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The Australian Stuttering Research Centre



Developing a Stand-alone Internet Version of the Lidcombe Program for Early Stuttering

A thesis submitted in fulfilment

of the requirements for the degree of Doctor of Philosophy

by

Sabine Van Eerdenbrugh

Sydney, NSW

1st May, 2014

AUTHOR'S DECLARATION

I, Sabine Van Eerdenbrugh, conducted the research and the writing of this thesis, *Developing a Stand-alone Internet Version of the Lidcombe Program for Early Stuttering*. I certify that the empirical studies carried out for this thesis are authentic. They were approved by the University of Sydney Human Ethics Committee and the South Western Sydney Local Health District Human Research Ethics Committee. Conclusions were drawn on the basis of the data from the studies described in the thesis. The thesis does not contain material published by another person, except where acknowledged, and has not been submitted for any other degree.



Sabine Van Eerdenbrugh

1st May, 2014

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Soon after our arrival in Australia several years ago I visited the Australian Stuttering Research Centre (ASRC). I was immediately immersed in the enthusiasm and professionalism of the centre. I remember saying to Bart that *I would love to work there*. I was not wrong in my first impression!

The Lidcombe Program is a magnificent program that has helped thousands of families, my family included. I knew the Lidcombe Program from doing it with my son and from conducting it in my speech pathology practice with clients. After having scrutinised the Lidcombe Program to its core, after having turned it inside-out and upside-down during my candidature, I can report findings that reach new frontiers. The following people who nurtured me along the journey helped me to get to that point:

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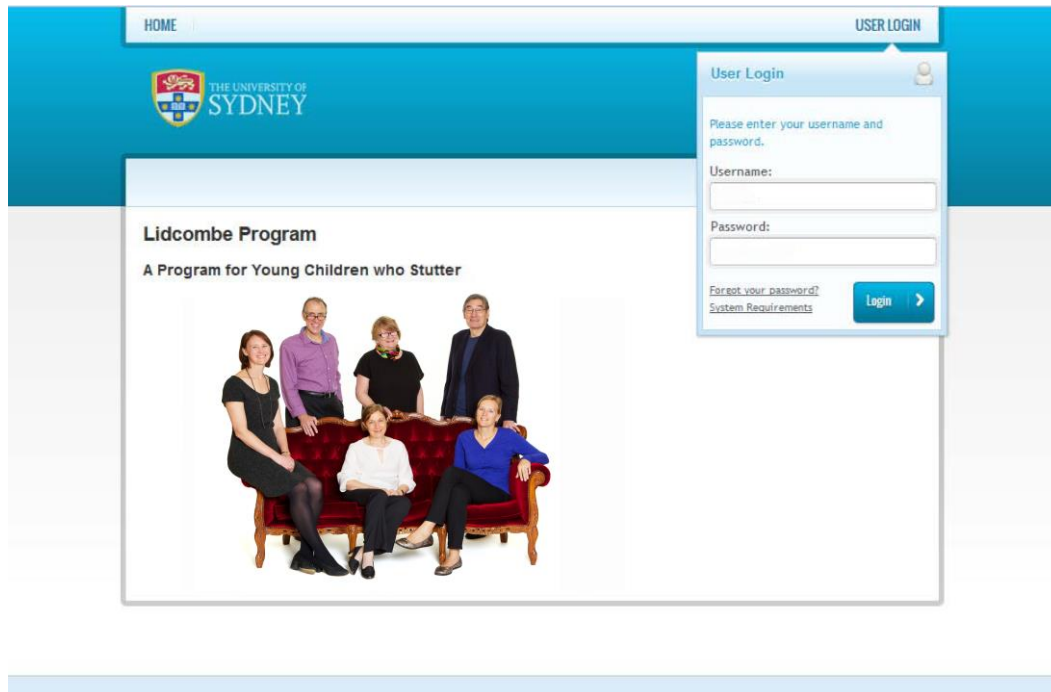
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GLOSSARY

ASRC	Australian Stuttering Research Centre
%SS	Percentage of syllables stuttered
Internet Parent Training	Part 1 of the Internet Lidcombe Program, where parents receive training in Lidcombe Program components
Internet Treatment	Part 2 of the Internet Lidcombe Program, where parents log in regularly to receive tailored treatment advice for their child
Lidcombe Program component	Can refer to a treatment-related procedure, e.g. providing verbal contingencies and having treatment conversations, as well as to a more structural component, e.g. weekly visits
Part I of problem-solving study	The part of the problem-solving study that explored the treatment problems that parents can face when doing the Lidcombe Program
Part II of problem-solving study	The part of the problem-solving study that reported potential solutions to the treatment problems in the Lidcombe Program
Part 1 of the program	How the Internet Parent Training is referred to on the website
Part 2 of the program	How the Internet Treatment is referred to on the website
SR	Severity rating
Stage 1	The first treatment stage of the Lidcombe Program
Stage 2	The second treatment stage of the Lidcombe Program, starting if SRs are 1 or 2 with more 1's in the previous 3 weeks

ABSTRACT

The Lidcombe Program is an evidence-based program and is the preferred intervention option in Australia to treat preschool age children who stutter. Speech pathologists help parents to implement the program at home by training them during regular visits at the clinic. Parents learn how to identify stuttering, rate stuttering severity and provide verbal contingencies during conversations. However, the Lidcombe Program is not accessible to all families that need it. Known obstacles that hinder access to the Lidcombe Program, delivered according to the Lidcombe Program Treatment Guides (Onslow, Packman & Harrison, 2003; Packman et al., 2014), are work or time restrictions of speech pathologists due to heavy caseload, and distance for families who live remotely (Rousseau, Packman, Onslow, Dredge & Harrison, 2002; Wilson, Lincoln & Onslow, 2002). The construction of a stand-alone Internet-based intervention, that is, an intervention that does not require the physical involvement of a speech pathologist when delivered, has the potential to overcome these obstacles. This thesis presents the construction and trialling of the first part of an Internet version of the Lidcombe Program, and the construction of a problem-solving tool for parents who do the program.

