particular attention was paid to the occupational therapists' responses to situations in the course of implementing *COMPLEAT*<sup>®</sup>, where five purposes were identified and will be further explored in the following chapter. In the

latter sections of this chapter, aspects of the occupational therapists' personal and community contexts influencing their actions were also outlined. Personally, the occupational therapists reflected on their skills and beliefs as they negotiated setting and agreeing expectations with clients, implementation of a dynamic assessment, and building and maintaining relationships with clients. Fulfilling community expectations, the occupational therapists were appreciably influenced in their approaches and interpretations by their team roles, moderated by their level of experience. While not the independent focus of this study, these personal and community aspects are inseparable from the occupational therapists' actions and inform the interpretation of the findings later in this thesis.

## Chapter 5:

### **Results, Phase 2 – Hierarchy of Therapists' Responses to Facilitate Participation**

This chapter investigates in further detail the occupational therapists' direct responses to situations arising in the course of implementing *COMPLEAT*<sup>®</sup> by applying the methodological framework of the broader instrument development project. This second phase of analysis emphasised a measurement perspective and integrated the qualitative and quantitative data to understand the application of *COMPLEAT*<sup>®</sup> in the evaluation of participation in brain injury rehabilitation settings. This contrasts with the sociocultural perspective of the previous phase, which emphasised the qualitative dimensions of the occupational therapists' broader implementation of *COMPLEAT*<sup>®</sup> over the course of the study. With the aim of this study being to examine the practical application of *COMPLEAT*<sup>®</sup>, especially in the context of intervention planning, this chapter seeks to relate the occupational therapists' responses identified in the interpersonal plane to the concept of participation restriction measured using *COMPLEAT*<sup>®</sup>.

### **Overview of Findings by Level of Participation Restriction**

The *COMPLEAT*<sup>®</sup> hierarchy of item difficulties and clients' performances was applied as a skeleton for the further analysis and interpretation of the qualitative data on the occupational therapists' responses during the dynamic assessment sessions.<sup>15</sup> From this, patterns were identified across clients with similar levels of participation restriction, irrespective of the nature of the specific impairments each client presented. These similarities within and differences between each level of client participation

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<sup>15</sup>The hierarchy of participation restriction is detailed in Appendix B, with evidence supporting the validity of this interpretation. The Rasch analysis from which the hierarchy was derived is described in Appendix C. Relevant details of the hierarchy are described alongside the results in this chapter.



restriction formed a hierarchy of occupational therapists' responses to facilitating participation with clients at the five levels of participation restriction.

These responses are thematically described as interventions to:

- Direct action with clients with severe participation restriction;
- Orchestrate action with clients with moderate-to-severe participation restriction;
- Shape action with clients with moderate participation restriction;
- Guide action on track with clients with mild-to-moderate participation restriction;
- and
- Confirm and extend action with clients with mild participation restriction.

The nature of the occupational therapists' responses at each level is set out in Table 5.1 against the participation restriction hierarchy indicated by the *COMPLEAT*<sup>®</sup> items and client performances. The remainder of this chapter describes these intervention responses, again presenting examples from the observation sessions referenced by the client pseudonym, stage and setting of the study (S1 for Stage 1, etc.; C for community and R for residential rehabilitation setting), and the video recording timestamp as applicable. The findings from both phases together are discussed in Chapter 6 in light of the literature on occupational therapists' use of assessments and clinical reasoning for intervention planning, selected observational assessments available to occupational therapists in brain injury rehabilitation, and the application of dynamic assessment.

**Table 5.1: Occupational Therapists' Responses Against Client Performance Themes by Level of Participation Restriction**

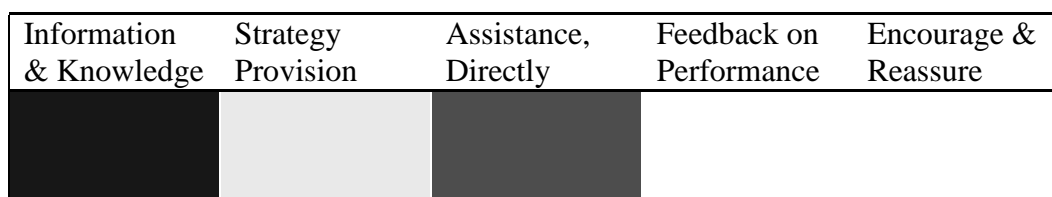
	<b>Participation Restriction Level<sup>a</sup></b>	<b>Performances of Clients in this Study<sup>a</sup></b>	<b>Occupational Therapists' Responses<sup>b</sup></b>
<b>Severe</b>	<i>Difficulties with basic components across a variety of activities that result in severe participation restriction across areas that is not addressed by compensatory strategies and everyday environmental supports.</i>	<ul style="list-style-type: none"> <li>- Across all items client mean raw scores &gt;2.5; severe participation restriction across all areas</li> <li>- Difficulty with some very easy items, particularly communication, but also movement</li> <li>- Functional impacts not addressed by compensatory strategies and additional supports</li> <li>- 1 client at this level overall</li> </ul>	<p><i>Direct Action:</i></p> <ul style="list-style-type: none"> <li>- Assistance with the execution of tasks and activities</li> <li>- Frequent information and knowledge giving</li> <li>- Strategy provision, encouragement and reassurance, and feedback infrequent if at all</li> </ul>
<b>Moderate-to-Severe</b>	<i>Emerging self-regulation for functional performance of the basic components and more difficult activities.</i>	<ul style="list-style-type: none"> <li>- Instigation and continuation of interactions with others means clients are not solely reliant on OTs' responses</li> <li>- Difficulties sustaining movement and adjusting for activities additional time and compensatory strategies</li> <li>- Delayed, reassured or prompted to move between steps and activities, identifying when to terminate one, how to start the next, and the required pacing</li> <li>- No clients at this level overall, 7 performing on some elements consistent with this level</li> </ul>	<p><i>Orchestrate Action:</i></p> <ul style="list-style-type: none"> <li>- Dominance of information and knowledge giving</li> <li>- Significant assistance with execution of tasks and</li> <li>- A little encouragement and reassurance</li> <li>- Minimal strategy provision and feedback</li> </ul>

	Participation Restriction Level <sup>a</sup>	Performances of Clients in this Study <sup>a</sup>	Occupational Therapists' Responses <sup>b</sup>
Moderate	<i>Emerging performance in preparing and knowing, which underpins integrated function across activities. Difficulties continue to require intervention throughout the routine and with most activities, with some chains of independent performance.</i>	<ul style="list-style-type: none"> <li>- Assistance less than half the time, with chains of independent performance once organised</li> <li>- Difficulties generating and selecting ideas at a sufficient level of detail to enable planning</li> <li>- Difficulties accessing the required knowledge on what and how to perform tasks and solve problems</li> <li>- Difficulties initiating and finishing tasks associated with difficulties planning</li> <li>- 8 clients at this level overall</li> </ul>	<p><i>Shape Action:</i></p> <ul style="list-style-type: none"> <li>- Balanced responses applied flexibly to issues</li> <li>- Information and knowledge giving important</li> <li>- Provision of strategies more common</li> <li>- Assistance to execute tasks and activities not uncommon</li> <li>- Feedback used alongside other responses</li> <li>- Strategic use of encouragement and reassurance</li> </ul>
Mild-to-Moderate	<i>Emerging functional capacities in organising and integrating performance in multiple tasks, activities, and environments (including in managing frustrations with the impacts on performance) as is required of everyday routines.</i>	<ul style="list-style-type: none"> <li>- Requiring some assistance but managing many items with available adaptations and supports</li> <li>- Difficulties making decisions and planning but draw on experience and environmental supports</li> <li>- Difficulties organising time and space related to inefficient planning and distraction</li> <li>- For some individuals, difficulty managing frustration with impacts on performance</li> <li>- 10 clients at this level overall</li> </ul>	<p><i>Guide Action on Track:</i></p> <ul style="list-style-type: none"> <li>- Information and knowledge giving most frequent</li> <li>- Strategy provision also somewhat increased</li> <li>- Feedback substantial, but nuanced</li> <li>- Less direct assistance to execute tasks and activities</li> <li>- Encouragement following successful performance despite delayed or withheld responses</li> </ul>
Mild	<i>Emerging performance in dynamic situations that draw upon cognitive and executive functions. Clients use compensatory strategies and are reluctant to seek assistance with the most difficult aspects of participation.</i>	<ul style="list-style-type: none"> <li>- Functional performance considering available environmental supports; infrequent intervention</li> <li>- Disorganisation the most noted feature, leading to less efficiency but not often requiring assistance</li> <li>- Use of compensatory strategies and reluctance to seek assistance</li> <li>- 6 clients at this level overall (1 anonymous)</li> </ul>	<p><i>Confirm and Extend Action:</i></p> <ul style="list-style-type: none"> <li>- Information and knowledge giving most prevalent</li> <li>- Some encouragement to extend or continue</li> <li>- Feedback rare with difficulties uncommon</li> <li>- Assistance focussed on delayed or complex steps in novel tasks</li> <li>- Strategy provision less common</li> </ul>

Notes. <sup>a</sup> Appendix B details the COMPLEAT<sup>®</sup> hierarchy of participation restriction summarised here. <sup>b</sup> Responses identified in the interpersonal plane.

### Severe Participation Restriction: Responses to Direct Action

The participation hierarchy described with *COMPLEAT*<sup>®</sup> revealed that severe participation restriction was characterised by difficulties with basic components in the support activities (Part III of *COMPLEAT*<sup>®</sup>), across a variety of routine activities (Part II of *COMPLEAT*<sup>®</sup>), that were not addressed by compensatory strategies and everyday environmental supports (Part I of *COMPLEAT*<sup>®</sup>). Severe participation restriction was associated with demonstrated emerging or functional levels of performance on the easiest support activity component tasks reflecting basic communication (producing and receiving messages, including using communication devices and techniques) and basic movement of objects and oneself. Routine activity and component task items (Part II of *COMPLEAT*<sup>®</sup>), with rare exception, presented difficulties. Corresponding with this, the client with severe participation restriction in this study required frequent intervention throughout every activity of the routine; the difficulties he experienced had a functional impact on performance not addressed by compensatory strategies and everyday environmental supports. The pattern of the occupational therapist’s responses, described as directing action, is summarised in Figure 5.1. This figure, which complements the description in Table 5.1, illustrates the relative contributions of different responses to the client’s participation. Greater saturation of the shading represents greater qualitative ‘intensity’ of responses with that purpose in terms of frequency, impact on participation, and intrusiveness or reliance on the response.



Key: Intensity of responses from the occupational therapists



**Figure 5.1: Facilitating Participation by Directing Action**

### *Facilitating clients' participation by directing action*

In consideration of the client's pervasive difficulties, including with communication and basic movement, the occupational therapist's approach to facilitate participation at this level was to direct action. In this approach the occupational therapist provided direct assistance with the execution of tasks and activities in many instances, as well as frequent information and knowledge giving. Other responses to situations (strategy provision, encouragement and reassurance, and feedback) were observed infrequently. Overall, directing action was an approach in which the occupational therapist featured strongly. Not a lot occurred without some degree of involvement from the occupational therapist, yet the occupational therapist's responses were dominated by two categories whilst others featured infrequently or rarely (see Figure 5.1).

The application of *direct assistance* and *information and knowledge giving* responses was in line with the absence of explicit communication and requests by the client, given he had only emerging functional abilities in basic communication. For example, when the client stopped and looked to the occupational therapist it was readily apparent intervention was required and the occupational therapist interpreted this as a non-verbal expression of a question. The sequence of interventions included assistance to execute the task at hand and to highlight and confirm information relevant to the task (e.g., Owen, S4C, 25:12). Contrary to the overall finding that direct assistance was infrequent, this intervention was not uncommon at this level of participation restriction. Also common were sequences of interventions including provision of the same information again and again, and scaffolding by providing information as it was needed for performance.

*Feedback and strategy provision* were uncommon in facilitating participation at this level, as both would have required the client to employ higher level communication and cognitive skills in order to interpret the occupational therapists' responses in relation to prior performance and plans for future performance. The occupational therapist seemed to judge that with this degree of participation restriction, including difficulties with communication, the client was unlikely to be able to understand and generalise feedback. In the instances where feedback was provided, it addressed the behaviour requirements firmly and directly as in the (female) occupational therapist saying to Owen (S4C), "You don't need to hold my arm today. It's not wet or slippery." (29:52). By giving explicit direction, rather than feedback on the (in)appropriateness of the behaviour or the behaviour rule per se (i.e., in this case, that entering a female's personal space was not acceptable), the occupational therapist averted the need for the client to interpret the implication for his behaviour. Likewise, the response closest to strategy provision was when the occupational therapist briefly and simply outlined the nature and cause of a minor problem that had arisen, and directed Owen how to execute the solution (1:03:48). Encouragement and reassurance were also rare.

With the extent of intervention and limited active engagement of the client with the intervention strategies, little occurred without the occupational therapist and the overall approach served to direct action. Similar findings would be expected of other clients at this level considering the extent and nature of performance difficulties defined by the item hierarchy. As a result of these restrictions, others must lead the use of supports and clients have limited active engagement with those supports. In this case, this was observed during the interactions with a shop assistant, when the

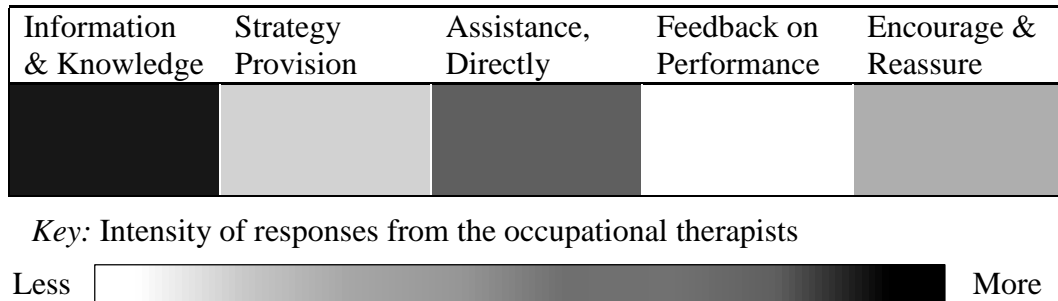
occupational therapist had to step in and request the required resources to cater for Owen's 'hidden disability' (S4C, 28:31). Paid personal support workers engaging with Owen on a day-to-day basis were, on the other hand, directive with him since they had experience of his expected performance and likely difficulties. The extent of support required and the need for others to direct that support, as well as the lack of generalisation from one time and setting to another, presents a challenge to achieving participation and is consistent with a measure of severe participation restriction.

### **Moderate-to-Severe Participation Restriction: Responses to Orchestrate Action**

Moderate-to-severe participation restriction was described with *COMPLEAT*<sup>®</sup> as featuring the emergence of self-regulation as clients extended on component tasks related to movement (incorporating longer and more complex body movements and the handling of multiple objects in functional situations) and communication (including interpersonal interactions with others in their environments). There were no clients whose overall performance reflected this level of participation restriction, but seven displayed aspects of performance consistent with this level. Most were clients with overall moderate participation restriction with particular difficulties where performance was found to be in this range—unexpectedly given their better overall performance. Most commonly these difficulties were with extended or complex movements (changing and maintaining body position over the course of the routine, shopping, transporting shopping, and taking the garbage out from the kitchen to the collection bin). Less commonly these difficulties were with planning, initiating and completing activities, or with communication in novel or stressful situations.

Clients performing at this level of participation restriction instigated and continued interactions with others, so were not solely dependent on intervention. However, they

required assistance with sustaining action and with adjusting for the additional time taken and adaptive techniques required to compensate for difficulties (see Figure 5.2).



**Figure 5.2: Facilitating Participation by Orchestrating Action**

*Facilitating clients' participation by orchestrating action*

Reflecting that clients at this level of participation restriction have emergent self-regulation, occupational therapists facilitated participation by orchestrating action. This was characterised by an overall pattern of responses dominated by information and knowledge giving, with a significant amount of assistance with the execution of tasks and steps, a little encouragement and reassurance, and minimal provision of strategies or feedback to modify performance (see Figure 5.2). Compared to the responses with clients with severe participation restriction, which was to direct action, occupational therapists' periods of more intense involvement were interspersed with periods of closely monitoring and supporting performance with the active engagement of clients.

*Information and knowledge giving* responses were proportionally dominant at all levels of participation restriction but were qualitatively different at each level. Specific to this level of participation restriction, information and knowledge giving responses were often direct and repeated, and often used as first line interventions. This was the



case, for example, as Simon (S3R) planned his meal preparation. The occupational therapist needed to orchestrate this task with repeated and directive information for decision making and problem solving (throughout the first 10 minutes) given Simon's decreased insight and the degree of short-term memory impairment associated with his hypoxic brain injury. Simon was able to engage in aspects of this task, particularly where he could implement familiar strategies without need to account for his acquired limitations, allowing the occupational therapist to orchestrate rather than direct action. Overall, information and knowledge giving responses at this level of participation restriction utilised scaffolding, where the occupational therapists provided one small piece of information at a time, as was required to orchestrate performance.

These clients also required a significant degree of *direct assistance* to execute tasks and steps, including having the occupational therapists step in with assistance rather than using other responses. These clients experienced difficulties in a range of areas and tasks across their routines and in some cases assistance with one aspect of performance allowed for assessment of another. For example, despite being relatively easy items, Robbie's difficulties with 'producing communication' required intervention and were noted to have "added to the difficulties he was already having" as he performed at a moderate participation restriction level (S3R, *COMPLEAT*<sup>®</sup> assessment form). Robbie's own contributions and initiation of communication provided his occupational therapist with specific opportunities for intervention to facilitate his communication, including using his communication folder. Given his moderate-to-severe difficulties, however, the occupational therapist responded on multiple occasions to directly assist Robbie to execute tasks requiring communication but in which the focus was on another difficult aspect of performance (e.g., while

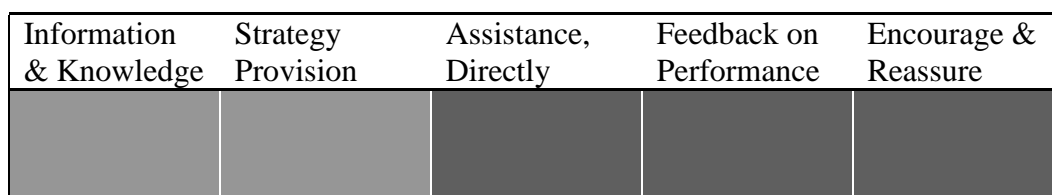
planning the meal preparation and shopping [at 3:19, 4:34 and 6:19]). In other cases the occupational therapists stepped in with assistance according to current rehabilitation priorities and where future interventions may be anticipated to change clients' needs. For example, Lachlan's (S4R) performance on the two items where he required an unexpectedly high level of support were examples of where he was provided direct assistance to complete tasks—transporting shopping items (34:44) and disposing of garbage (48:16)—for which interventions were not a current priority and that might be addressed later in his rehabilitation when a better setup in his own environment and skilled use of appropriate mobility equipment would likely support his performance.

The occupational therapists were less likely to provide clients at this level of participation restriction with *encouragement and reassurance* than they were to provide repeated and directive information or assistance to execute tasks and activities, potentially because of a lack of opportunity. With Owen (S4C), for example, the occupational therapists' use of encouragement to continue as he was cooking his meal (1:03:43) was a rare occurrence within the routine given the considerable challenge and difficulty he faced and his need for assistance and information and knowledge giving interventions. Likewise, both *strategy provision* and *feedback* to clients to correct or improve performance were rare, and indications from the observations were that these clients, like those with severe participation restriction, had limited capacity to take on and apply such interventions. Overall these observations indicated that while the need for assistance was slightly less, and the opportunity for providing encouragement slightly greater, than for clients with severe participation restriction, the occupational therapists provided similarly directive

responses at this level of participation restriction. These directive interventions, particularly if required across activities and settings, were consistent with moderate-to-severe participation restriction.

### **Moderate Participation Restriction: Responses to Shape Action**

At a moderate level of participation restriction, *COMPLEAT*® items reflect that clients are developing in the area of preparing and organising for performance, and accessing and using knowledge to perform component tasks of activities, and that this underpins integrated function. Clients at this level of participation restriction would be expected to have less difficulty with basic components and self-regulation outlined in the levels of more severe participation restriction. In this study, the eight clients performing at this level overall demonstrated difficulties with generating and selecting ideas at a sufficient level of detail to enable planning, and with having and accessing the required knowledge on what and how to perform tasks and solve problems. Associated with difficulties planning, they required some assistance with initiating and finishing tasks, but also demonstrated some chains of independent performance, particularly once organised (see Figure 5.3).



Key: Intensity of responses from the occupational therapists



**Figure 5.3: Facilitating Participation by Shaping Action**

*Facilitating clients' participation by shaping action*

At this level, occupational therapists' responses to facilitate participation were to 'shape' the clients' actions and performance toward integrated functioning, working with clients' capacities in the areas of basic components and self-regulation. Clients at this level received a considerable number of interventions and supports, but the functions of the assistance the occupational therapists provided were much more balanced (see Figure 5.3) and were applied flexibly to the specific situations arising through the different activities and tasks. The occupational therapists intervened to shape actions as situations arose, ensuring clients did not experience too many difficulties and preventing them from getting into situations they were unable to resolve. These interventions were balanced against facilitating clients' own independent performance.

*Information and knowledge giving* responses remained important at this level of participation restriction. Specifically, the occupational therapists sought to address clients' difficulties with generating ideas, planning and organising, and accessing and applying knowledge to execute steps, use compensatory strategies and solve problems. The occupational therapists therefore used information and knowledge giving responses to promote clients' access to their own information or to highlight information in the environment. At times the relationships between the responses and functional outcomes were indirect; for example the occupational therapists would ask questions, the answers to which highlighted environment factors needing attention, which in turn prompted the clients to initiate actions. Likewise, confirmation of information and knowledge was sought by clients and provided by occupational therapists. Direct provision of information by occupational therapists was typically

used when the topic related to the evaluation process or the client's rehabilitation program, including embedding teaching of new knowledge relevant to the ongoing rehabilitation program in the practical context of the routine. Scaffolding was not as much a feature of information and knowledge giving responses for many clients at this level of participation restriction. Where scaffolding was used, this more often related to step-by-step identifying problems and alternatives for solutions (i.e., higher level cognitive difficulties) than the directive scaffolding used for clients with greater participation restriction.

At different times the occupational therapists provided these clients with *strategies* with which to approach tasks. These strategies were often to assist clients with planning performance, considering the difficulties they had with knowing what to do and how to do it, and adequately preparing for performance. When providing clients at this level of participation restriction with such strategies, the occupational therapists often took the opportunity to indicate to clients both an approach and reasoning. In doing so, the occupational therapists assisted the clients to make the link between the suggested approach and the nature of the problem encountered, if the problem may not have been readily recognised by the client.

Providing *direct assistance* to execute tasks and steps was also a fairly common response at this level of client participation restriction. This assistance included to complete cognitive tasks as well as physical. The occupational therapists appeared to weigh the likelihood of the client benefiting from a less intrusive response, such as providing information and assisting with problem solving, against the expediency of stepping in with assistance given the overall level of intervention required to complete the routine. For example, Prue (S3R) failed to correctly set the grill such that it did not

heat. Given she also failed to recognise she has made this error, and her general presentation to that point in the routine, the occupational therapist stepped in to set the grill for her rather than to provide her information on how to complete this step or to solve her problem (22:12). Factors that may have weighed into the decision include: the available information up to that point in the routine to judge the level of intervention required and therefore the appropriate assessment score; the likely impact of each of the possible responses on Prue's experience of the assessment; and the occupational therapists' reasoning about the value and most appropriate form of an intervention in a residential rehabilitation facility from which Prue would be moving at some point.

At this level of participation restriction, *feedback* to clients to correct and modify their own performance was also used to similar effect as other responses to facilitate performance. Indeed, this represented probably the greatest difference between clients at this level and those with greater participation restriction. In contrast to responses with clients with greater participation restriction, the occupational therapists working with clients at this level provided feedback that required the clients to actively engage in extrapolating from the intervention provided to the means to correct and modify performance. For example, the occupational therapist repeatedly provided Lazzaro (S4R) with feedback about his performance and behaviour, to various effects. Beyond any immediate changes, the degree of Lazzaro's engagement with this response from his occupational therapist was demonstrated in some extended exchanges. Near the end of the routine Lazzaro acknowledged his struggle and need to change, stating, "It is difficult for me to let go of the fact that I am not an able-bodied man, working in the building industry anymore. This is more than difficult; it is in fact the biggest battle of

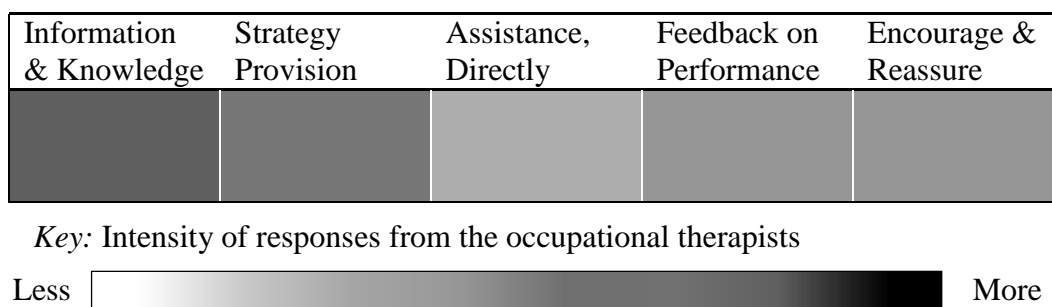
my life” (1:14:46). This awareness of the need to adapt and adopt new strategies after brain injury, even if not accurately anticipated in planning activities, enabled the use of feedback not evident with clients with greater participation restriction.

Hand-in-hand with the use of feedback was an increase in the strategic use of *encouragement*. This balanced out the occupational therapists’ responses, including corrections, and provided variation to feedback. Encouragement was particularly used when the occupational therapists were shaping behaviour, to revert the focus to the positive after the clients made appropriate changes. Conversely, encouragement was not evident where feedback was given on motor performance resulting in a change, nor where feedback resulted in defence of a behaviour and no change from the client. Overall, the occupational therapists’ responses were combined to shape clients’ actions toward chains of independent performance. The responses were at times indirect, and required the clients’ active engagement in supporting access to clients’ own knowledge and resources in the environment. The frequency and intensity remained at a level reflecting a moderate level of participation restriction across activities and tasks.

### **Mild-to-Moderate Participation Restriction: Responses to Guide Actions**

The *COMPLEAT*<sup>®</sup> items at the mild-to-moderate level of participation restriction, the difficult items on the hierarchy, reflect organising and integrating performance in multiple tasks, activities, and environments. These items presented moderate-to-severe difficulties for most clients, while clients performing at this level of participation restriction demonstrated emerging capacities. These emerging capacities included preparing and organising to manage and adapt while completing complex activities, where these clients used prior experience and environmental

supports. They also included integrated functioning across domains to complete activities of moderate difficulty, where these clients demonstrated the most problems with efficient planning and organisation when facing potential distractors or sources of frustration (see Figure 5.4).



**Figure 5.4: Facilitating Participation by Guiding Action on Track**

*Facilitating clients' participation by guiding action on track*

Occupational therapists worked with these clients' emergent capacities with responses that could be collectively described as guiding action on track. As expected, these entailed a lower level of involvement throughout the activities and routines, with the responses focused around guiding the organisation and integration of multiple functions for the clients to demonstrate greater independence in self-regulation and execution. The clients were increasingly able to follow-through with independent performance once 'on track'. This was demonstrated in a trend to decreasing directiveness in the occupational therapists' responses, such as in using information and knowledge giving or strategy provision rather than direct assistance (see Figure 5.4).

As the occupational therapists guided clients, *information and knowledge giving* responses remained the most frequent. Reflecting these clients' increased capacities, however, those information and knowledge giving responses were more often in the



form of prompts to access information already known to the client or to highlight information available in the environment. Generally information was only provided if the client was not able to give the expected response or did not note the intended environmental features after another strategy. The confirmation of known or available information was also infrequent, and generally only after the client had first made an attempt. Occasionally, in situations that were new or unusual, clients were provided information rather than having them seek out the information. For example, Skye (S4C) was accustomed to using stock powder but only stock cubes were available; when Skye was about to use the stock cube incorrectly, the occupational therapist provided her the required information (45:57). Doing so, the emphasis in the assessment remained on Skye's performance in familiar situations rather than on her ability to read and convert the directions on the packaging in an unfamiliar situation. In this and similar situations the occupational therapists also provided information to avert undesirable outcomes that might occur if errors were not immediately corrected, such as contamination of the flavour of foods.

The *provision of strategies* for the clients to approach tasks and steps was if anything increased, which is consistent with the observations above of the nature of these clients' performances and their demonstrated use of strategies (including self-generated strategies and previously provided adaptive techniques and aids). Occupational therapists introduced strategies to these clients rather than providing direction, resulting in responses that were less intrusive and facilitated clients' choices. The occupational therapists' use of strategy provision also enabled clients to identify how problems could be solved at a later time. In doing so, the occupational

therapists were utilising these clients' capacities to draw upon prior experience and environmental supports.

In a substantial difference from the responses with clients with greater participation restriction, the occupational therapists provided these clients with less *direct assistance*. This is reflected in the overall naming of the occupational therapists' approach at this level. The information and strategies were to get the clients' performance close to that which would be expected, from which point they were able to execute performance themselves. The less frequent provision of assistance was consistent, even where higher levels of assistance were sought, as demonstrated in more frequent instances of delayed or withheld interventions.

There was still a substantial quantity of *feedback* provided as these clients demonstrated difficulties that the occupational therapists sought to correct. This feedback was at times more nuanced than that observed with clients with greater participation restriction. For example, when Ryan (S3R) was looking to choose a product to meet his needs from among a wide range available, the occupational therapist first provided a cue to gather relevant information (asking, "what about the price?"; 19:24) and then, when Ryan did not respond appropriately, provided indirect feedback on that performance by highlighting that there were still more alternatives Ryan had not (appeared to have) considered (19:28). The occupational therapist next provided Ryan further, more direct, feedback by way of a suggestion (19:46), before providing a strategy when Ryan revealed his problem (20:31). These compound constructions including feedback were used by the occupational therapists to have clients modify their behaviours, reinforcing components of performance or reasoning and indicating desirable changes in performance. In other examples, the occupational

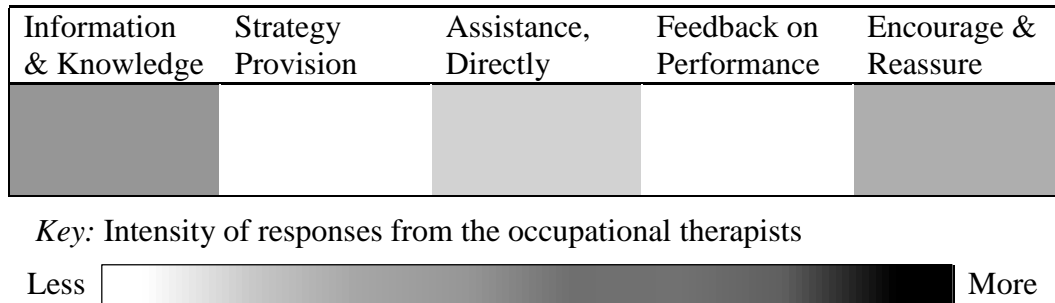
therapists' feedback was to communicate the reasoning or likely outcomes, again delaying direct instruction (for example, when Ryan was provided extended feedback to convey the reasoning for the occupational therapist's request that he wash his knife in hot soapy water, as described in the previous chapter). In being at least initially indirect and providing reasoning, as well as again being balanced with encouragement, feedback was used to have the clients try to extend without direct assistance.