The thesis is presented in six sections. Section I provides an overview of early stuttering, including its onset, cause and course. Potential impacts on social development and intervention for different age groups are discussed and an overview of treatment options for preschool age children is given. Subsequently the Lidcombe Program is introduced, as well as evidence that supports it. Different delivery formats of the Lidcombe Program are explained and insight in how the Lidcombe Program translates into everyday practice is provided.

Section II explores theoretical issues that may need to be taken into consideration when developing the Internet Lidcombe Program. First, an overview of telehealth interventions in speech pathology is given, which results in understanding some practical

issues related to its application. Aspects of other Internet-based health interventions are then discussed, to identify potential issues for the development of the Internet Lidcombe Program. The literature on adult learning and Internet-based learning is then reviewed, because the Lidcombe Program is directed towards parents of preschool age children who stutter and therefore it is essential to understand how they learn. Next, the design of the Internet Lidcombe Program is explained, including the necessary adaptations of the clinic-based Lidcombe Program components. It becomes clear that the Internet Lidcombe Program needs to be separated into two parts. Part 1 consists of a Parent Training (hereafter called Internet Parent Training), in which parents are introduced to the Lidcombe Program components, and Part 2 consists of Treatment (hereafter called Internet Treatment), in which parents start treating their child.

Section III identifies the need for problem-solving support throughout the Internet Lidcombe Program and describes the qualitative problem-solving study conducted to (1) identify treatment problems that can emerge during the course of the Lidcombe Program and (2) develop potential solutions to solve them. This study was conducted in two parts. In Part I of the study, template analysis was applied to identify the treatment problems. Template analysis is based on the construction of a template through an iterative process of collecting and analysing data. Data were collected using various sources, including a brainstorming meeting, Lidcombe Program publications, reports of participants at different sites and in-depth interviews with expert speech pathologists. Part II of the study provided solutions through interviews with seven speech pathologists experienced with the Lidcombe Program. A summary structured around the main themes is given in this thesis. The findings of this study are reported in a qualitative description, organised in the template. They support the development of the Internet Lidcombe Program and the construction of a problem-solving tool for the program.

Section IV illustrates how the findings of the problem-solving study are incorporated and how the identified theoretical issues related to Internet-based health interventions and

adult education are addressed in the Internet Parent Training.

Section V reports the feasibility study of the Internet Parent Training. Six parents of preschool age children who were about to commence the Lidcombe Program in a clinic completed the Internet Parent Training. Outcome measures were participants' knowledge, skills, experiences and usage data, and the reports of participants and treating speech pathologists about starting the clinic-based Lidcombe Program after completing the Internet Parent Training. Results indicated that the Internet Parent Training could be optimised with a few small modifications, but overall it seemed to provide the training in stuttering and Lidcombe Program components for which it was constructed.

Section VI discusses the implications of the problem-solving study and the feasibility study of the Internet Parent Training, and explores the future directions of the Internet Lidcombe Program.

SECTION I

INTRODUCTION AND THESIS OVERVIEW

CHAPTER 1 THE NATURE OF STUTTERING

1.1 INTRODUCTION

This thesis is based on stuttering, and a deep understanding of this complex communication disorder is essential prior to unfolding details of the research. This chapter provides an overview of stuttering and its development, research-based hypotheses and models about onset and cause, potential impact of stuttering and intervention for different age groups. The chapter concludes with an overview of available stuttering treatments for preschool age children.

1.2 WHAT IS STUTTERING?

The definition of stuttering in the International Classification of Diseases is:

Speech that is characterized by frequent repetition or prolongation of sounds or syllables or words, or by frequent hesitations or pauses that disrupt the rhythmic flow of speech. There may be associated movements of the face and/or other parts of the body that coincide in time with the repetitions, prolongations, or pauses in speech flow (World Health Organization, 1993, p. 227).

It must be noted, however, that there is no definition of stuttering that unequivocally differentiates between stuttering and normal disfluencies, that is, the hesitations and pauses that can be presented in normal speech.

The three most common types of stuttering behaviour are often labelled repetitions, prolongations and blocks, although other terminology has been suggested that offers more precise labelling. One such example is the terminology suggested by Teesson, Packman and Onslow (2003) of repeated movements (syllable repetition, incomplete syllable repetition, multisyllable unit repetition), fixed postures (with and without audible airflow) and

superfluous behaviour (verbal and non-verbal). In this thesis, the researcher chose to use the terms repetitions, prolongations and blocks, because the Internet Lidcombe Program addresses parents and the terminology needed to be simple and transparent.

1.3 STUTTERING INCIDENCE AND PREVALENCE

Stuttering incidence estimates of approximately 5% and prevalence estimates of approximately 1% of the population seem to be indicative for the United States and many European countries (Conture, 1996; Yairi & Ambrose, 1999). However, these numbers differ depending on several factors. For example, Van Borsel et al. (Van Borsel et al., 2006) found a prevalence of 0.58% in children aged 6 to 20 years attending regular school and 2.28% in children aged 6 to 15 years attending special needs schools. An Australian community cohort study (Reilly et al., 2009, 2013) revealed that the cumulative incidence of stuttering onset in Australian children is 8.5% by 3 years of age and 11.2% by 4 years of age, which is higher than previously thought.

Stuttering onset seems to slow down after 3.5 years of age (Reilly et al., 2013). Even though parents or teachers are typically the first to recognise stuttering in children and are believed to be reliable at doing so (Einarsdottir & Ingham, 2009), it is also known they do not always label stuttering as such (Lincoln, Onslow & Reed, 1997). Therefore, incidence numbers may be higher than usually reported.