*Encouragement* was also observed following clients' successful performance despite the occupational therapists delaying or withholding responses. In this way clients were reinforced for their successful performance, promoting future independent attempts. This strategy was noticed by Skye (S4C), who commented following an instance in which her occupational therapist had offered encouragement, "I just get on with it, don't I? Instead of 'Oh, what do I do!' and getting in a flap" (44:32). Consistent with this comment, Skye less often sought assistance later in the routine and when assistance was sought the occupational therapist less often withheld assistance (suggesting the occupational therapist judged the assistance sought was reasonable).

### **Mild Participation Restriction: Responses to Confirm and Extend**

The items in *COMPLEAT*<sup>®</sup> representing the least participation restriction are the most difficult and reflect integrated functions around using information and managing resources. Clients performing at this level of participation restriction, of which five contributed observational data to this study, generally showed difficulties only with performance in dynamic situations that drew on executive functioning. The most often noted feature of performance difficulties was disorganisation, which decreased efficiency but did not often require intervention considering the available strategies

and supports in the clients' everyday environments. The clients were often reluctant to seek assistance, instead using compensatory strategies effectively (see Figure 5.5).



**Figure 5.5: Facilitating Participation by Confirming and Extending**

*Facilitating clients' participation by confirming and extending*

The occupational therapists facilitated participation with clients demonstrating mild participation restriction by using responses to confirm and extend performance. The occupational therapists' responses were consistent with their roles as rehabilitation providers, aiming to increase clients' participation despite the clients often demonstrating a functional level of performance. In some cases occupational therapists' interventions were also encouraged by clients who sought to benefit from the occupational therapists' engagement in the session. This dynamic between clients and their occupational therapists is reflected in the provision of information and knowledge, some degree of encouragement, and a little assistance, but minimal strategies (see Figure 5.5).

Consistent with the nature of brain injury, where clients have impairments of cognitive functions, *information and knowledge* giving remained the most prevalent response with these clients. At this level, however, these responses were predominantly instigated by clients, often serving to confirm information already gathered or held.

For example, Atid (S3C) was on several occasions provided with information, on his request, to compensate for his inability to access some information in the environment owing to his visual impairment. From time-to-time information was provided when a client could not retrieve the information expected following a less intrusive response, or to tell a client what to do next when there was no obvious cue. For example, the occupational therapist assisted Fergus (S3R) to recognise what was required when he was not orientated to the rehabilitation environment, which was neither known to him prior to his injury nor remembered since.

The occupational therapists provided these clients with some *encouragement* to extend or simply continue with performance. In contrast to the use of encouragement with clients with greater participation restriction, this was a less frequent response and was also often less enthusiastic and specific than with clients with greater participation restriction. Therapists gave encouragement or reinforcement from time-to-time when clients implemented a desirable compensatory strategy, successfully solved a problem, or demonstrated appropriate responses to challenges. For example, the occupational therapist subtly encouraged and reinforced Fergus (S3R) when he referred to his shopping list in the supermarket (18:20). Encouragement and reinforcement given to these clients was used to balance withheld responses, but was not required as frequently as with clients with greater participation restriction where this response was often used to balance feedback.

Indeed, the occupational therapists rarely provided these clients with *feedback*, given the clients made fewer errors that required feedback and were more likely than those with greater participation restriction to correct their own errors. For example, Greg (S3R) paused and appeared to try to take in information from the environment to

establish whether he had successfully completed the task. Only after Greg incorrectly concluded he had completed the task did the occupational therapist offer indirect feedback by way of a suggestion that he review what was required, notably not indicating how (“Do you want to check...”; 1:03:54). Where feedback was used it appeared in the context of problem-solving, as in this example, thereby encouraging the client to contribute independently to the process rather than relying only on the occupational therapist to provide information.

The *assistance* occupational therapists provided to clients at this level of participation restriction was with delayed or complex steps in novel tasks. The assistance provided was at times also related to the choices clients made to take advantage of the opportunity to extend themselves in the session with the occupational therapist. For example, Greg (S3R) may have been able to increase his independence in using the microwave with the implementation of tactile cues, but usually his support workers would complete this task for him. In the assessment, Greg did not defer to the occupational therapist to complete the task as he would have with the support worker, instead attempting the task and then being provided with assistance to complete the novel procedure (32:35). Likewise, Atid (S3C) was assisted to use the self-serve checkout at the supermarket, with which he had some difficulty. He articulated to the occupational therapist that he was cognisant of the difficulties he would face, and the presence of the traditional checkout alternative with which he would not require the occupational therapists’ assistance, but that he wanted to try the self-serve option when he had the occupational therapist’s assistance available (25:27). By contrast, Greg was provided assistance to find the required items in the store while shopping (14:04), but in this context did not demonstrate the same use of problem-solving

strategies, or awareness of and planning for likely difficulties, as Atid had in a similar context.

Finally, it appeared that, as with assistance, *strategy provision* was less often used as a response to overcome problems with these clients than with those with greater participation restriction; it was more often as an intervention to extend performance.

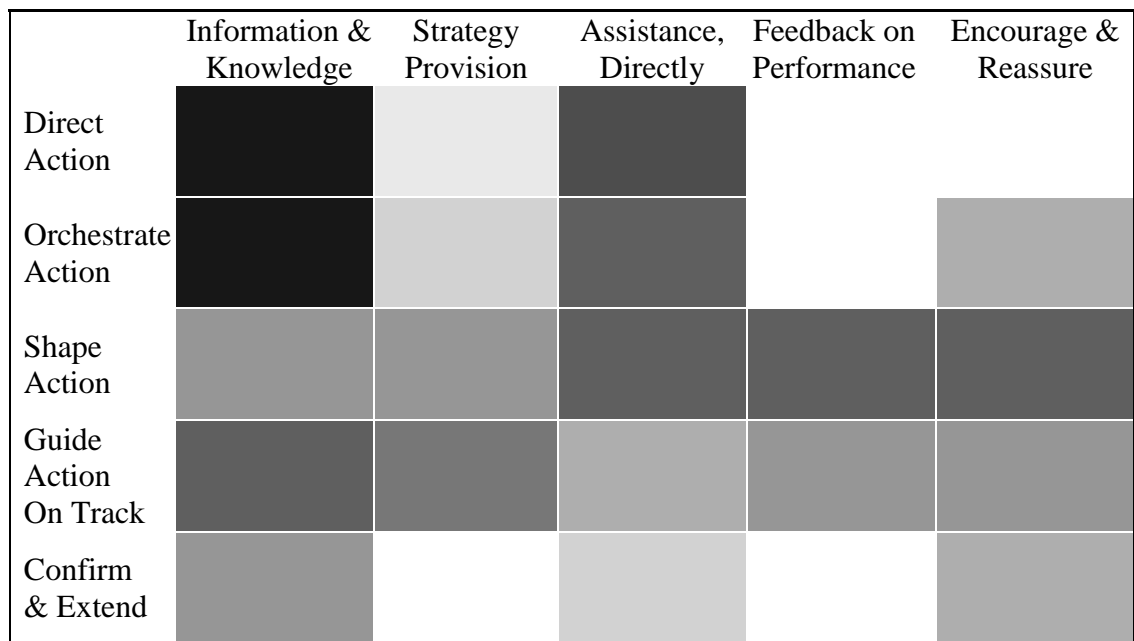
For some clients this intervention was not employed at all, perhaps because of the appropriate use of existing strategies and available environmental supports as when Fergus (S3R) initiated, himself, the use of a shopping list and a kitchen timer.

Likewise, Atid (S3C) was not provided with any strategies during the assessment session, but he did explain in some detail to the occupational therapist and researcher several of the strategies he was explicitly implementing to compensate for the impairments related to his brain injury as he carried out each activity. The occupational therapist occasionally suggested strategies for Greg (S3R), which may have reflected a judgement that he would be able to achieve greater independence by using strategies than he did given that in his current environment where support staff completed many tasks for him. Not surprisingly given the nature of the items at this level of participation restriction, the strategies suggested to clients at this level pertained to organising for performance considering the available resources and compensating for difficulties accessing and using information.

### **Facilitating Clients' Participation Across the Hierarchy**

Overall, the patterns of the occupational therapists' responses varied across the hierarchy of participation restriction in terms of the combination of responses applied, and the 'intensity' of the combinations. That is, there was no simple hierarchy of types of responses, but rather a hierarchy characterised by combinations of responses

delivered at different intensities. The application of responses with the same purpose therefore varied at different levels of participation restriction. This is illustrated in Figure 5.6 where each row represents a level of client participation restriction from more to less, as represented in Figure 5.1 through Figure 5.5, while each column again represents a response with a given purpose.



Key: Intensity of responses from the occupational therapists



**Figure 5.6: Hierarchy of Interventions to Facilitate Participation**

Collectively, the following patterns were observed in the occupational therapists’ responses. In general, comparing between the rows, the occupational therapists graded their responses so as to provide support to the immediate needs of clients with greater participation restriction and promote the attempts by clients with less participation restriction to implement their own skills and available resources. Details have been outlined for each level of participation restriction in turn within in this chapter.



The occupational therapists' interventions to *direct action* were characterised by frequent responses to the extent that not a lot occurred without some involvement of the occupational therapist. Many times the occupational therapists' responses were to provide direct assistance, which were responses not present to near the same degree with clients with less participation restriction.

Interventions to *orchestrate action* saw occupational therapists making frequent responses, but, at the same time, clients instigating and continuing interactions. This resulted in chains of action by clients that were closely monitored by the occupational therapist. The occupational therapists' responses were dominated by information and knowledge giving, with the use of direct assistance significant but somewhat reduced relative to the approach with clients with greater participation restriction.

At the next level, interventions to *shape action* were flexible to the situation to elicit the best participation from the client. At this level feedback and encouragement, along with strategy provision, were common as the occupational therapists drew upon and attempted to build clients' increasing capacities to continue with independent performance.

With clients with still less participation restriction, the occupational therapists' approach to *guide action on track* was less often to provide direct assistance whilst maintaining substantial knowledge and information giving. Strategy provision, feedback, and encouragement and reassurance remained important as the occupational therapists seemed to seek to enable clients' independence across situations.

Finally, for clients with the least participation restriction, the occupational therapists continued to provide some intervention to *confirm and extend action*, consistent with rehabilitation roles. Information and knowledge giving remained the most common, at this level often in response to clients' initiation, with some encouragement to extend and occasionally direct assistance with delayed or complex steps in novel tasks.

Examining patterns in occupational therapists' responses with different purposes along the continuum of participation restriction (i.e., comparisons between columns of Figure 5.6), it is evident that support to clients with greater participation restriction did not equate with more intense responses for each purpose equally. Rather, responses such as feedback were used primarily with clients with less participation restriction. It was with clients with moderate levels of participation restriction that the widest range of responses and arguably the overall greatest intensity of interventions were employed.

Further to this, as well as varying the combinations of responses, the occupational therapists adjusted the directiveness with which they applied responses within each thematic group. This was particularly evident in information and knowledge giving responses, which were the most common of all responses and were present at each level of participation restriction. For example, with clients with severe participation restriction, the occupational therapists' information and knowledge giving responses were "direct and repeated... first line interventions" in contrast to prompting and highlighting information in the environment for clients with less participation restriction. Such adjustments in directiveness meant that information and knowledge giving responses were relatively influential even with the clients with the least participation restriction.

## Chapter Summary

This chapter has presented the findings of the Phase 2 analysis to investigate how the sociocultural activity of using *COMPLEAT*<sup>®</sup>, and in particular interacting with clients to facilitate their participation during *COMPLEAT*<sup>®</sup> assessment sessions, relates to the construct of participation restriction as defined using the measurement framework of the project within which this study is embedded. Specifically, as the occupational therapists interacted with clients to implement *COMPLEAT*<sup>®</sup> they were required to make judgements in their moment-to-moment decisions about the supports they would provide to facilitate their clients' participation.

Throughout each *COMPLEAT*<sup>®</sup> assessment session the occupational therapists' interactions with clients included a range of responses to facilitate their clients' participation that are of particular interest to this study. At the conclusion of each assessment session the occupational therapists were then required to summarise and articulate their judgements on immediate reflection when filling out the *COMPLEAT*<sup>®</sup> assessment forms, including in numerically rating participation restriction on the basis of their observations of each client's performance and adaptation given the dynamic supports. This Phase 2 analysis has considered the responses to situations the occupational therapists were observed to demonstrate over the course of each assessment session against the resulting quantitative measure of participation restriction.

These responses to facilitate clients' participation at each level of participation restriction, the occupational therapists' personal processes to adapt to *COMPLEAT*<sup>®</sup>, and the community processes to fit with (perceived) expectations in a given role and with different levels of experience, together reflect the collective expertise and reasoning of

these occupational therapists. From the measurement perspective of the overall study and broader project, the alignment between this reasoning and the hierarchy of participation restriction represented by item difficulties and client performances speaks to the validity of interpretation of the measures. With the aim of this study to examine the implementation of *COMPLEAT*<sup>®</sup> and implications for intervention planning, the reasoning evident between the occupational therapists' responses and the personal and community processes is itself of interest. These findings will be considered in light of the literature in the following chapter, which will highlight the relevance and potential of *COMPLEAT*<sup>®</sup> as a dynamic assessment to identify clients' needs and inform rehabilitation intervention planning, considering the ongoing interaction between the interpersonal, personal, and community planes of sociocultural activities as occupational therapists implement assessments in brain injury rehabilitation.

## Chapter 6:

### Discussion – Making Participation Explicit in Occupational Therapy Assessment

Brain injury rehabilitation purports to have as a major aim optimising clients' participation, as defined in the ICF. For occupational therapists in particular, to optimise clients' participation or occupational performance is among the main objectives espoused by the profession. In the introduction to this thesis, I argued that occupational therapists' work with younger adults with brain injury is not well understood or consistently implemented, and that their expertise is not well supported by many standardised assessments, resulting in a preference for observational, performance-based assessments that are often non-standardised. In the literature review, I examined and critiqued some of the available observational assessments that occupational therapists might use with their clients with brain injury, illustrating some core features of such assessments from an occupational therapy perspective and suggesting that dynamic assessment might address occupational therapists' need to substantiate their clinical reasoning in assessment and intervention planning. There remains a need for observational assessments that represent participation as it is defined in the ICF in order to address the gap in what is available to meet the needs of rehabilitation teams and occupational therapists planning interventions. Dynamic assessment, and *COMPLEAT*<sup>®</sup> in particular, shows promise for this purpose but has not been well-developed or examined within occupational therapy.

Responding to these needs, the findings of this study suggest:

- *COMPLEAT*<sup>®</sup> has application to making explicit occupational therapists' assessment of participation as an observational assessment of participation that is consistent with the theoretical bases of the ICF and occupational therapy;

- As a dynamic assessment specifically, *COMPLEAT*<sup>®</sup> enables occupational therapists to apply their clinical reasoning to systematically draw direct links to interventions and consider their roles in different rehabilitation settings; and
- Dynamic, observational assessment of participation is a means of implementing assessment that is supportive of client-centred and goal-directed rehabilitation.

If that is the case, then there are implications for occupational therapists to assert their expertise in participation that span direct work with clients as part of rehabilitation teams, broader perceptions of occupational therapists' roles, and the development of assessments to support occupational therapists in planning and implementing occupational therapy interventions. These issues and implications will be discussed in this chapter before concluding with recommendations for participation-focused evaluation to impact on practice.