1.4 ONSET OF STUTTERING

Stuttering is most likely to start between 2 and 5 years of age (as cited in Guitar, 2006; Yairi, Ambrose, Paden & Thronenburg, 1996) and seems to be linked to an increase in syntax complexity (Reilly et al., 2009; Starkweather & Gottwald, 1990). Other factors, identified as potentially related to stuttering onset (Reilly et al., 2009, 2013; Yairi & Ambrose, 1999), are:

1) gender; stuttering occurs more in males than in females (Reilly et al., 2009; 2013; . In general, the male:female ratio for school age children is thought to be 3:1. This ratio is lower at preschool age and higher in adulthood (Bloodstein & Bernstein Ratner, 2008; Yairi & Ambrose, 1992);

2) twin birth status (Reilly et al., 2009; 2013);

3) high vocabulary scores at 2 years of age; however, this factor was only related to the onset in 3-year-old children, not to the onset in children older than 3 years of age (Reilly et al., 2009);

4) high educational level of the mother (Reilly et al., 2009; 2013).

Not surprisingly, the onset of stuttering has intrigued many researchers and various models have been developed. Two models of the many are discussed in this chapter: the Demands and Capacities Model (as cited in Adams, 1990), because of its strong influence on treatment approaches and the V-Model (Packman, Onslow, Richard & Van Doorn, 1996), because of its power to explain several aspects of stuttering, including its onset. Also the hypothesis of a potential relationship between temperament and stuttering onset is discussed briefly. It should be noted that a clear distinction is made between explaining *the onset* of stuttering and explaining *the cause* of stuttering. The two models and hypothesis discussed here attempt to explain the onset of stuttering.

1.4.1 The Demands and Capacities Model

The model was developed by Gottwald and Starkweather (as cited in Adams, 1990) and claims that “fluency breaks down when environmental and/or self-imposed demands exceed the organism’s cognitive, linguistic, motoric or emotional capacities for responding” (p. 136). In other words, children’s capacities are not sufficient to meet the demands imposed on the children to talk without stuttering. The model claims that only the demands

related to the production of stutter-free speech are not in balance with the capacities; other verbal and non-verbal behaviour are still in balance.

According to the model, stuttering appears when demands exceed capacities. When demands abruptly and dramatically exceed capacities, stutter-free speech is disrupted for a brief period of time only. The extent at which demands increase to exceed capacities, or the degree to which capacities to produce stutter-free speech are insufficient, varies amongst children (Adams, 1990).

The model's success may be attributed to the appealing description of the phenomenon of stuttering, but it provides no more information than what is observable. In spite of this, the model has been attractive to speech pathologists over the last two decades. Several early stuttering programs started to focus on decreasing the demands of children's environment, more specifically on parental behaviour during conversations with their children who stutter. Such programs include those propounded by Millard, Edwards and Cook (2009), Gottwald and Starkweather, and Starkweather, Gottwald and Halfond (both as cited in Guitar & McCauley, 2010) and Starkweather and Gottwald (1990).

1.4.2 The V-Model

The Variability model (V-model) was developed by Packman et al. (1996). The model links the timing of stuttering onset to the milestone of adding variable syllabic stress in children's language development. Children transition from a rather syllabic pattern of speech to speech with stress contrasts between the age of 18 months and 2 years. Producing stress contrasts refers to the appropriate use of stressed and unstressed syllables in words and phrases, e.g. in water, /wa/ being the stressed syllable and /ter/ being the unstressed syllable (Packman et al., 1996). Children require "the necessary level of linguistic competence and sufficient control over the speech motor system to produce the required variability in neuromuscular activity" to produce stressed syllables (Packman et al., 1996, p.

245). The V-model not only explains the onset of stuttering, it also explains why treatment approaches in which individuals learn to use a new speech pattern with reduced variability of stress across syllables, including prolonged speech and syllable timed speech, can eliminate stuttering.

1.4.3 Hypothesis of the relationship between temperament and stuttering onset

There may be a relationship between temperament and stuttering onset (Kefalianos, Onslow, Block, Menzies & Reilly, 2012). Temperament includes many aspects depending on the temperament model, such as impulsivity level, sadness and fear (as cited in Eggers, De Nil & Van den Bergh, 2010) and activity level, rhythmicity and adaptability (as cited in Kefalianos et al., 2012). Establishing a relationship between temperament characteristics and stuttering onset would be useful clinically, and therefore it has been investigated in several studies over the last 13 years (Kefalianos et al., 2012). Eggers et al. (2010) supported the hypothesis of such a relationship after finding temperament differences between preschool age children who stuttered and (age and gender) matched controls. The children who stuttered showed higher negative affectivity, e.g. anger and frustration, and lower effortful control, e.g. shifting attention to other tasks. In relation to the latter, children who stuttered were less able to select information from sensory input than children who did not stutter (Eggers, De Nil and Van den Bergh, 2012). Researchers of a large community cohort study of Australian children (Reilly et al., 2009) found, in contrast to this hypothesis, that pre-onset temperament characteristics of 137 children younger than 3 years of age did not predict stuttering onset. Clearly the relationship between temperament and stuttering onset is still uncertain and more research is necessary.

1.5 THE CAUSE OF STUTTERING

Discovering the cause of stuttering has occupied researchers for many decades. In

the last few years, research has increasingly focused on genetic research. Stuttering is known to run in certain families (Ambrose, Cox & Yairi., 1997). Also, higher concordance rates in monozygotic twins than in dizygotic twins at the age of 3 indicate that genetic factors affect stuttering (Dworzynski, Remington, Rijdsdijk, Howell & Plomin, 2007; Fagnani, Fibifer, Skyrre & Hjelmberg, 2011; Rautakoski, Hannus, Simberg, Sandhabba & Santtila, 2012; Reily et al., 2009). Genetic researchers have attempted to link stuttering to a chromosome (including Raza, Amjad, Riazuddin & Dryana, 2011; Riaz et al., 2005) and have investigated the mutation of three genes that result in specific, different processes at molecular and cellular levels (Dryana & Kang, 2011; Wang-Sik, Changsoo, Dryana & Komfeld, 2011). However, no uniform conclusions could be drawn from these studies.

There has also been considerable research activity within the domain of brain imaging, both functional and structural, but studies usually include adults who stutter, not children. Hence, any changes of the brain detected in these studies with adults cannot be considered causal, as they could be adaptations of the brain to the stuttering (Bloodstein & Bernstein Ratner, 2008). Based on brain imaging evidence, two models that attempt to explain the cause of stuttering in young children have emerged. The first model, the Syllable Initiation Model (Packman, Code & Onslow, 2007) is based on the V-Model of Packman et al. (1996). Packman et al. (2007) continue their reasoning by suggesting that individuals who stutter have difficulty initiating syllables. This difficulty is believed to be the result of an underlying problem of the supplementary motor area (SMA) in the brain. Individuals who stutter may not have a direct lesion of the SMA, but the underlying problem in stuttering should be viewed as a perturbation and “given the extensive connections to the supplementary motor area, this perturbation may be the result of influences of nearby areas” (p. 359). The evidence for this idea is based on brain imaging findings of adults with developmental stuttering and adults who stutter after lesions of the SMA.

Alm (2004) proposed that stuttering is caused by a dysfunction of the basal ganglia.

According to Alm, the basal ganglia fail to produce adequate speech timing cues, which is the core problem in individuals who stutter. In his Dual Premotor Systems Model of stuttering he explains that there are two parallel premotor systems involved in speech. The lateral system consists of the lateral premotor cortex and the cerebellum, and plays a key role in externally cued movements, such as talking to the pace of a metronome. The medial system consists of the basal ganglia and the SMA and is more important for internally cued movements, e.g. spontaneous speech. A dysfunction of the medial system results in inability to produce timing cues and thus leads to stuttering. Alm found support for his model in findings of post mortem investigation of children's synaptic density and in vivo investigation of cerebral metabolism that demonstrated a peak of dopamine receptors type D2 in the basal ganglia around the age of 2.5, which coincides with the onset of stuttering. Moreover, drugs that block these type D2 receptors have been found to have a favourable effect on the stuttering severity in children (Brady, 1991).

Cykowski, Fox, Ingham, Ingham and Robin (2010) combined genetic data and brain imaging data to develop their causal hypothesis. They began with the finding that genes identified in individuals who stutter are often abnormal in lysosomal storage. This abnormal lysosomal storage refers to the condition where lysosome enzymes fail to degrade lysosome material, and is associated with damage to the myelin sheath of the white fibre bundles that connect different brain areas. The damage caused to the white fibre bundles could possibly be linked to developmental stuttering. However, despite the plausibility of this hypothesis, further research is necessary to raise the veil that surrounds the cause of stuttering.

If one believes that stuttering is caused by a neural defect, as research suggests, one could consider Packman and Attanasio's three-factor causal model (the P&A model) as a way of describing the underlying causal aspects of the disorder (Packman, 2012). The P&A model is based on the assumption that three causal factors, namely a deficit in neural processing of speech, modulating factors and triggers, operate at times of stuttering.

Modulating factors include physiological arousal, which reflects how an individual responds to stressful internal and external stimuli. In other words, individuals react differently to environmental factors, so for each individual the level of physiological arousal modulates the threshold of the triggering mechanism. Features of speech, such as variable syllabic stress and/or linguistic complexity, can be triggers of stuttering. Packman concluded that the extent of impairment in neural processing dictates baseline stuttering severity *across* individuals, while the modulating factors explain the variability of stuttering *within* individuals, across communicative contexts.

So, research increasingly provides evidence that a genetic neural component is involved in the cause of stuttering, which means that children are predisposed to be stuttering due to the genetic constitution with which they were born. Parents of children who stutter should be informed about the neural involvement to ensure they receive the evidence-based information currently available about the cause of stuttering. Experience has shown that many parents still believe in theories that claim triggers, such as anxiety or parental conversation responses, to be the cause of stuttering.

1.6 THE COURSE OF STUTTERING AND ITS SOCIAL IMPACT

1.6.1 Natural recovery

Many children who start to stutter at a young age recover without treatment. Yairi and Ambrose (1999) conducted a longitudinal study in which they followed 84 children from early after onset until 4 years post-onset. They found that about 74% of preschool age children recovered naturally, with the peak of recovery being within 3 years of onset. It must be noted, however, that Yairi and Ambrose gave parents of the children who stuttered in their study “a brief, unbiased review of several factors frequently cited as potentially beneficial for children who stutter, such as slow speech, not interrupting and avoiding negative corrections of the child’s speech” (p. 1101). They defined spontaneous recovery as “they outgrew the

disorder without formal clinical intervention” (p. 1104). It could be argued that their “unbiased review”, which is discussed as parent counselling later in this chapter, might have had an impact on the stuttering course in the children involved in their study. The results should therefore be carefully interpreted. Reilly et al. (2013) found that 6.3% of the children (9/142) in their study recovered within the first year after stuttering onset, four of whom had consulted a professional.

Conclusive factors for predicting natural recovery from stuttering have not been found, but findings suggest that (1) recovery from stuttering (like persistence of stuttering) is familial, (2) natural recovery typically occurs within 3 years of onset, (3) females recover more quickly without treatment than males, and (4) the recovery rate for females is higher than for males over a period of 4 years after onset (Ambrose et al., 1997; Yairi & Ambrose, 1999; Packman, Onslow & Attanasio, 2003).

1.6.2 Social impact of stuttering at preschool age (approximately 3–6 years)

Already at preschool age, children can experience negative consequences for their stuttering. Boey et al. (2009) found that 75.1% of the 1122 children in their study, aged between 2 and 7 years, were aware of their stuttering, and that age and stuttering severity were each associated with an increase in awareness. Children responded to their stuttering in various ways, e.g. by making remarks, asking for help, being angry, feeling sad or being impatient, or by walking away from a situation. Similar findings were revealed in a field study conducted by Langevin, Packman and Onslow (2009) with four preschool age children who stuttered.