### **Making Explicit Assessment for Occupational Therapy**

An occupational therapy perspective on participation entails consideration of interactions between individuals, activities and environments (e.g., Drolet, 2014; J. M. Fleming et al., 2000; Klein et al., 2008; Lee et al., 2001). The responses of the occupational therapists in this study to their clients' difficulties, and the *COMPLEAT*<sup>®</sup> items that the clients found relatively difficult, highlighted the cognitive demands of participation that are challenging for clients with brain injury. This is neither new nor surprising given that prior research—such as that highlighted in Chapter 2 and in Appendix B in relation to the validity of *COMPLEAT*<sup>®</sup> scores—has noted similar findings in describing the activity limitations and participation restrictions of people with brain injuries of different severities and time since injury, and measures of skills and difficulties in occupational performance (e.g., A. G. Fisher, 1993, 2003; Malec et al.,

2003; Malec & Lezak, 2003; Nott & Chapparo, 2012; van Schouwen-van Kranen, 2014).

What this study has added is insight into these occupational therapists' interventions when working with this client group. This has been achieved through the identification of thematic groupings of responses used by the occupational therapists, and then the identification of the purposes and applications of those responses that were similar within and different between levels of client participation restriction. The occupational therapists' actions during the *COMPLEAT*<sup>®</sup> assessment sessions included the integration of direct responses with the client, and adjustments to the demands and supports featured in the activities and environments. These actions support the proposition that occupational therapy is concerned with the interactions between individuals, activities and environments, and add insights to the limited literature on *occupational therapy* assessment for planning *occupational therapy* interventions with this client group.

Most assessments that permit interaction with clients in the course of the assessment itself attempt to neutralise the influence of the administrator through standardisation that prescribes what are described as least-to-most hierarchies of responses when clients encounter difficulties (e.g., Baum & Wolf, 2013; Bottari et al., 2010b; Nott et al., 2009). These hierarchies typically proceed in a limited number of levels of homogeneous response that range from no cues to prompts, through verbal and physical cues and prompts, to total assistance. Hierarchies such as these are consistent with propositions derived from conscious experience and theory, and formalised in the Four-Quadrant Model of Facilitated Learning (Greber et al., 2007a). That is, the most reasoned and nuanced explanations consider potential responses with reference to two, orthogonal, continua: facilitator-learner initiation and direct-indirect strategies

(Greber et al., 2007a). The resulting four types of learning strategies represent a hierarchy that ranges from autonomous performance, through recognition of key points and decision-making levels, to direct specification of task requirements (Greber et al., 2007b), as set out in Table 6.1.

**Table 6.1: Hierarchies of Strategies and Responses Across Studies**

<b>Modelled Hierarchy of Instructional Strategies in Facilitated Learning<sup>a</sup></b>	<b>Observed Hierarchy of Cognitive Demands in Strategies for IADL Performance<sup>b</sup></b>	<b>Observed Hierarchy of Occupational Therapists' Responses when Using <i>COMPLEAT</i><sup>®</sup></b>
Easiest for the learner	Least Demanding	Supports Greatest Participation Restriction
<ul style="list-style-type: none"> <li>● Facilitator-initiated, direct strategies: specification of task requirements;</li> <li>● Facilitator-initiated, indirect strategies: decision-making;</li> <li>● Learner-initiated, direct strategies: recognition and recollection of key points;</li> <li>● Learner-initiated, indirect strategies: autonomous strategies.</li> </ul>	<ul style="list-style-type: none"> <li>● Cues that are provided directly by the social environment, as in when a clerk answers questions;</li> <li>● Cues that are sought from the physical environment, as in using signage;</li> <li>● External strategies that are created and used by the individual, as in a checklist;</li> <li>● Internal strategies, such as self-talk.</li> </ul>	<ul style="list-style-type: none"> <li>● Direct action using assistance, strategies, and information;</li> <li>● Orchestrate action using information and assistance;</li> <li>● Shape action using a balanced set of responses;</li> <li>● Guide action on track using information, strategies, feedback and encouragement;</li> <li>● Confirm and extend action using information and encouragement</li> </ul>
Most Difficult for the Learner	Most Demanding	Supports Least Participation Restriction

Notes. <sup>a</sup> Greber et al. (2007b, p. S41). <sup>b</sup> Bottari et al. (2014, p. 74).

As implemented in response hierarchies in standardised assessments, however, the validity of some representations of least-to-most sequences of assistance has been questioned (Greber, Ziviani, & Rodger, 2011). More detailed analyses published recently have also shown greater complexity in strategies and responses than the typical hierarchies of prescribed cues and prompts accommodate.



For example, the self-generated strategies applied by five clients selected to represent each level of independence on the IADL Profile (i.e., independent, independent with difficulty, verbal assistance, verbal and physical assistance, and dependent) showed a qualitative hierarchy of cognitive demands that ranged from readily apparent cues to internal strategies (see Table 6.1; Bottari et al., 2014). These self-generated strategies highlighted inter-relationships within and between the ‘levels’ or ‘types’ of cues and prompts it has been suggested assessment users should provide.

A separate study on the verbal assistance provided by an occupational therapist during the information gathering task of the IADL Profile (Le Dorze et al., 2014) would also seem to be in broad concordance, with similar observations about the directiveness of responses as well as the frequency varying within only verbal assistance. However, being based on one occupational therapist and one activity, with only two clients who were selected to represent the extremes of the continuum, that study does not present a hierarchy per se and it is difficult to read further into the findings. Furthermore, none of these reports of graded strategies and responses matches these against client needs beyond gross levels of independence that are defined by the level of assistance itself.

The present study adds further support to and elucidation of the preliminary understandings presented in the recent literature (Table 6.1), including a broader range of responses and a larger number of both occupational therapist and client participants that were drawn from specialist rehabilitation services. Many of the responses occupational therapists gave to situations in this study aligned with types of cues, prompts and learning strategies that have previously been presented (Greber et al., 2007a; Le Dorze et al., 2014; Nott & Chapparo, 2012; van Schouwen-van Kranen, 2014). This study furthers that prior research by illustrating a hierarchy that combines

a range of instructional strategies and responses, addressing more than the information processing skills and metacognitive strategies of the PRPP System and CO-OP interventions, or the self-directed strategies or verbal assistance within single IADL Profile activities.

The responses implemented by the occupational therapists in this study were premised on the occupational therapists' own clinical reasoning, guided by the *COMPLEAT*<sup>®</sup> framework, rather than on prescription by the assessment. This is similar to the problem-solving approach used in Dynamic Performance Analysis where the occupational therapist is merely guided by that framework to consider, in sequence, whether the client has knowledge of what is required, willingness to do what is needed, and ability to perform as required, considering the demands and supports of both the occupation and environment (Polatajko et al., 2000). However *COMPLEAT*<sup>®</sup>, unlike Dynamic Performance Analysis, provides a measure that allows the responses by the occupational therapist to be arranged in a hierarchy according to client need.

This study has, uniquely, matched the combinations of responses the occupational therapists implemented to facilitate their clients' participation during the dynamic assessment, against the items that delineate participation restriction. These items in turn parallel previous research limited to particular skills (see Appendix B). Unlike previous investigations of either clients' performance profiles *or* the strategies and responses to support performance, in linking these two aspects this study lends practical support to the implementation of the most appropriate and effective responses for individual clients.

The therapists in this study did not have the benefit of the data on either the hierarchy of items describing clients' performances or of the direct responses to situations to facilitate their clients' participation. Yet they acted with reasonable consistency on the basis of their clinical reasoning, common experiences, and training. That is, the occupational therapists' expertise in assessment and intervention with this client group was (in most cases, as illustrated in Appendix C) sufficient to rely upon given minimal training and without prescriptive assessment procedures. Given the responses the occupational therapists were observed to utilise in this study were applied in complex and multi-factorial combinations that reflect the general principles of fading directiveness (Greber et al., 2007b; Le Dorze et al., 2014) *and* the observed interactions between different types of strategies (Bottari et al., 2014), this type of assessment likely better reflects occupational therapy practice than prescriptions of homogeneous response levels.

### **Highlighting Dynamic Assessment in Occupational Therapy**

The identification and grading of the occupational therapists' responses to facilitate their clients' participation was possible because *COMPLEAT*® is an example of dynamic assessment. Indeed, the direct insights from assessment to intervention described in Chapter 2 and discussed above are possible because the IADL Profile, PRPP, Dynamic Performance Analysis and *COMPLEAT*® all use some degree of dynamic assessment. Looking in this way at assessment as being a dynamic interaction between an occupational therapist and a client highlights and demands attention to the influence of the occupational therapist in assessment. However, dynamic assessment has been relatively newly adopted from other fields into occupational therapy, and remains scarcely implemented (Katz, Bar-Haim Erez, et al., 2012). The influence of the

occupational therapist in dynamic assessment has not been explored let alone reflected upon in relation to occupational therapy principles and interventions more broadly. Unique to this study was investigation of the means by which the occupational therapists, given the freedom to draw upon their own clinical reasoning to implement *COMPLEAT*<sup>®</sup> based on guidelines provided in minimal training, applied their clinical reasoning and achieved the task.

Broadly speaking, the occupational therapists in this study were observed to take two different approaches to implementing *COMPLEAT*<sup>®</sup>. In one, a more neutral stance, the occupational therapists shadowed as if not involved in the assessment and then stepped in to interact and provide assistance as required for safety and progression. In the other, participant-observer approach, the occupational therapists implemented similar actions as required for safety and progression of the routine, but also otherwise engaged the client throughout the process. The literature on observational assessments in rehabilitation that have a dynamic element (Dynamic Performance Analysis, the EFPT, the IADL Profile, and the PRPP System) presents a range of approaches, often not explicitly articulated as dynamic assessment, and with little cross-referencing to compare features from one to another.

The neutral approach observed in this study was similar to the EFPT and IADL Profile, where the prescribed provision of minimal assistance from a least-to-most hierarchy enables the assessment to be completed and a performance level ascertained (Baum & Wolf, 2013; Bottari et al., 2010b). This process is held separate from considerations for intervention. This neutral approach is more common in the broader literature on dynamic assessment, but is typically discussed in relation to discrete cognitive functions and interventions, remaining close to theories of learning and

development such as Vygotsky's *zone of proximal development* and the application of dynamic assessment in psychology and particularly education (Haywood & Lidz, 2007).

The participant-observer approach, on the other hand, fits with the descriptions in the literature of the PRPP System of Task Analysis with its focus on the effectiveness of performance (Nott et al., 2009), and Dynamic Performance Analysis with its focus on identifying the pre-requisites to successful performance (Polatajko et al., 2000). This approach to dynamic assessment contributes directly to the planning of interactive and individualised occupational therapy interventions appropriate to functional goals, such as the PRPP and CO-OP interventions that have been well-defined for use with this population (Dawson, Gaya, et al., 2009; Nott et al., 2008). These occupational therapy approaches to assessment and intervention are more consistent with the essence of occupational therapy and the focus on participation, and therefore better complement the roles of occupational therapists in brain injury rehabilitation.

At the outset of this study the occupational therapists were only generally informed of how they may individualise their approach to the client, as described in Chapter 3. In practice, whether they adopted a neutral or participant-observer approach to implementing *COMPLEAT*® appeared to be strongly influenced by their roles in their rehabilitation teams and services. Considering together the occupational therapists' roles and chosen approaches to implementing *COMPLEAT*®, it seems the two approaches were used by the occupational therapists to fulfil different functions in different sociocultural contexts.

The neutral approach most commonly adopted by occupational therapists in short-term, constrained roles, addressed the need to identify the supports the client needed to progress safely through the routine in order to allow for scoring and qualitative description. The participant-observer approach generally adopted by occupational therapists in neurobehavioural-specific roles achieved this *and* went further to more actively try to engage the client in a constructive relationship and make the most of additional opportunities to gather information. The literature would suggest that these different perspectives on the function of assessment may both reflect occupational therapists' perceptions of their roles within their teams and influence their positioning in their teams in a cyclical fashion, promulgating established practices that are contrary to purported ideals (Bright et al., 2012; Duggan, 2005; Toth-Cohen, 2008; Wilding & Whiteford, 2007).

In this study, there were stark differences between the short-term and neurobehavioural-specific roles in the intensity and duration of the occupational therapists' involvement with their clients, the proportion of clients the occupational therapists considered to be resistant to standardised assessments and needing strong foundations to engage in ongoing rehabilitation processes, and the fundamental alignment between their roles and client participation outcomes. In effect, the concept of dynamic assessment, at least as embodied in this very detailed format, was more or less challenging to occupational therapists in different roles, depending on the time and knowledge available, nature and scope of the role, and alignment between the assessment and the role.

The functions for which the occupational therapists used *COMPLEAT*® appear to reflect a trade-off between investment (time and intellectual effort) and depth of information

returned in appraising the utility of the assessment (Duncan & Murray, 2012). As a result of these different functions, the therapists found it more or less challenging to realise the intended connections between their actions as implementing *COMPLEAT*<sup>®</sup>, their observations of their clients' performances, the concept of an overarching and generalisable construct labelled participation, and the implications for interventions and supports.

Those occupational therapists in the neurobehavioural services were usually able to interpret links between the components of *COMPLEAT*<sup>®</sup>, and between *COMPLEAT*<sup>®</sup> and potential interventions, in such a way as to structure their observations and validate the focus of occupational therapy on whole activities. For those in short-term roles, the focus of occupational therapy remained on discrete activities, and as a result, when implementing *COMPLEAT*<sup>®</sup> as in what was observed of their usual practice, clients' broader expressed or observed needs were not always followed. Again these findings are consistent with occupational therapists' perceptions of their roles and environments that impact on their implementation of other innovations toward the attainment of the purported ideals and focus of rehabilitation and occupational therapy (Bright et al., 2012; Toth-Cohen, 2008).

It remains to be seen whether the data from this study, fed forward into the development of *COMPLEAT*<sup>®</sup> and training, support future occupational therapists to make explicit the connections between their assessments and intervention planning. In this study it was clear, however, the potential of the structure of a dynamic assessment such as *COMPLEAT*<sup>®</sup> for considering participation holistically was not appreciated to the same degree by all of the occupational therapists.

Having said that the occupational therapists' role influenced the function for which they used *COMPLEAT*<sup>®</sup>, and therefore the ease with which the intended connections were made, the moderation of the influence of role by the individual occupational therapists' experience should not be ignored. Specifically, the less experienced therapists were more apt to take a neutral stance and more experienced therapists a participant-observer approach, even where their roles may suggest otherwise. Given that clinical reasoning rather than stipulated guidelines underpinned the approach selection, patterns of development in the occupational therapists' rapid and flexible processing of complex situations with increasing expertise are relevant considerations (Ajjawi & Higgs, 2008; Benner, 1984; Gibson et al., 2000; Kristensen et al., 2012).

Here it appeared that more experienced occupational therapists were better able to compensate for a lack of familiarity with the client when choosing their actions by using their awareness and confidence in their therapeutic use of self to neutralise their own impact on their clients' observed performance. This awareness enabled them to incorporate some level of engagement with the client to ascertain further information (and thus rapidly increase familiarity). While the less experienced occupational therapists benefitted from the structure provided by *COMPLEAT*<sup>®</sup> for looking at participation holistically, they sought to be confident in their clients' capabilities and risks and their focus remained on discrete interventions.

In relation to Benner's (1984) description of the Dreyfus Model of skill development as applied to clinical situations, the less experienced therapists in this study reflected the learning of competent performers who are able to take on new situations and manage simultaneous contingencies, and potentially benefit from organising and consciously practicing planning long-range goals. The more experienced therapists



were at the proficient level where they were readily interpreting situations as a whole based on maxims rather than explicit components, drawing upon their experience (Benner, 1984). Some of the more experienced occupational therapists also appear to have crossed the gap from proficient to expert. For these occupational therapists it was intuitive to view the possibilities, which Benner describes as a 'leap' (p.37) from the proficient level that not all professionals will make. The functions to which the occupational therapists applied *COMPLEAT*<sup>®</sup>, and the challenges they experienced, may therefore also reflect the match between the structure and support the *COMPLEAT*<sup>®</sup> framework and tool provides and the usefulness of that structure and support given the characteristics of individual therapists' clinical reasoning.

In attending to the influence of the therapist in assessment that is highlighted by dynamic assessment, this study has illuminated aspects of the application of (dynamic) assessment not previously discussed in the occupational therapy and rehabilitation literature, and how these relate to occupational therapy roles and expertise. The multiple intersecting components of functional performance and the multi-factorial application of occupational therapists' own direct responses and enabling of other supports, as well as the sheer complexity of brain injury and rehabilitation, demands a lot of the occupational therapists' clinical reasoning if they are to maintain a holistic perspective on participation.

It is likely that the occupational therapists are not explicitly aware of their reasoning, particularly as they become more expert and draw more upon experience (Gibson et al., 2000). Dynamic assessment, and particularly *COMPLEAT*<sup>®</sup> with its focus on participation and structural alignment with the ICF, may assist occupational therapists to reconcile the barriers to achieving and making clear to others how occupational

therapy contributes in assessment and rehabilitation. Specifically, the more explicit structures dynamic assessment provides may help less experienced therapists organise and consciously attend to how their actions relate to long-range goals, while helping more experienced occupational therapists to draw upon their experiences in order to grasp situations (Benner, 1984).

### **Addressing the Barriers to Assessment with Clients with Brain Injury**

The concept of dynamic assessment is new to most occupational therapists. For the occupational therapists implementing *COMPLEAT*<sup>®</sup> in this study, the novel and yet familiar strategies and responses highlighted a number of discrepancies between *COMPLEAT*<sup>®</sup>, as a dynamic assessment, and what occupational therapists often understand to be fixed features of standardised assessments. It would seem that these perceptions also underpin the common tensions and uncertainties noted in the literature and anecdotally by therapists in relation to using a range of standardised assessments, and particularly occupational therapists' concerns about disengagement and difficulties interpreting assessments with clients with brain injury and cognitive impairments (White et al., 2014). As they applied *COMPLEAT*<sup>®</sup>, these occupational therapists were able to interpret their clients' responses to meaningful routines and activities with relevant demands and supports, thus both building and maintaining relationships with clients and informing considerations for occupational therapy intervention.

The occupational therapists' implementation of the dynamic assessment in this study contradicted their perception that standardised assessments are uniform and highly specified, down to the wording of instructions and supports given to clients before and—if permitted at all—during the assessment. This was reflected in the

occupational therapists' acute concern for providing the 'right' instructions and supports to clients with respect to the aim of the assessment and interpretation of ratings, as compared to implementing their usual, non-standardised, observational and qualitative evaluations. In raising their concerns, the occupational therapists drew upon their experiences of standardised assessments where the instructions and supports are specified, as is the case for many occupational therapy assessments and most of the assessments their colleagues in brain injury rehabilitation use. This includes, perhaps especially, the psychologists and neuropsychologists whose assessments were inferred to be valued as the most rigorous in these occupational therapists' settings.

Applied to occupational therapy with clients with brain injury and cognitive impairments, however, the rigour of highly standardised instructions is reported as a limitation to the practical implementation of standardised assessments that may even complicate the interpretation of findings where clients have communication, cognitive, or behavioural impairment (White et al., 2014). The ability to adjust the means of instructing and supporting clients within a set of parameters related to the aims of *COMPLEAT*<sup>®</sup> was therefore welcomed.

Using *COMPLEAT*<sup>®</sup>, the occupational therapists were able to work flexibly with their clients to achieve agreement by establishing with each the routines, activities and details that were individually meaningful in the context of individualised rehabilitation programs. By way of the part on environmental factors, the occupational therapists were also able to accommodate the demands for performance that were relevant to the goal of enabling participation for each individual. These features share commonalities with other assessments coming from an occupational therapy perspective (Klein et al.,

2008). For example, the AMPS allows task details to be selected from the range of standardised options in order to be relevant to the individual (A. G. Fisher, 2003), while the PRPP allows both the task and the means of accomplishment to be identified with the individual client and evaluated in terms of the effectiveness of performance (Nott et al., 2009) rather than independence or proficiency in a standardised method. By making the consideration of environmental factors explicit and rating performance according to function in that context in *COMPLEAT*<sup>®</sup>, these occupational therapists could see just how the assessment was made relevant to clients' individual goals and circumstances and also consistent with occupational therapy perspectives as espoused in principles of occupational therapy assessment (Klein et al., 2008).

The negotiation process to determine both relevant activities and relevant performance criteria permitted the occupational therapists to apply their clinical reasoning in what would be seen as variations to the standard administration of many standardised assessments (White et al., 2014). It gave the occupational therapists the opportunity to prioritise what they saw as most important about building and maintaining relationships with their clients. Here the occupational therapists sought to engage their clients in individually-tailored ways that continued to respect each individual's autonomy with regard to the goals and activities of intervention.

Having originated as a formalisation of what occupational therapists in these positions were doing in usual practice within the project partner organisations, *COMPLEAT*<sup>®</sup> was in this way congruent with and responsive to the occupational therapists' concerns for engaging and respecting their clients whilst obtaining relevant information. This is also consistent with what has been found in previous qualitative studies of occupational therapists' approaches to engaging clients with brain injury or cognitive

impairments (Daniëls et al., 2002; White et al., 2014), and the bodies of literature on client-centred practice (Bright et al., 2012; Copley et al., 2008) and interactive aspects of clinical reasoning (M. H. Fleming, 1991b; White et al., 2014).

From the perspective of the occupational therapists, rather than confounding interpretation by negating the standardisation, these adjustments neutralised the impacts of poor motivation or cognitive impairments that may otherwise confound interpretation of observations because they compromise performance on a standardised task but have little apparent relevance to participation in meaningful activities.

It is true that there are many assessments where the provision of instructions is not fixed, and even where interactions during observational assessments are fluid whilst maintaining varying levels of standardisation (e.g., the EFPT, IADL Profile, PRPP, and Dynamic Performance Analysis that were described in Chapter 2). What *COMPLEAT*<sup>®</sup> drew particular attention to for these occupational therapists, which has previously received limited attention in the literature, is that when framed as a dynamic assessment the instructions and supports provided to clients in the course of evaluation might inform not only the interpretation of the client's level of performance, but also the nature of interventions that might address limitations (Haywood & Lidz, 2007; Katz, Bar-Haim Erez, et al., 2012).

While many occupational therapists do report using performance-based assessments in this way, this is usually associated with non-standardised evaluation rather than formal assessment, and still entails challenges in choosing how to interact with the client and interpreting resultant observations (Sansonetti & Hoffmann, 2013). As the concept of

dynamic assessment is relatively new to occupational therapy assessments and is not well known to occupational therapists in practice or widely used in occupational therapy assessments (Katz, Bar-Haim Erez, et al., 2012), the formal intertwining of assessment and intervention was a novel realisation about standardised assessment, even if it reflected usual practice.

Overall, while this study has further evidenced that observational and dynamic assessments do not themselves resolve all tensions with regard to the evaluation of clients with cognitive impairments, these therapists endorsed the previously identified preference for observational assessments as a source for detailed data on their clients' performances in occupational and environmental contexts that might inform intervention planning, particularly where clients have cognitive impairments (Sansonetti & Hoffmann, 2013). The individualisation of the routine, activities, and performance needs enabled the occupational therapists to increase the relevance and therefore motivation for their clients, and the interactions with clients during the dynamic assessment further assisted with engaging clients who might otherwise not appreciate the need for assessment or understand and retain standardised instructions. Thus, this dynamic assessment was able to avoid the complications of interpreting observations in standardised assessments where clients have cognitive or communication impairment (Klein et al., 2008; White et al., 2014).

These occupational therapists also challenged their established views on standardised assessments, and the potential of such assessments to assist them to meet the difficulties inherent in their roles. This shift was not generalised, or likely even fully appreciated by the occupational therapists in this study, but the application of this dynamic assessment provided the chance for the therapists to experience facilitating

clients' participation in ways that highlighted possibilities to achieve the ultimate intended outcome of reduced participation restriction and the roles of occupational therapy in assessment and intervention with this client group.

### **Limitations of this Study**

This study was not without limitations that should be acknowledged before exploring the potential implications of the study and asserting any conclusions. The first limitation would be to recognise the scope of the study and focus of the methods. In particular, this study was associated with the development of *COMPLEAT*<sup>®</sup> and examining patterns representative of a unidimensional construct of participation. As is highlighted using Rasch analysis, the overall measures of participation restriction are observed slightly higher for more difficult activities and lower for easier activities, and thus the patterns across the whole routine that are examined in this study would be expected to vary if only looking at isolated activities. Put another way, the scope of this study was to examine the overall features of the implementation of *COMPLEAT*<sup>®</sup> with respect to the clients' overall participation, and not to focus specifically on interventions for particular activity limitations. The findings therefore have implications on the scale of participation and not necessarily generalisability at the level of individual activities, which is where prior research has focussed.

While the data collected were extensive and detailed, the restricted number of participants involved in this study also remains a limitation. Each setting and service had few occupational therapists involved, and each of those occupational therapists used *COMPLEAT*<sup>®</sup> with very few clients, yet much of the analysis drew on qualitative comparisons across participants and between subgroups (e.g., clients with different levels of participation restriction, or occupational therapists with different roles).

The subgroups of occupational therapists were also unevenly represented, with the senior and sole occupational therapists (who were more experienced) also employed disproportionately to neurobehavioural services. Occupational therapists in short-term, constrained rehabilitation roles were only recruited from one service and involved at one stage. These remain under-represented in this study since, on encountering particular challenges to their use of *COMPLEAT*® discussed herein, the priority of the broader instrument development project was to further develop the assessment and data that would support interpretation with more intensive services, thereby accruing data that would assist supplementing the interpretation and perhaps modifying the process for other priority groups at a later date. Given the likelihood that individuals who elect to work in different settings differ from each other (Rassafiani et al., 2006), broader representation will need to be achieved before generalisations can be made.

With regard to clients, the recruitment of few clients with greater participation restriction was a similarly pragmatic decision given convenience sampling and the challenges already outlined. Such limitations in the sampling restrict the understanding of the processes that have been investigated for some subgroups of the population and thereby the representations in the findings. Further, the study also did not follow up, beyond the assessment session debriefing, with what the occupational therapists pursued with their clients and teams. With *COMPLEAT*® still in development and neither the total scores nor the hierarchies of items or therapists' interventions known, there were no data on which to base recommendations that might influence practice or require advocacy within the team. The data regarding potential influences on practice were therefore derived only from occupational therapists' reports during



debriefing discussions with the researcher and occasional voluntary reports later, combined with the researcher's understanding of the contexts from observations of usual practice in each setting.

Indeed, another limitation is that whilst the engagement of clients was observed, and where possible they were asked their perspectives on the assessment (and research) process following the observation session, this study was conducted predominantly from the perspective of the occupational therapists. Prior research has acknowledged both the importance and the difficulty of engaging clients with brain injury in reflections on occupational therapists' assessment practices and clinical reasoning, even where those clients' impairments are predominantly physical rather than cognitive in nature (Copley et al., 2008). None-the-less, when investigating participation outcomes in support of client-centred and goal-directed rehabilitation it is important to be cognisant of clients' opportunities for involvement in the process. In this study that involvement was delegated largely to the occupational therapists as they recruited the clients and then planned with the client the routine and details that would be most relevant. Given the nature of their brain injuries, most clients required assistance to (at least) initially direct the parameters of the negotiation and the occupational therapists were best able to draw upon their knowledge of the client if they had previously met, their relationships with the people and organisations with whom the clients were familiar, and their awareness of the local context and resources.

Finally, the extent to which any of the findings of this study apply beyond the context of an assessment session using *COMPLEAT*<sup>®</sup> remains to be seen. However, while this study has only examined the ways in which occupational therapists' facilitate their clients' participation whilst engaging those clients in assessment with *COMPLEAT*<sup>®</sup>, the

observations made across multiple, meaningful, everyday activities in more than one environment are similar to the assessments many occupational therapists make informally. For each client, recruitment to the study and selections within the assessment were based on their relevance to the clients' rehabilitation to enable authentic engagement, thereby grounding the study in rehabilitation practice for those services involved. Further, the strategies were examined across clients and occupational therapists, including those in different brain injury rehabilitation settings, and were found to relate to a unidimensional hierarchy of client participation restrictions and preliminary findings previously reported from the application of other assessments. This study design provides for detailed, descriptive, data from observation, which has an important place in elucidating the subtle and tacit strategies occupational therapists use in order to gain a better understanding of assessment, clinical reasoning, and occupational therapy in brain injury rehabilitation (White et al., 2014).

### **Implications for Occupational Therapists to Assert their Expertise in Participation**

Having approached this study from a sociocultural perspective and, in doing so, illustrated the intertwining of interpersonal activities, personal influences, and community contexts, it might be presumed that the findings could influence occupational therapists' interactions with their clients and teams, their own beliefs, and the communities in which they work. If that is the case, then the development of *COMPLETE*<sup>®</sup> and the adoption of dynamic assessments with these characteristics in brain injury rehabilitation would have implications for client-centred, goal-directed rehabilitation enabling clients' participation; for occupational therapists' identities as

participation experts in rehabilitation teams; and for dynamic assessment for occupational therapy.

*Client-centred, goal-directed rehabilitation enabling clients' participation*

The purpose of rehabilitation is to optimise participation for each individual client. If this is to be achieved and recognised, it is necessary to promote participation goals for clients' rehabilitation, and to evaluate progress toward those goals while implementing and monitoring rehabilitation programs comprised of individualised combinations of interventions. Given the multiple factors that influence participation, and the nature of the difficulties faced by clients in brain injury rehabilitation, programs that successfully address clients' individual participation goals draw upon diverse strategies and combinations of strategies. As a result there is a need to address participation outcomes holistically and in context, and not focus solely on proximal impacts and selective indicators of performance such as independence.

*COMPLEAT*<sup>®</sup> addresses participation in such a way as to facilitate client-centred, goal-directed rehabilitation by negotiating the activities and routines that are personally meaningful to each individual's rehabilitation program, and highlighting the demands for performance that are relevant to each individual's situation. The holistic perspective on the interactions between individuals' abilities and impairments, features of the tasks and activities they perform, and supports and demands in their environmental contexts allows for the recognition of individually-relevant goals, needs, and intervention strategies. Thus *COMPLEAT*<sup>®</sup> moves beyond documenting whether or not clients need assistance as a measure of independence, to capturing nuances in the relative contributions of different supports to their participation. Compared with the implementation of narrower approaches, including common

assessments that focus on independence in selected daily activities, this structured view of participation guided by the ICF model assists to maintain a focus on client-centred participation goals in rehabilitation.

As a dynamic assessment with a holistic perspective, *COMPLEAT*<sup>®</sup> illustrates the value of a wide range of direct strategies and recognises the multiple potential targets of intervention to support clients' participation. This feature, unlike assessments of underlying cognitive capacities in standardised tasks and environments, assures relevance to evaluating the impact of rehabilitation interventions that apply remedial, compensatory, environmental or combined strategies. In incorporating environmental barriers and supports specifically, *COMPLEAT*<sup>®</sup> also facilitates the recognition of features of the rehabilitation and assessment environments that contribute to clients' participation, thereby facilitating client-centred approaches and prompting planning for changing circumstances. This may assist occupational therapists to explicitly and comfortably apply and test a wide range of responses that are supported by theory and evidence when implementing their assessments and evaluations to identify how to facilitate their clients' performance toward increasing autonomy.