Not only can stuttering affect children, it can also affect parents. In a study by Langevin, Packman and Onslow (2010), nearly all parents who were surveyed (90.9% of 77) reported being affected by their child’s stuttering in some way, e.g. by being concerned, worried or anxious, by feeling uncertain or frustrated, by self-blaming or being upset. They

primarily responded to their child's stuttering by taking time to listen to their child, by waiting for their child to finish talking, by asking their child to modify the speech or by modifying their (own) speech (Langevin et al., 2010).

Stuttering also triggers reactions from preschool age peers. Langevin et al. (2009) found that preschool age children, despite their young age, sometimes respond negatively to their peers who stutter. They observed that children interrupted their peers who stuttered, mocked them, walked away from them and ignored their speech. These negative reactions usually followed behaviourally complex stuttering (e.g. blocks) or stuttering of longer duration, which impaired the child's ability to get a message across. Most likely due to the stuttering, the preschoolers who stuttered in this study had difficulty in leading peers in play, in participating in socio-dramatic play, in resolving conflicts, in explaining events and in participating in problem-solving discussions. It must be noted that the likelihood of over-generalising the observations, reported in this study, is real because they were based on only four children. However, the risk that stuttering can impact negatively on children's communicative and social interactions at preschool is also real, and unfortunately, detrimental.

1.6.3 Social impact of stuttering at school age (approximately 6-12 years)

School age children who stutter are often teased or bullied by their peers. They are seen by their peers as less popular, inadequate or more vulnerable than children who do not stutter (Davis, Howell & Cooke, 2002). Blood and Blood (2007) found that 11- to 12-year-old boys who stuttered were at significantly higher risk for bullying than their (male) peers who did not stutter (61% versus 22%). They also found significantly higher anxiety scores among the children who stuttered. The authors suggested a potential relationship between the higher anxiety and the victim status of the children who stuttered, because they all scored at the highest range on the Bullying Index, a checklist used as the measure for bullying. These

children also worried significantly more and thought that they did not match the expectations of individuals in their environment.

Even though it is evident that social training components need to be implemented in the stuttering treatment for school age children, including actions for children's negative thinking and for teasing and bullying (Ramig & Bennett, 1995), these social components are not always recognised sufficiently by speech pathologists or understood by school staff (Blood, Boyle, Blood & Nalesnik, 2010; Langevin, 2009; Langevin, Kleitman, Packman & Onslow, 2009). Blood et al. (2010) investigated how speech pathologists evaluated different types of teasing and bullying of school age children who stuttered. They concluded that speech pathologists often took appropriate action for physical or verbal bullying, but they seriously underestimated relational bullying. Relational bullying refers to children excluding their peers because of their stuttering. Langevin (2009) and Langevin et al. (2009) developed the Peer Attitudes Towards Children who Stutter scale (PATCS scale) as an attempt to better understand teasing and bullying in school age children who stutter and to support the development of educational programs.

1.6.4 Social impact of stuttering during adolescence (approximately 12–18 years)

The ability to communicate effectively becomes essential for adolescents who want to become part of a peer group, who want to build friendships and who want to compete with peers. Adolescents who are unable to communicate sufficiently may be rejected by their peers and may go through a range of feelings, may be victimised and may develop low self-esteem. Blood and Blood (2004) and Blood et al. (2012) found in their studies that nearly half (43% and 44%) of 53 and 54 adolescents who stuttered had experienced bullying in their recent past, as compared with 11% or 9.2% of adolescents who did not stutter. The risk of being bullied was positively correlated with poor self-esteem levels and was negatively

correlated with communicative competence. Adolescents who stuttered were less optimistically oriented in life and had a lower overall life satisfaction (Blood et al., 2012).

1.6.5 Social impact of stuttering during adulthood (18+ years)

Despite the important role of social media in society nowadays, having a face-to-face conversation is still the most frequently used way to socially engage with other people. However, adults who stutter seem to talk less and seem to use less complex language (Spencer, Packman, Onslow & Ferguson, 2009). Compared with adults who do not stutter, they do not want to stay engaged in a conversation and fail to vary the structure of their utterances, such as highlighting information.

Stuttering impacts significantly on four qualitative aspects of the life of adults who stutter: vitality, social functioning, emotional functioning and mental health status (Craig, Blumgart & Tran, 2009). Adults who stutter seem to be six to seven times more likely to develop an anxiety disorder than adults who do not stutter (Iverach et al., 2009), and their anxiety is mostly related to fearing negative social evaluation by others because of their stuttering (Messenger, Onslow, Packman & Menzies, 2004).

The relationship between stuttering and employment status has been investigated and mixed findings have been published. In the study of McAllister, Collier, and Shepstone (2012), a group of stutterers was followed from birth through to adulthood. At age 50, the 217 individuals who stuttered differed from the individuals who did not stutter only by their socioeconomic employment status. The difference between all other factors related to educational attainment or employment status was not significant. The studies of Klein and Hood (2004) and O'Brian, Jones, Packman, Menzies, and Onslow (2011) on the other hand, reported a clear relationship between stuttering and educational attainment or employment status. O'Brian et al. found that the higher the stuttering severity, the lower the educational attainment in the 147 participants of their study. However, the authors speculated that the

relationship between the two is not necessarily causal because other factors could have impacted on educational attainment. Klein and Hood (2004) found that the majority of their 232 individuals who stuttered believed that they were less likely to be hired or promoted at work. A minority (20%) believed their stuttering interfered with their job performance and 33% of the individuals actually refused a job because of their stuttering.

1.7 BRIEF OVERVIEW OF STUTTERING INTERVENTION AT DIFFERENT AGES

1.7.1 Stuttering intervention at preschool age (approximately 3-6 years)

It is generally accepted that stuttering intervention is most successful during the preschool years (e.g. see Conture, 1996; Packman et al., 2003; Prasse & Kikano, 2008). Intervention does not need to be routinely initiated immediately after stuttering onset because natural recovery occurs in the majority of young children who start to stutter (Yairi & Ambrose, 1999). It is also known that delayed intervention for up to 1 year within the preschool years does not impact negatively on treatment with the Lidcombe Program, a treatment for early stuttering (Packman et al., 2003). As treatment for stuttering in the preschool years is the topic of this thesis, available treatments for this age group are reviewed in more detail below.