#### *Occupational therapists' identities as participation experts in rehabilitation teams*

The core focus of occupational therapy is well-aligned with taking participation as the goal of rehabilitation and acknowledging it is a broad concept influenced by multiple factors. However, occupational therapists' roles are poorly understood. There is the opportunity in regularly sharing assessment findings to provide a common language and approach to rehabilitation between team members based on each assessment's conceptual models, which in turn clarifies clinical reasoning and communication between team members. Using standardised assessments further supports clinical

reasoning and communication by providing data to support meaningful interpretations and comparisons. For occupational therapists in particular, recognition of their roles and contributions could be enhanced through the use of the multidisciplinary ICF model, consistent and directly linked assessment and intervention, and clear communication.

Using *COMPLEAT*® to conceptualise occupational therapy in terms of the ICF and participation provides occupational therapists with a multidisciplinary framework to illustrate their particular focus on the interactions between components contributing to participation outcomes, overcoming the challenge of communicating about discipline-specific constructs such as occupation that are poorly understood by others. Specifically, that *COMPLEAT*® items adopt the language of the ICF assists occupational therapists to communicate with other disciplines about the relationships between component tasks and observed performance and participation. The sound theoretical base assists occupational therapists to draw clear links between their assessments and their interventions with clients. Using the ICF for that purpose, occupational therapists are also in a position to communicate and collaborate with the other members of their multidisciplinary rehabilitation teams to identify where each team member contributes to the many factors influencing their clients' participation goals.

The descriptive language of the intervention hierarchy provides a succinct summary of the gradations in occupational therapists' responses to support their clients' participation. This hierarchy of interventions derived from a range of individual clients and occupational therapists, activities, and settings, has broad applicability across disciplinary boundaries. Working with other team members who have specific expertise according to clients' individual needs, occupational therapists could apply

their assessments of clients' participation restrictions and their knowledge of strategies to facilitate clients' participation to collaborate in effective intervention. For example, physiotherapists' expertise in physical function, psychologists' expertise in emotional and behavioural adjustment, and speech pathologists' expertise in communication, could all be complemented by these occupational therapists' expertise in strategies to enable the fit between clients, activities, and environments. Such collaboration enhances the ultimate aim of enabling clients' meaningful participation in everyday activities and environments.

This more comprehensive and clearly articulated communication of occupational therapists' roles highlights where occupational therapists have particular expertise that, while wide-ranging, is complementary to a number of other disciplines rather than merely filling the gaps between them. As was clear from the occupational therapists' actions just while implementing *COMPLEAT*<sup>®</sup> assessments with their clients, occupational therapists' contributions in rehabilitation teams include providing their own direct and indirect interventions, guiding others (including multidisciplinary team members, support workers, and carers) to provide interventions and support to clients, and enabling and monitoring the generalisation of direct and indirect interventions by other team members working on common participation goals. Articulating this expertise may result in others better valuing the profession, making more appropriate referrals, making truly informed decisions about consent to assessment and intervention, and confidently investing—whether by effort or finances—in occupational therapy intervention programs.

### *Dynamic assessment for occupational therapy*

As a profession and across teams, occupational therapists are also encouraged to make use of theory, tools, and interventions that speak to occupational therapy's core principles. The design of *COMPLEAT*<sup>®</sup> makes explicit a dynamic assessment that serves occupational therapists with different levels of experience in brain injury rehabilitation by presenting a holistic perspective on participation. As a dynamic assessment, *COMPLEAT*<sup>®</sup> provides direct insights for occupational therapy intervention, while addressing the barriers to standardised assessment. Examining how occupational therapists utilise *COMPLEAT*<sup>®</sup> illustrates how the dynamic assessment of relevant constructs, based on appropriate theoretical foundations, speaks directly to the complex and individualised interventions common to occupational therapy. Similarly, other dynamic assessments might be developed for occupational therapists that guide intervention planning and demonstrate the unique and valuable contribution occupational therapists can make to achieving clients' individual goals.

*COMPLEAT*<sup>®</sup> specifically illustrates how a dynamic assessment approach might allow the structure of a standardised assessment to be applied to help occupational therapists to *recognise* the diverse range of instructional strategies they use, and *understand* the combination and implementation of those different strategies in relation to each client's needs. This contrasts with the prescriptive, homogenised, least-to-most hierarchies of cues and prompts applied with the purpose of determining clients' independence and needs for assistance. In formalising into a dynamic assessment what occupational therapists most commonly do in their own, non-standardised, observational evaluations, *COMPLEAT*<sup>®</sup> better reflects the individualised interventions

occupational therapists use, whereby they flexibly apply a suite of strategies and responses according to individuals' needs and situations.

For occupational therapists with limited experience in a specialised area of practice, the structure of a dynamic assessment assists to organise observations from new and complex situations with a view to long-range goals. For more experienced occupational therapists who see the holistic situation based on experience, the structure of a dynamic assessment assists to attend to a prioritised set of factors for critical reflection and communication with others. For expert occupational therapists who see the possibilities intuitively without explicit or conscious processing, the structure of a dynamic assessment assists with identifying factors for reflection and communication, and also with supporting less experienced colleagues to acquire expertise. Implemented in the way of *COMPLEAT*<sup>®</sup>, dynamic assessments are congruent with how occupational therapists take into account multiple factors to identify and individualise relevant interventions to address each client's specific participation restrictions.

### **Recommendations for Participation-focused Evaluation to Impact on Practice**

In conclusion, brain injury rehabilitation is often observed to fall short of the ideal of being client-centred and goal-directed. While rehabilitation aspires to optimise clients' participation, many evaluations and outcome measures routinely used in research and practice focus on behaviour, function (often independence) in daily activities, or social contact (van Heugten, Gregório, & Wade, 2012). Occupational therapists' holistic and individualised perspectives on their clients' participation and the interactions between factors that influence participation, when combined with their diverse and relevant skills to craft direct and indirect interventions, are core to meeting many clients' goals.



However, occupational therapists' roles are often poorly recognised and under-utilised when they could be featured as experts on participation.

In this study *COMPLEAT*<sup>®</sup> allowed the occupational therapists to explicitly assess their clients' participation restriction and the supports and strategies they expected to facilitate participation, using a dynamic assessment, and with clients with brain injury with whom the use of standardised assessments is often challenging. The continued development of *COMPLEAT*<sup>®</sup> should attend to further validation and tools to guide occupational therapists in different roles and with varying levels of expertise to utilise the framework to support the characteristics of their clinical reasoning. The dynamic assessment structure, supported by data such as from this study, has potential to support occupational therapists' clinical reasoning at different levels as they perform different duties, overcoming some of the barriers to assessment with the population of clients with brain injury and cognitive impairments. The focus on participation in client-centred, goal-directed rehabilitation highlights occupational therapists' particular expertise within and capacities to work collaboratively with their multidisciplinary teams.

For the profession more generally, dynamic assessment provides the opportunity to draw direct links between the discipline's conceptual foundations and the assessments and interventions conducted with individual clients. However, the concept and methods of dynamic assessment should not simply be adopted from other disciplines. Rather, the profession of occupational therapy should examine how the application of dynamic assessments developed by occupational therapists, for occupational therapists, implements occupational therapy principles. Better understanding of dynamic assessment and its application in developing observational assessments for

occupational therapy may overcome some of the common barriers to the use of standardised assessments to meet occupational therapists' needs and portray the discipline more accurately to others.

## Appendix A:

### **COMPLEAT<sup>®</sup> - Features and Development**

*COMPLEAT<sup>®</sup>* is a dynamic, observational, assessment of participation as defined in the ICF. It has been developed by investigators at the University of Sydney, including myself, in collaboration with occupational therapists and their colleagues in our partner organisations. The project to develop, pilot test, and conduct preliminary investigations on *COMPLEAT<sup>®</sup>* is beyond the scope of the study presented in this thesis. Yet, as described in Chapter 3, the broader instrument development project and this study are intimately connected as this study has examined the application of *COMPLEAT<sup>®</sup>* in practice by occupational therapists. This appendix presents further details on the features of *COMPLEAT<sup>®</sup>*, complementary to the descriptions set out in Chapters 2 and 3, and outlines the stages of the instrument development project within which this study was embedded.

#### **Features of *COMPLEAT<sup>®</sup>***

In Chapter 2 I briefly described *COMPLEAT<sup>®</sup>*, and in Chapter 3 I outlined the features of *COMPLEAT<sup>®</sup>* as they applied to the data collection in this study. Those five features, I described, are the (i) use of observational methods; (ii) focus on performance; (iii) application of ICF categories; (iv) consideration of environmental factors; and (v) assessment designed around routines. Each is detailed and justified here.

#### *Use of observational methods*

*COMPLEAT<sup>®</sup>* makes use of observations of clients' performance in everyday activities, just as occupational therapists often do in their usual evaluations of clients in brain injury rehabilitation settings. As outlined in Chapter 1, observations are frequently used by occupational therapists in these settings since, by drawing on occupational

therapists' expertise and clinical reasoning, they allow the efficient collection of detailed information on the nature of clients' performance. As well as being detailed, the observations are directly relevant to rehabilitation since they provide indicators of clients' performance in everyday activities and environments. Using observations for *COMPLEAT*<sup>®</sup> assessment also avoids problems with self- or proxy-report and allows for dynamic assessment, whereby occupational therapists can directly test hypotheses regarding the nature of clients' difficulties and the interventions that might support participation (Brentnall, Bundy, & Veitch, 2014; Brentnall, Bundy, Veitch, et al., 2014; Brentnall et al., 2013a, 2013b). *COMPLEAT*<sup>®</sup> structures and formalises these observations by applying a consistent rating scale to score clearly defined items in order to evaluate clients' participation restriction.

#### *Focus on performance*

The *COMPLEAT*<sup>®</sup> rating scale focuses on performance by using the ICF Activities and Participation performance qualifier (WHO, 2001). This way, the observations are used to evaluate participation restriction rather than component skills, the extent of independence or activity, or even satisfaction. Given there is little guidance provided with the ICF qualifier, descriptors for each level of the scale have been developed on the basis of testing in order to improve rater reliability. The descriptors direct raters to evaluate the level of participation restriction taking into account (i) assistance and adaptations relative to the 'usual' environment, considering the client's context and culture, and the ordinarily available supports for the individual; (ii) time and effort; (iii) the impact on progression of the routine; and (iv) the safety of persons and objects. These descriptors convey the essence of participation represented by *COMPLEAT*<sup>®</sup> with the intention of creating an expectation of flexibility in clients' approaches to

achievement, in line with client-centred practice and to emphasise desired outcomes (Brentnall et al., 2013b; Veitch & Brentnall, 2011a).

### *Application of ICF categories*

As well as the ICF performance qualifier, *COMPLEAT*<sup>®</sup> applies ICF Activities and Participation categories to provide the scope and definitions of items. The potential item pool was taken to be all categories of the Activities and Participation component of the ICF (Veitch & Brentnall, 2011a, 2011b; Veitch et al., 2009). This approach was selected with consideration of the fact that the ICF itself had already been through an extensive, international, multi-party development process. Where possible, the definitions of the items have been taken from the ICF, following the hierarchical structure and grouping to enable comparisons with other work applying the ICF. Where more detailed definitions are required, such as for deriving the component tasks within many of the activities, a modified activity analysis has been applied to break down the broader ICF categories into smaller, observable, components that are consistent from item to item.

In *COMPLEAT*<sup>®</sup>, the ICF Activities and Participation categories are divided into two item types (Brentnall et al., 2013b; Veitch & Brentnall, 2011a). The *routine activities* that comprise Part II of *COMPLEAT*<sup>®</sup> are the substantive activities the client carries out as part of the assessment (e.g., shopping, meal preparation). These are broken into detailed *component tasks* based on the modified activity analysis. The *support activities* that comprise Part III of *COMPLEAT*<sup>®</sup> are those that can be observed in the course of a variety of routine activities, of which there are six that are scored in every assessment, irrespective of the routine activities observed: use information (ICF chapter d1), manage resources (d2), communicate (d3), interact (d7), move (d4), and self-care (d5).

Each support activity is divided into *component tasks* based on the category blocks that are described in the ICF. Table A.1 provides illustrative examples of each item type.<sup>16</sup>

**Table A.1: *COMPLEAT*® Item Types**

<i>COMPLEAT</i> ® Parent Items	Example <i>COMPLEAT</i> ® Child Items
Support Activities	
One per relevant chapter of the ICF Activities and Participation component	One per block of the relevant chapter of the ICF Activities and Participation component
d1 USE INFORMATION	d1.3 Applying knowledge
d2 MANAGE RESOURCES	d2.2 Organising and managing
d3 COMMUNICATE	d3.1 Receiving communication
d4 MOVE	d4.3 Moving and handling objects
d5 SELF-CARE	No component tasks for this item
d7 INTERACT	d7.1 General interpersonal interactions
Routine Activities	
One per relevant code in the ICF Activities and Participation component	Derived considering the ICF definitions, with a modified activity analysis for consistency
d220 MANAGE MULTIPLE ACTIVITIES*	22.1 Planning and initiating when and where activities will occur
d450 WALKING FOR TRANSPORT	45.3 Walking on different surfaces and for distances
d470 USING PASSENGER TRANSPORT*	47.1 Planning and initiating when and where (the mode and route) to travel
d620 SHOPPING	62.2 Preparing and organising what to buy and resources to shop
d630 PREPARING MEALS	63.6 Finishing preparation and serving the meal
d640 DOING HOUSEWORK	64.4 Storing foods, materials, equipment and domestic goods
d650 HOUSEHOLD OBJECT CARE*	65.3 Using tools and techniques
d850 REMUNERATIVE (PAID) EMPLOYMENT*	85.4 Working alongside and with others
d860 BASIC ECONOMIC TRANSACTION*	86.3 Locating and accessing the merchant

*Notes.* Starred (\*) items have not been included in the quantitative analyses in the project to date. See Appendix C for further explanation.

<sup>16</sup>Note the two item types serve a functional purpose rather than a scoring distinction. Both are scored on the same rating scale and contribute to one total score (i.e., unlike the AMPS motor and process items).

### *Consideration of environmental factors*

Environmental factors are included in Part I of *COMPLEAT*<sup>®</sup>, defined and categorised according to the ICF (Brentnall et al., 2013b; Veitch & Brentnall, 2011b). These include a vast range of factors external to the client that are not features of the activities, but none-the-less exert significant impacts on participation. *COMPLEAT*<sup>®</sup> allows the evaluation of clients in different environments within one assessment. Impacts of environmental factors encountered over the course of the assessment are recorded with *COMPLEAT*<sup>®</sup>, which is a particularly important consideration when trying to make generalisations from one setting of care to another, or for planning and evaluating interventions aimed at modifying environmental factors. These factors include features of physical and sensory environments, such as accessible design, the presence of natural or built-in cues and prompts, and the degree of sensory stimulation (e.g., from cluttered, crowded, or noisy environments). Environmental factors also include features of dynamic interpersonal environments, such as the presence of family members, carers, therapists, and members of the community in all roles from paid assistants to passing strangers. Any of these environmental factors may be supports or barriers, to different people, at different times, or in different activities and settings.

### *Assessment designed around routines*

Finally, assessment with *COMPLEAT*<sup>®</sup> is built around the unique idea of ‘routines’ with the intent of directly representing meaningful outcomes that are purposeful and individually relevant to clients and their rehabilitation programs (Veitch & Brentnall, 2011a, 2011b; Veitch et al., 2009). A routine is a series of about three to five activities that are connected as a purposeful unit with an endpoint that represents a meaningful

accomplishment for the client. That is, something the client can identify has been achieved from the assessment session. Each routine is built around a major activity such as ‘meal preparation’, ‘running errands’ or ‘employment’. For example, transport, shopping, meal preparation, and housework activities are connected into a routine for (acquiring and) preparing a meal. Supporting a client-centred approach, different routines can be selected depending on clients’ interests and needs (Veitch & Brentnall, 2011b).

The concept of routines assists to inform interpretation and decision-making regarding the need for intervention or impacts on everyday life by providing for the observation of a range of behaviours in different contexts, over an extended period, to provide a good understanding of the nature of errors (Bottari & Dawson, 2011). For assessment with clients with brain injury in particular, routines are goal directed and unstructured, and require multi-tasking. This allows for holistic and occupation-based assessment with the potential to detect executive functioning difficulties (Cramm et al., 2013; J. M. Fleming et al., 2000; Manchester, Priestley, & Jackson, 2004).

### **Instrument Development Project Stages**

The instrument development project had four stages leading up to and parallel with this study. The first two stages were conducted in Australia and the third and fourth in England, though the project partners from England were involved throughout.

#### *Stage 1: Development and first pilot*

The team of academics and partners initially developed Version 1 of *COMPLEAT*<sup>®</sup> based on the concept of a routine comprised of inter-related activities (Veitch et al., 2009), but in practice including only one routine: simple meal preparation. The rating scale



had only three points (independent, assisted, and unable), and did not explicitly detail the multiple considerations outlined above. The support activities now included as Part III were also included as a supplement rather than as part of the body of *COMPLEAT*<sup>®</sup>. This supplement provided a very detailed breakdown of each support activity, including all of the detailed ICF categories for rating according to the ICF definitions. Part I on the environmental factors was brief, including a few multiple-choice options but calling mostly for description. Part II used the ICF definitions for activities without modification and divided the activities into components following the examples provided in the ICF definitions.

Pilot testing included managers, an occupational therapist, and another therapist from one residential rehabilitation service. *COMPLEAT*<sup>®</sup> was first piloted with one client on two occasions. The focus of the pilot was on the acceptability, feasibility, and utility of *COMPLEAT*<sup>®</sup> (Veitch et al., 2009), working with the client's therapists on preparing for and interpreting the observation.

#### *Stage 2: Development and second pilot*

The first pilot was used to inform the continued development of *COMPLEAT*<sup>®</sup>, culminating in the production of Version 2.0 (Veitch & Brentnall, 2011a). The main impetus for revision was to better use the assessment to operationalise the intended connection between clinically-relevant support activities and overall participation. This was achieved with a major revision implemented as further routine activity items were created. Version 2.0 allowed for multiple options from which the routine to observe in each assessment could be chosen for relevance to the individual client. The five-point ICF qualifier was also adopted. The support activities were included in the assessment form as Part III rather than appended as a supplement, and were also

referred to throughout Part II to allow the occupational therapists to make explicit connections between routine and support activities. Part I was expanded, including more multiple-choice options as well as descriptions. Finally, Part II included item descriptions based on the ICF but edited to ensure that elements would be observable and relevant in both Australia and England. These changes are summarised in Table A.2.

**Table A.2: Comparison of Version 1 and Version 2 of *COMPLEAT*<sup>®</sup>**

	<b>Version 1</b>	<b>Version 2</b>
Routines	Only simple meal preparation	A variety relevant to clients
Environment	Brief, with a few multiple choice options and mostly descriptions	Expanded with more multiple choice options and descriptions
Routine Activities	Item descriptions drawn directly from ICF definitions; component tasks derived from ICF descriptions, including elements from related ICF categories but excluding additional details	Item descriptions based on the ICF definitions and edited for relevance to Australia and England, with component tasks developed using a modified activity analysis for consistency across items
Support Activities	Relevant categories from the ICF Activities and Participation component listed in a supplement to the main forms for rating according to ICF definitions	Included as Part III <i>COMPLEAT</i> <sup>®</sup> items based on the ICF, cross-referenced with Part II items and detailed in the manual for scoring
Rating Scale	Three-point rating scale indicating independent, assisted, or unable with no additional descriptions provided for raters	Five-point rating scale based on the ICF qualifier with descriptors including four contributing factors to guide raters

Version 2.0 of *COMPLEAT*<sup>®</sup> was reviewed by academics and rehabilitation providers before a second round of pilot testing in a community rehabilitation service with a very different target client group than the service in Stage 1. This second pilot involved two occupational therapists who had not previously been involved, and a further two clients went through with *COMPLEAT*<sup>®</sup> assessments. Again the focus was on acceptability, feasibility, and utility (Veitch & Brentnall, 2011a).

### *Stage 3: Development and first implementation trial*

The second pilot led to the continued development of *COMPLEAT*<sup>®</sup>. The changes were less substantive than from Stage 1 to Stage 2, giving rise to Version 2.5 of *COMPLEAT*<sup>®</sup> for the first implementation trial. That trial involved introducing *COMPLEAT*<sup>®</sup> to five teams with 11 occupational therapists working across residential/transitional and community rehabilitation settings. The training and manual (*User Guide* and *Scoring Descriptions* volumes) were more developed and formal for this stage to promote consistency across participants and settings. In *COMPLEAT*<sup>®</sup> data collection specifically, nine occupational therapists recruited 19 clients (one team with two occupational therapists did not have ethics approval to collect *COMPLEAT*<sup>®</sup> data from clients for the research project). In addition to continuing to investigate acceptability, feasibility and utility, these data contributed to the first analysis of the psychometric properties of *COMPLEAT*<sup>®</sup> scores. A two-facet analysis of clients and items provided promising results (unpublished data).

### *Stage 4: Development and second implementation trial*

After Stage 3, further minor revisions were made to *COMPLEAT*<sup>®</sup>, including refining and adding to the range of routines, expanding the training for occupational therapists, and making subtle improvements to the forms. The second implementation trial used what was referred to as *COMPLEAT*<sup>®</sup> Version 2.6 (or, being the current version, simply *COMPLEAT*<sup>®</sup>) and involved a mix of new participants and participants from Stage 3. Nine occupational therapists and ten clients completed the data collection used in this study. The feasibility and utility was examined with respect to the changes implemented since Stage 3, but the emphasis was on continuing data collection to add to the Stage 3 analyses of reliability and validity. The data from Stages 3 and 4 were combined to

investigate the hierarchy of participation and preliminary psychometric properties of the *COMPLEAT*<sup>®</sup> scores (Brentnall, Bundy, Veitch, et al., 2014; Brentnall et al., 2013a, 2013b). These are described in Appendices B and C of this thesis.

## **Appendix B:**

### ***COMPLEAT*<sup>®</sup> - Hierarchy of Participation Restriction**

The quantitative application of the Rasch measurement model and psychometric properties of *COMPLEAT*<sup>®</sup> total scores are beyond the scope of the study reported in this thesis. However, the principle of unidimensionality and the consequences for identifying the relative position of each item and each client along a single scale of participation restriction is central to the interpretation of *COMPLEAT*<sup>®</sup>. Critical to this study, the resulting hierarchy of participation restriction also has implications for understanding the occupational therapists' responses during the dynamic assessment and subsequent intervention planning, and was therefore used as a skeleton for the Phase 2 analysis.

This appendix presents the hierarchy of participation restriction established as part of the instrument development project and applied in the course of this study. Included is a description of the hierarchy, followed by a discussion of the evidence for its validity, as a premise underpinning the application of *COMPLEAT*<sup>®</sup> in this study and the interpretation of the qualitative data in the Phase 2 analysis.

#### **Total Scores and the Hierarchy of Participation Restriction**

To derive the total scores and descriptions of the participation restriction hierarchy, a many-faceted Rasch analysis was conducted using Facets Rasch analysis software (Bond & Fox, 2007; Linacre, 2014). The data for this analysis were the scores of *COMPLEAT*<sup>®</sup> assessments (Part II and Part III items) conducted in Stages 3 and 4 of the instrument development project. The Rasch analysis, detailed in Appendix C of this thesis, accounted for and measured the clients' performances, the difficulty of each

item, and the difficulty of each routine, all along the same hierarchy of participation restriction.

The nature of the items and the observed performances of clients at each level of participation were then examined qualitatively in order to contribute to the evaluation of the validity of *COMPLEAT*<sup>®</sup> in the broader instrument development project, and to provide a descriptive point of reference for the qualitative analysis in this study. This descriptive data, presented in Table B.1, summarises the features of the hierarchy represented quantitatively by the total scores and Rasch analysis. For the purposes of the qualitative investigations in this study, this hierarchy was divided into the five levels described in Table B.1.

#### *Validity of the hierarchy of participation restriction*

A key premise of the study reported in this thesis is that the interpretations of the *COMPLEAT*<sup>®</sup> scores as indicators of participation restriction, as defined in the ICF, are valid for these clients in different settings and stages of brain injury rehabilitation. Initial support for the proposition that *COMPLEAT*<sup>®</sup> scores represent the construct of participation is garnered from the development of *COMPLEAT*<sup>®</sup> based on the ICF. Specifically, *COMPLEAT*<sup>®</sup> has taken from the ICF the definition of participation, categories from the Activities and Participation component for item content, and the Participation Performance Qualifier for the rating scale. On this basis it is argued that *COMPLEAT*<sup>®</sup> includes content that is representative of the construct of participation, arranged consistent with the theory that defines that construct. How those items are combined in measures, however, requires investigation.

**Table B.1: Hierarchy of Participation Restriction as Represented by *COMPLEAT*® Items and Performances of Clients in this Study**

	Participation Restriction Level	Main Themes Represented Among Items	Performances of Clients in this Study
Severe	Items and client performances demonstrate difficulties with basic components across a variety of activities that results in severe participation restriction across areas that is not compensated for by compensatory strategies and everyday environmental supports.	<ul style="list-style-type: none"> <li>- <i>Very easy items</i> dominated by activity support components</li> <li>- Items presenting difficulty to only those with the greatest participation restriction, on which it is relatively easy for most clients to perform functionally as indicated by scores of 0 or 1 (mean raw scores 0.5 or less).</li> <li>- <i>Communication</i> - components of the activity support.</li> <li>- <i>Movement</i> - components of the activity support.</li> </ul>	<ul style="list-style-type: none"> <li>- 1 client scored at this level overall</li> <li>- Across all items on which scores were recorded, the raw scores averaged greater than 2.5, indicating severe participation restriction across all areas</li> <li>- Difficulty with some of the easiest items, particularly with communication but also with movement</li> <li>- Difficulties having a functional impact on performance not addressed by compensatory strategies and additional supports</li> </ul>
Moderate-to-Severe	Items and client performances demonstrate emerging self-regulation for functional performance of the basic components and more difficult activities.	<ul style="list-style-type: none"> <li>- <i>Easy items</i> at the same level or easier than the median item defining the zero point of the scale.</li> <li>- Items on which most clients in this study would be expected to have mild difficulties.</li> <li>- <i>Communication</i> extended to include the social and behavioural elements of <i>interactions with others</i></li> <li>- <i>Movement</i> items addressing longer and more complex body movements and the handling of multiple objects in functional situations</li> <li>- <i>Self-regulation of actions</i> by starting/ initiating, pacing, and stopping/ finishing</li> </ul>	<ul style="list-style-type: none"> <li>- No clients scored at this level overall, but several demonstrated performance on some elements consistent with this level</li> <li>- In the area of communication, instigation and continuation of interactions with others means clients at this level are not solely reliant on intervention</li> <li>- Difficulties with sustaining movement and adjusting for the additional time taken and adaptive techniques required to compensate</li> <li>- Delayed, reassured or prompted to move between steps and activities, identifying when to terminate one, how to start the next, and the required pacing</li> </ul>

	Participation Restriction Level	Main Themes Represented Among Items	Performances of Clients in this Study
Moderate	Items and client performances demonstrate emerging performance in preparing and knowing that underpins integrated function across activities, but difficulties continue to require intervention throughout the routine and with most activities, albeit with some chains of independent performance.	<ul style="list-style-type: none"> <li>- <i>Moderate items</i> relative to the range measured by <i>COMPLEAT</i><sup>®</sup></li> <li>- Items on which most clients score around 2, representing moderate difficulties with which additional support is required for most clients</li> <li>- <i>Learning and knowing</i> including gathering information and knowing what and how to perform activities and component tasks</li> <li>- <i>Preparing and organising</i> including adequately planning how the activity will be achieved using time, space and materials</li> <li>- <i>Integrated functioning</i> in physical, sensory and cognitive domains to complete activities</li> </ul>	<ul style="list-style-type: none"> <li>- 8 clients scored at this level overall</li> <li>- Raw scores across items averaged around 2, representing moderate difficulty but needing assistance less than half the time, with clients showing some chains of independent performance particularly once organised</li> <li>- Difficulties generating and selecting ideas at a sufficient level of detail to enable planning</li> <li>- Difficulties with having and accessing the required knowledge on what and how to perform tasks and to solve problems</li> <li>- Difficulties initiating and finishing tasks associated with difficulties planning</li> </ul>
Mild-to-Moderate	Items and client performances demonstrate emerging functional capacities in organising and integrating performance in multiple tasks, activities, and environments (including in managing frustrations with the impacts on performance) as is required of everyday routines.	<ul style="list-style-type: none"> <li>- <i>Difficult items</i> with an average raw score greater than 2 (moderate difficulty)</li> <li>- Items on which most clients had moderate to severe difficulties</li> <li>- <i>Preparing and organising</i> to manage and adapt while completing complex activities with the available time, space, and materials</li> <li>- <i>Integrated functioning</i> across domains to complete activities of moderate difficulty</li> </ul>	<ul style="list-style-type: none"> <li>- 10 clients scored at this level overall</li> <li>- Raw scores across items 1-2, requiring some assistance but managing many items with available adaptations and supports</li> <li>- Difficulties making decisions and planning but able to draw on prior experience and environmental supports rather than assistance</li> <li>- Difficulties organising time and space related to inefficient planning and distraction</li> <li>- For some individuals, difficulty managing frustration with impacts on performance</li> </ul>



	Participation Restriction Level	Main Themes Represented Among Items	Performances of Clients in this Study
Mild	Items and client performances demonstrate emerging performance in dynamic situations that draw upon cognitive and executive functions, with clients using compensatory strategies and reluctant to seek assistance with these most difficult aspects of participation.	<ul style="list-style-type: none"> <li>- <i>Very difficult items</i> at the more difficult end of the range measured with <i>COMPLEAT</i>®</li> <li>- Items that are challenging to all clients with brain injury</li> <li>- <i>Integrated functioning</i> to manage resources and use information in all activities</li> </ul>	<ul style="list-style-type: none"> <li>- 6 clients scored at this level overall (including 1 anonymously)</li> <li>- Raw scores across items less than 1, indicating functional performance considering the available environmental supports and infrequent intervention</li> <li>- Disorganisation the most noted feature of performance difficulties, decreasing efficiency but not often requiring assistance</li> <li>- Use of compensatory strategies and reluctance to seek assistance</li> </ul>

To date, there has been no investigation that has compared *COMPLEAT*® scores against any other criterion measure. As a precursor to validation against an external criterion, investigation of the representation of the construct of participation restriction in *COMPLEAT*® scores has been initiated. One mechanism for this is to qualitatively compare the constructs in *COMPLEAT*® and similar assessments. As described in Chapter 2 of this thesis, the AMPS and PRPP are two other occupational therapy assessments employing observational methods to measure aspects of the related construct of occupational performance. Further, each of these has been used with clients with brain injury, with evidence for the validity of the interpretations of their respective scores including results from Rasch analyses of their item difficulties (see Chapter 2 for discussion of the evidence for validity of the interpretations of each of these measures). A third assessment, the *Mayo-Portland Adaptability Inventory* (version 4, MPAI-4; Malec & Lezak, 2003) has also been developed for use with clients with brain injury across settings and stages of brain injury rehabilitation. While not observational in the sense of *COMPLEAT*®, the AMPS and PRPP, the MPAI-4 is commonly scored by rehabilitation teams based on their knowledge of clients (including through observation), and evidence for the validity of its scores has also included a Rasch-derived hierarchy of clients' abilities, adjustment, and participation after brain injury. Comparing the item hierarchies from these four assessments provides an indication of the validity of each.