1.7.2 Stuttering intervention at school age (approximately 6-12 years)

A review of stuttering intervention during the school age years reports an average of 61% decrease in stuttering frequency and/or severity (Conture, 1996). Successful intervention is thought to depend on variables such as speech pathologist skills, stuttering severity, parent involvement and consistency, and frequency of the treatment (Ramig & Bennett, 1995). However, there is a lack of evidence about individual stuttering treatments for school age children (Nippold, 2011; Nippold & Packman, 2012).

1.7.3 Stuttering intervention during adolescence (approximately 12-18 years)

In general, stuttering intervention for adolescents seems to take longer and often requires modification of other stuttering treatments. It also seems to be less successful than for younger children (Conture, 1996). In fact, adolescents who stutter are seen as the toughest clinical cases (Daly, Simon & Burnett-Stolnack and Van Riper, both as cited in Conture, 1996). They often lack intrinsic motivation for initiating stuttering treatment (Hearne, Packman, Onslow & O'Brian, 2008). An intervention technique with promising results in adolescents is speech restructuring (Carey, O'Brian, Onslow, Packman & Menzies, 2012; O'Brian & Onslow, 2011).

1.7.4 Stuttering intervention during adulthood (18+ years)

Review of stuttering intervention for adults resulted in the finding that a long-term maintenance phase is required to achieve a positive long-term outcome (Bothe, Davidow, Bramlett & Ingham, 2006). Intervention limited to stuttering only is often insufficient, because adults who stutter tend to have an increased risk on developing co-occurring anxiety disorder (Iverach et al., 2009). The need to incorporate treatment components that focus on those aspects is evident, taking into account the fact that co-occurring anxiety disorders seem to affect the outcome of stuttering treatment, including stuttering frequency and the amount of situation avoidance. Menzies, Onslow, Packman and O'Brian (2009) have suggested cognitive behaviour treatment in addition to stuttering treatment as a possible treatment package for adults who stutter. They developed a questionnaire to explore unhelpful thoughts and beliefs that are linked to social anxiety in individuals who stutter (UTBAS checklist, Menzies et al., 2009). They also developed a stand-alone, Internet cognitive behaviour treatment which was positively evaluated in a study with adults who stuttered and had co-occurring anxiety disorders (Helgadottir, Menzies, Onslow, Packman & O'Brian, 2009).

Stuttering can evolve into a debilitating condition over time with a serious impact on individuals' social development. However, it need not come to that because stuttering treatment seems to be most successful for children at preschool age.

1.8 THE BRAINS OF PRESCHOOL AGE CHILDREN

Brain plasticity makes learning possible throughout life and makes recovery (to some degree) possible after brain injury. In vivo experiments have revealed that brain organisation can change in response to a wide range of sensory and motor experiences (Kolb & Gibb, 2011). Developing brains of children seem more responsive to experiences than adult brains and seem to react qualitatively differently to identical experiences. Even though research is only slowly unravelling the processes of neural plasticity in young children's brains (Chilosi et al., 2008; Ewing-Cobbs, Barnes & Fletcher, 2003; Yeatman & Feldman, 2013), the power of young brains to rewire should not be underestimated and could explain the successful outcome of stuttering treatment at preschool age.

1.9 TREATMENT OPTIONS FOR PRESCHOOL AGE CHILDREN WHO STUTTER

Stuttering intervention is considered most successful at preschool age; therefore, not surprisingly, there is choice of early stuttering programs. The three groups of treatment programs discussed here all require parent involvement but their approach is different. They deviate from the commonly used categorisation of indirect, direct and integrated treatment approaches because they were grouped by their most salient treatment component. Programs in one group focus on altering children's environment, such as by changing parental behaviour during conversations with the child who stutters. Programs in the second group teach children a new speech pattern. Programs in the third group provide response-contingent stimulation for children's talking, such as reinforcing a child's stutter-free speech. Programs in these three groups are now described, including their supporting evidence.

1.9.1 Programs that focus on the child's environment

1.9.1.1 Parent Counselling

The overall idea of parent counselling, an approach that has been in common use for many years, is informing parents how to eliminate behaviour, conditions or factors that are likely to increase stuttering (Bloodstein & Bernstein Ratner, 2008). Advice for parents could be to:

- avoid criticising, reacting negatively and correcting or helping their child while stuttering;
- respond to what their child says regardless of fluency;
- acknowledge their child's struggle with stuttering;
- apply strategies to reduce stuttering severity, merely at times when stuttering has increased, such as times when their child is fatigued or excited, or talks under pressure. Strategies include extending turn-taking and reducing interruptions during meal times;
- alter their way of talking to their child, including decreasing their speech rate, eliminating questions that require long, complex answers and simplifying their language;
- strengthen their child's self-confidence in being a speaker by giving opportunities to talk without stuttering so the child enjoys it. During times of speaking fluently, parents should encourage their child to talk as much as possible. During times of severe stuttering, strategies such as singing, rhythmic speaking and recitation of nursery rhymes can be applied.

Other approaches are based on the principle of parent counselling, for example

Andronico and Blake's filial therapy, in which parents are trained in the technique of play therapy to develop empathy with their child (as cited in Bloodstein & Bernstein Ratner, 2008). Similarly, the approach of Egolf et al. (as cited in Bloodstein & Bernstein Ratner, 2008) focuses on eliminating parental behaviour that is believed to maintain stuttering when communicating with the child, such as silence, verbal aggression and interruptions. Speech pathologists model new, contrasting ways to converse with the children and parents adapt this behaviour. Another example is Yovetich's message therapy (as cited in Bloodstein & Bernstein Ratner, 2008) in which parents apply conversation strategies to redirect their children's attention from how they speak to what they say. Strategies include reflecting and expanding children's utterances, self-talk, parallel talking and decreasing parental speech rate.