While these four assessments are not directly comparable, there are parallels between the hierarchies outlined in Table B.2. Specifically, the greatest participation restriction is characterised in *COMPLEAT*® by difficulties with communication and movement components, social and behavioural interactions, and self-regulation of

**Table B.2: Comparisons Between Item Hierarchies of Different Assessments**

<b>COMPLEAT® Hierarchy of Participation Restriction</b>	<b>MPAI-4 Hierarchy of Injury Sequelae (incl. <i>participation</i>)<sup>a</sup></b>	<b>AMPS Hierarchy of Motor (M) and Process (P) Skills<sup>b</sup></b>	<b>PRPP Hierarchy of Information Processing Abilities<sup>c</sup></b>
Greatest restriction	Very severe	Easiest	Easiest
Communication components	audition	uses (P)	Recognising and categorising objects, people, environments and goals
Movement components	pain, vision	lifts (M)	
Social and behavioural interactions	dizziness, sensitivity to mild symptoms, motor speech, use of hands	moves (M), endures (M)	Attending to and processing sensory input and starting/stopping task steps;
Complex movements and object handling	anxiety, depression, inappropriate behaviour	attends (P), chooses (P), searches/locates (P)	Using and coordinating the body and searching and locating information
Self-regulation of activity		reaches (M), sequences (P), handles (P)	
Learning and knowing how to perform actions	anger, <i>self-care</i> , visuospatial abilities	coordinates (M), gathers (P), transports (M)	Supervisory cognitive strategies such as maintaining attention, persisting and contextualising
Preparing and organising by planning	fatigue, information, mobility communication	inquires (P), terminates (P), heeds (P), aligns (M)	More complex planning and performance processing strategies such as adjusting, sequencing, calibrating, and modulating
Integrating physical, sensory and cognitive functions	family relationships, <i>initiation</i> , self-awareness	manipulates (M), continues (P), navigates (P), organises (P)	Complex executive processing skills such as monitoring and questioning, judging and analysing
Preparing and organising adaptively	attention, <i>transportation social contact</i>	grips (M), bends (M), flows (M)	
Integrating functions in more complex activities	<i>leisure</i> , problem-solving memory, <i>work/school</i>	initiates (P), stabilises (M), restores (P), adjusts (P)	
Integrating functioning in all activities	<i>independent living money management</i>	calibrates (M), walks (M), paces (M/P), notices/responds (P)	
		positions (M)	
		benefits (P)	
		accommodates (P)	
Least restriction	Mild	Most difficult	Most Difficult

Notes. The top of each column represents poorer outcomes. <sup>a</sup> Malec et al. (2003). <sup>b</sup> A. G. Fisher (1993, 2003). <sup>c</sup> Nott and Chapparo (2012, p. 260).

activity. This corresponds with impairments on the MPAI-4 with motor speech, use of hands, and inappropriate behaviour, all in the most severe half of the hierarchy, and anger, mobility and communication around the middle. The next group of MPAI-4 items are also relevant, with relationships paralleling social and behavioural interactions, and initiation and self-awareness paralleling elements of self-regulation of activity. Looking to the PRPP, the easiest items relate to recognition, which has no direct parallel in *COMPLEAT*<sup>®</sup>. However, the next level of items in the PRPP address attending to and processing information, and starting and stopping, which are similar to regulating activity in *COMPLEAT*<sup>®</sup>. PRPP items relating to using and coordinating the body are likewise related to *COMPLEAT*<sup>®</sup> items on simple and complex movements, and object handling. Many of the AMPS items across much of the hierarchy are similar. In this way, the simplest items on the MPAI-4, AMPS and PRPP, which represent impairments and skills respectively, are easier than the items reflecting the greatest participation restriction on *COMPLEAT*<sup>®</sup>, but other relatively easy items concur.

The middle of the *COMPLEAT*<sup>®</sup> participation restriction hierarchy is represented by learning and knowing, planning, and integrating functions across different domains. Items around the middle of the MPAI-4 hierarchy such as fund of information, self-awareness, and attention are the nearest parallels. Likewise, the PRPP items around the middle of that hierarchy that address supervisory cognitive strategies are related. On the AMPS, items such as heeds (which refers to sustaining performance matching the goal), continues (which is about temporal organisation), and navigates and organises (which refer to organising the work space), are related and all appear in the more difficult half of the AMPS hierarchy. Interestingly also among these more difficult AMPS items are motor items such as aligns pertaining to the body,

manipulates pertaining to objects, and flows and bends. That these motor items are more difficult than parallel *COMPLEAT*® and PRPP items may reflect differences in the criteria on each assessment's rating scale such as the penalisation of two points on the four-point AMPS scale for propping the body, decreased dexterity, or a lack of fluidity of movement since the AMPS measures motor skills, compared with the *COMPLEAT*® and PRPP focus on function.

Finally, the *COMPLEAT*® items representing the least participation restriction relate to adaptive preparations and integrating functions in increasingly difficult activities. These relate to items on the MPAI-4 representing more mild sequelae, such as problem-solving and the participation items related to leisure, work and school, and independent living. The PRPP items on complex planning and executive processing clearly relate to the *COMPLEAT*® items reflecting the least participation restriction, though the most difficult of these PRPP items may not represent as mild sequelae as the MPAI-4. Likewise, the AMPS items adjusts, benefits and accommodates represent adapting performance and are among the most difficult on that hierarchy, paralleling *COMPLEAT*® and the PRPP.

In summary, these comparisons against other relevant and well-researched assessments provide preliminary evidence of the validity of the hierarchy of participation restriction represented by *COMPLEAT*® as it has been applied qualitatively in this study. Future investigations will need to validate this qualitative hierarchy against concurrent indicators within a group of participants to provide further, quantitative, validation. For now, Appendix C presents the preliminary statistical analysis of the psychometric properties of *COMPLEAT*® scores from the instrument development project, which have been investigated using a Rasch measurement model.

## **Appendix C:**

### ***COMPLEAT*<sup>®</sup> - Technical Details and Results of the Rasch Analysis**

This appendix briefly presents the data and analysis used to establish the total scores and participation restriction hierarchy applied in this study. It outlines the preliminary findings on the psychometric properties of the *COMPLEAT*<sup>®</sup> total scores that were used to group the client participants for the Phase 2 analysis of the qualitative data in this study.

#### **Brief Details of the Rasch Analysis Methods**

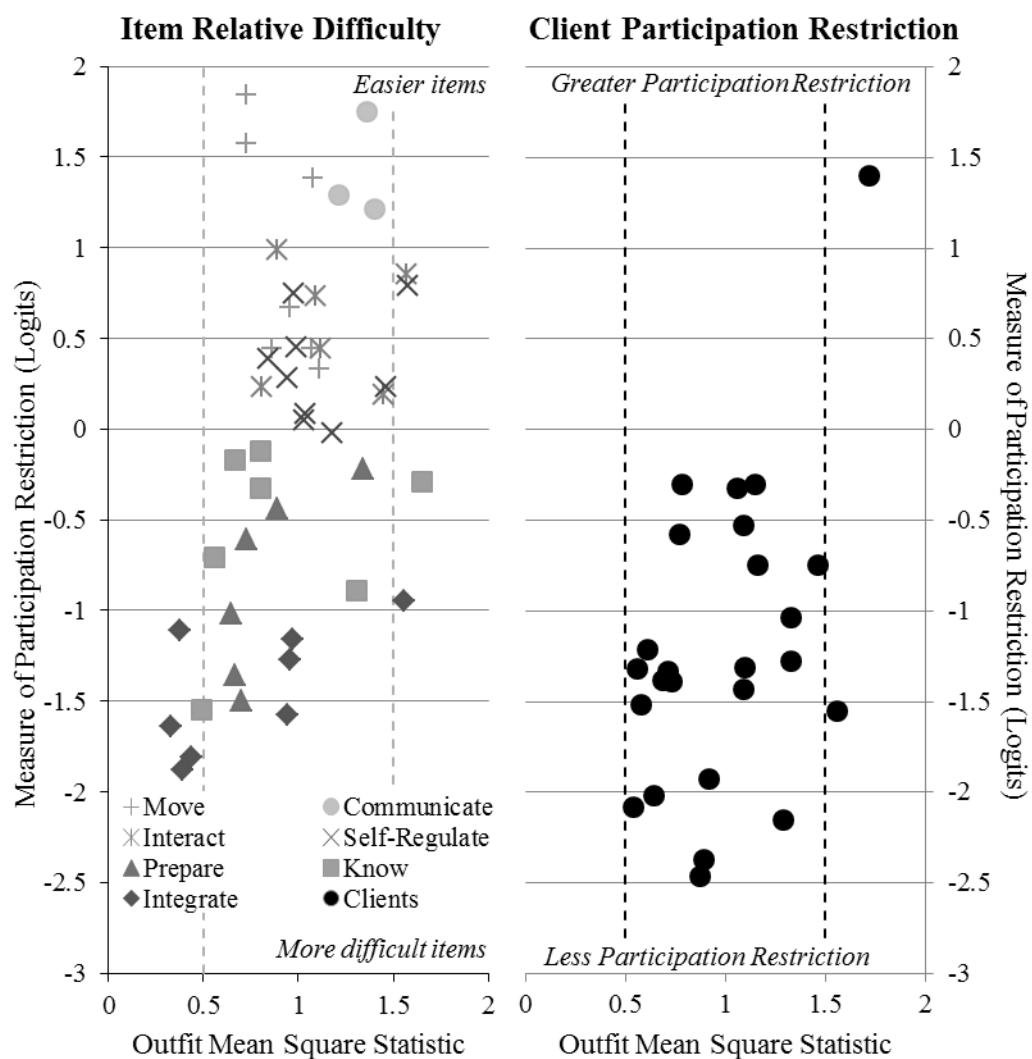
In order to derive the *COMPLEAT*<sup>®</sup> total scores and participation restriction hierarchy, a Rasch analysis was conducted with data from Stages 3 and 4 of the instrument development project. In total, scores from 27 observations of 25 clients were analysed in a many-faceted Rasch analysis using Facets software (Linacre, 2014). The assessments yielded 1205 valid item observations across 70 items (activities and component tasks across Part II and Part III) and 3 routines (simple meal preparation, complex meal preparation and running several errands). While overlap of items was in most instances extensive given Part III items appear in each routine and many Part II activities occur in multiple routines, overlap between the routines in this analysis was minimal. Indeed, one client and one routine were excluded from the analysis as there was insufficient overlap in the routine facet to obtain reliable estimates of the client's participation restriction or the difficulty of the routine.

Rasch analysis is predicated on a series of assumptions that define the measurement of a unidimensional construct. As applied to *COMPLEAT*<sup>®</sup>, the assumptions are that more able clients are likely to score better on any item, and that easier items and routines are easier for all clients so that any client is likely to score better on those items and

routines. Fit statistics calculated for each client, item, and routine are a key indicator of whether those assumptions are sufficiently well met to interpret the resulting measures as representing a unidimensional construct (Bond & Fox, 2007). Facets presents two pairs of fit statistics: mean squares and corresponding *t* statistics for infit (weighted) and outfit (unweighted) calculations (Bond & Fox, 2007; Linacre, 2014). Outfit mean square statistics were used as the criterion for this analysis in accordance with recommendations for evaluating the fit to the expectations of the Rasch measurement model for items scored on rating scales (Smith, Rush, Fallowfield, Velikova, & Sharpe, 2008). Mean squares are chi-square statistics and therefore have an expected value of 1.0 and range from 0.0 to infinity (Bond & Fox, 2007; Linacre, 2014). For the purposes of application in this qualitative study, a generous threshold was set in accepting items in describing the participation restriction hierarchy. Specifically, items with outfit mean square fit indices greater than 2.0 were treated as suspect and not included in the representations of the participation restriction hierarchy since they may reflect a different dimension of performance. This upper level limit to define “misfit” was selected to be generous given the preliminary stage of the instrument development and qualitative purpose to which the data were applied in this study. While items with mean square fit statistics in the range of 1.4 to 1.7 are considered unproductive for measurement on rating scales and clinical observations, those items with mean square fit statistics greater than 2.0 are of concern since they have such a poor fit to the expectations of the model that they are likely to degrade measurement (Wright & Linacre, 1994). Finally, items with error estimates greater than 0.5 logits were excluded from the description of the participation restriction hierarchy since they cannot be reliably located on the hierarchy with the available data.

## Preliminary Findings on the Psychometric Properties of *COMPLEAT*<sup>®</sup> Scores

The Rasch construct map in **Figure C.1** presents client performance measures and the item difficulties for those items (n=46) with the most reliable estimates of participation. This construct map summarises a wealth of information from the Rasch analysis. Most importantly to the study reported in this thesis, the position on the vertical scale represents the relative level of participation restriction if all other factors



**Figure C.1: Hierarchy of Participation Restriction**

*Notes.* Grossly misfitting items (outfit mean square statistics greater than 2.0) are not shown in this figure as they may not be representative of the unidimensional construct of participation restriction illustrated with the other items (see below). Items with few observations *and* error margins greater than 0.5 logits are also not shown. All clients are shown for the purpose of this study. The three routines are not shown in this figure.



were held equal. In effect, a client observed to have the same level of participation restriction as a given item would, on average, be expected to have moderate problems with that item (since moderate problems are the midpoint of the *COMPLEAT*® rating scale), mild if any problems with significantly easier items, and more severe problems with significantly more difficult items. This is what is referred to throughout this thesis as the *COMPLEAT*® hierarchy of participation restriction, which has been utilised in the study reported in this thesis and detailed in Appendix B. Also represented on the horizontal axes of the Rasch construct map are indicators of the veracity of the data by way of estimates of fit to the Rasch model.

For the statistical analysis and to derive the total scores used to measure each client's participation restriction, all available data (25 clients, 70 items and 3 routines) were included. The five-point (0-4) rating scale was found to function as expected. The relative difficulties of each point on the rating scale were ordered as expected, with outfit mean squares all close to 1.0. The complete participation restriction category (4 on the *COMPLEAT*® rating scale) was, however, rarely used (only 2% of all ratings on all items).

The relative participation restriction of the 25 clients was well-measured across a wide range with a person separation index of 4.49 and reliability of .95. However, the one outlying client (whose data also misfit) should be taken into account and further data should be collected on clients with more severe participation restriction. This gap is reflected in the much lower item separation index of 1.64 and reliability of .73, indicating insufficient client data to confidently estimate the relative difficulty of the many items in this range. The three included routines were well-measured with a

separation of 5.90 and reliability of .97, reflecting there being relatively few of these, which were also well-matched to the clients and items.

Turning to the item statistics, four routine activities and their component tasks (n=21) with very large standard error values were ignored in the qualitative characterisation, but retained in calculating the scores. The position of these items on the participation restriction hierarchy was not able to be reliably estimated because, being items only added in Stage 4 and not taken up by all clients, each was scored three or fewer times in assessments used in this analysis. Also ignored in the qualitative review were an additional three routine activity component task items that also had difficulty estimates with measurement error greater than 0.5 logits, each of which were scored only seven times in this project. A final three items were excluded from the characterisation of the participation restriction hierarchy in this study on the basis of inadequate fit to the expectations of the Rasch model. These were 'Preparing something to drink' (a component task in the meal preparation activity), 'Handling stress' (a component task of the managing resources support activity, which also misfit), and 'Planning time and space for meal preparation' (a component task in the meal preparation activity). Each should be further investigated as the development of *COMPLEAT*<sup>®</sup> continues to identify if they are representative of participation restriction, but they were left in the analysis to calculate the measures of client participation restriction since they represent only 4% of items. All clients whose participation restriction was able to be estimated with the available linking data were retained for the purposes of this study.

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