Speech pathologists can begin parent counselling and move on to another treatment when appropriate, or can deliver it as a complete treatment package (Bloodstein & Bernstein Ratner, 2008). However, Bloodstein and Bernstein Ratner claim that parent counselling "may not be effective to eliminate the problem" (p. 366) but should be seen as a facilitator "to lessen the intensity of the stuttering, which may prevent development of negative feelings and consequently contributes to the likelihood that the child in time will outgrow the disorder" (p. 366).

Even though there is evidence to support parent counselling, findings also contradict the effectiveness of the advice given within this approach. Starkweather, Gottwald and Halfond (as cited in Bloodstein & Bernstein Ratner, 2008) reported normal speech in 16 children for up to 2 years after offering these families parent counselling. There is limited evidence to support the strategy of increasing parental turn-taking latency and its effect on children's stuttering (as cited in Bloodstein & Bernstein Ratner, 2008). However, Bernstein Ratner (1992) provided evidence to question the effect of decreasing parental speech rate on children's stuttering severity by not finding a parallel effect in children's speech.

Decreasing parental speech rate resulted in less complex parental speech but did not result in simpler language or more stutter-free speech of the children. Importantly, complexity of parental language is a strong predictor of children's later language profiles (Bloodstein & Bernstein Ratner, 2008). It could therefore be detrimental to advise parents to simplify their language in conversations with their children. So, even though some evidence is available, more research is necessary to support the efficacy of Parent Counselling.

1.9.1.2 Multi Process Stuttering Prevention and Early Intervention Program

The Multi Process Stuttering Prevention and Early Intervention Program (Gottwald & Starkweather, as cited in Guitar & McCauley, 2010) is based on the Demands and Capacities model (Adams, 1990). The Demands and Capacities model has influenced many speech pathologists and still does, even though opposition to the model has increased over the last decade.

In the Multi Process Stuttering Prevention and Early Intervention Program, speech pathologists work with children and parents during weekly 1-hour sessions through parent counselling and play therapy. Some strategies are the same as those used in Parent Counselling: additional strategies focus on changing children's talking environment, including allowing ample time for activities and transitions, showing children ways to talk in turns without stressing stutter-free speech, eliminating talking at stressful times, setting up a special parent-child playtime each day and maintaining structure and routine where possible. Play therapy focuses on enhancing stutter-free speech. Fluency enhancing strategies that speech pathologists and parents apply when conversing with the child include using slow to normal speech rate, relaxed speech style, slow and relaxed conversation pace, numerous pauses and silences, reduced requests for non-spontaneous speech and elimination of questions that require long, complex answers (Guitar & McCauley, 2010).

This program has been evaluated in a few studies (as cited in Guitar & McCauley,

2010), suggesting that it resulted in stutter-free speech 2 years post therapy. These studies, however, are reports and do not include outcome data (Packman, Onslow & Attanasio, 2004). Evidence against parental modification of conversational behaviour with children who stutter originates from studies conducted by Bernstein Ratner and Silverman (2000) and by Miles and Bernstein Ratner (2001). Parent expectations of children's language and speech performances soon after stuttering onset were matched appropriately to parent expectations of children who did not stutter. The parent expectations of children who stuttered were realistic and parents did not impose unusual language demands on their children.

In conclusion, the need for parental modification of language behaviour is not strongly supported by evidence. There is a clear need for more research to support the Multi Process Stuttering Prevention and Early Intervention Program.

1.9.1.3 Palin Parent-Child Interaction program

The Parent-Child Interaction program is a stuttering treatment for children up to 7 years of age and was developed by speech pathologists at the Michael Palin Centre in London. It focuses on adjusting the interaction between parents and children to establish stutter-free speech. This program is based on the premise that stuttering is a heterogeneous, multifactorial condition and that linguistic, physiological, environmental and emotional factors influence its onset and course (Millard et al., 2009). The standard program offers an initial assessment, six clinic-based sessions, 6 weeks of home-based therapy and review sessions at 3 weeks, 3 months, 6 months and 1 year post clinic-based therapy. Both parents are required to attend the clinic-based sessions if possible. Speech pathologists provide interaction strategies and family strategies during the first clinic-based sessions and direct strategies at a later stage. Interaction strategies include reducing parental speech rate, following the child's lead in play and using simplified language. Examples of family strategies are assistance in managing anxiety and children's emotions, and setting boundaries and

routines. Direct strategies include using easy onset, turn-taking and increasing the frequency and duration of pauses. Parents and children are asked to have *Special Times* at home to practise these strategies. Video recordings of the Special Times facilitate identification of correct implementation of the strategies.

Even though this program is widely recognised and many speech pathologists support the underlying beliefs, evidence is rather limited and studies do not include many participants. In the most recent study (Millard et al., 2009), six preschool age children completed the trial. The speech of four of them seemed to be impacted immediately and significantly from therapy. Matthews, Williams and Pring (1997) described the program conducted with one child and Millard, Nicholas and Cook (2008) with six children. Even though Botterill and Kelman (2010) have claimed that the findings of the two Millard et al. studies (2008; 2009) indicate the efficacy of the Palin Parent-Child Intervention in reducing stuttering in preschool age children who are at risk of persistent stuttering, it is clear that more studies such as randomised controlled trials need to be conducted to deliver evidence that the program has effects greater than those of natural recovery.

1.9.2 Programs that teach children a new speech pattern

1.9.2.1 Family-based integrated therapy

Family-based integrated therapy is an approach that combines parent counselling and direct child intervention, similar to the Multi Process Stuttering Prevention and Early Intervention Program and the Palin Parent-Child Interaction Program, but it also teaches children a new speech pattern (Yaruss, Coleman & Hammer, 2006). Parent counselling focuses on problem-solving while taking the child's and family's dynamics into account. Direct intervention with children focuses on teaching them a slow, smooth, relaxed pattern of speech, starting with words and progressively moving to longer and more complex utterances.

A substantial amount of research supports this approach of treating stuttering. Conture and Melnick (as cited in Bloodstein & Bernstein Ratner, 2008) treated 200 families of preschool age children who stuttered with a family-based integrated therapy, resulting in a decrease of stuttering to below 3% syllables stuttered (%SS) for 70% of the children. This measure calculates the ratio of stuttered syllables to the total number of syllables. It must be noted that participants in this study were preschool age and school age children. Yaruss et al. (2006) reported significant gains in the fluency of 17 preschool age children after treatment with family-based integrated therapy.

1.9.2.2 The Westmead Program

Preschool age children in the Westmead Program are taught to use syllable timed speech (called *Robot Talking* in the program), which is a form of rhythmic speech that is known to reduce stuttering. Parents are asked to practise this with their children during 5 to 10 minute conversations, four to six times per day (Trajkovski et al., 2011). Parents may add occasional praise during those sessions, but it is not the focus of the program. Generalisation to other times and locations occurs when children have mastered the syllable timed speech technique. Stutter-free speech is established in Stage 1 and maintained in Stage 2 of the program.

A case study, Phase I and Phase II trials have been published with promising results (Trajkovski, Andrews, O'Brian, Onslow & Packman, 2006; Trajkovski et al., 2009, 2011). One, three and eight preschool age children who stuttered reached scores between 0 and 1 %SS scores that can be accepted as normal speech outcome (Lincoln et al., 1997). The two important advantages of the program are that syllable timed speech is easy to learn and treatment time takes around 8 hours to reach Stage 2. However, participant numbers are limited and no long-term outcome has yet been reported.

1.9.3 Programs that provide response-contingent stimulation for the child's talking

1.9.3.1 Gradual Increase in Length and Complexity of Utterances

This program, also called GILCU, was developed by Ryan (1974) and focuses on establishing, transferring and maintaining stutter-free speech in increasingly longer and more complex utterances, while supported by reinforcement and accompanied by contingencies (comments) for stuttering. Children and adults who stutter can be treated with this program. Initially the stutter-free utterances are single words, and they gradually progress to six words, four sentences and 5 minutes of stutter-free speech. The conditions of speaking are reading, monologue and conversation. Even though the purpose of the program is to do all steps, it is not obligatory, for example if clients cannot read. Sometimes intermediate steps are added if clients fail to proceed from one step to the next. Even though this program can be used to treat preschool age children who stutter, only findings from trials with school age children have been published. Because the trials with school age children describe the program procedures, they are summarised here.

The two and six school age children who participated in the studies of Ryan and Van Kirk Ryan (1983, 1995), who received GILCU, practised either 60 or 54 steps. Praise and tokens were provided for stutter-free speech, and the phrase *Stop, speak fluently* was provided for stuttering. Proceeding to the next step was based on the criterion of talking with less than 0.5 stuttered words per minute during 5 minutes of speech, in the condition children had been practising. If children failed, they had to do the steps in that condition again. Criterion tests were given before and after establishing the stutter-free speech in a condition, and after transfer. Children and individuals in their environment (e.g. parents) received support for identifying children's stuttering. In the transfer phase, children needed to be stutter-free in different talking situations with multiple conversation partners while verbal

comments for stutter-free speech and stuttering were given. In the maintenance phase, children and individuals close to the children who stuttered reported about the children's speech.

Stuttering is labelled in GILCU as whole-word repetitions, part-word repetitions, prolongations and struggle behaviour. Interjections, revisions, incomplete phrases, pauses and phrase repetitions are labelled as normal disfluencies, except if they occur frequently or near stuttered words. Interestingly, Ryan normed data for stuttering behaviour and normal disfluencies in different age groups (as cited in Davidow, Crowe & Bothe, 2004). Children from 3 to 5 years old produced an average of 2.2 stuttered words per minute. Scores at or below this number could be considered normally fluent. However, the type of stutter was taken into consideration, so children with infrequent but stuttering behaviour that makes a child's talking sound effortful would not be classified as normally fluent (Davidow et al., 2004). GILCU can be used in isolation or as part of a treatment, for example combined with fluency shaping or stuttering modification techniques.

Even though the efficacy evidence of GILCU for the treatment of stuttering in school age children is positive (Mallard & Westbrook, 1988; Ryan & Van Kirk Ryan, 1983, 1995), it is limited to a small number of children and it is difficult to draw real conclusions on long-term outcome (Davidow et al., 2004). Efficacy evidence for treating preschool age children with this program exists but has not been peer-reviewed (Ryan, 2001).

1.9.3.2 Extended Length of Utterance

Extended Length of Utterance, called ELU, was developed by Janis Costello Ingham (Costello, as cited in Davidow et al.; 2004; Ingham, 1999), and even though it is similar to GILCU, it is mainly intended for children from 3.6 to 7 years old. In the program, speech pathologists choose speech activities that allow them to control length and complexity of children's utterances. Most of ELU is conducted in children's spontaneous connected

speech but it starts with short, non-conversational speech. Monologue tasks allow children to talk without having to deal with the pragmatic and interactive components of conversations, including turn-taking, responding to questions and coping with interruptions.

ELU is based on programmed instructions: the consecutive steps and their pass criteria are clearly described (Ingham, 1999). Children receive positive reinforcement, often supplemented by tokens for stutter-free speech and a verbal comment for stuttering (*Stop*), but they decrease when treatment progresses. As in GILCU, branch steps can be included if children fail to proceed to a next step.

The extent and quality of efficacy evidence of ELU is very limited, but because this program is so similar to GILCU, efficacy evidence on GILCU also partly provides evidence for ELU (Davidow et al., 2004). The main difference between the two programs is the age of the recipients: ELU addresses stuttering in preschool age children whereas GILCU is used with school age children.

1.9.3.3 The Lidcombe Program

The Lidcombe Program is a stuttering treatment for preschool age children up to 6 years (Onslow et al., 2003). Parents implement the program at home with their children and both visit the speech pathologist on a weekly basis during Stage 1 of the program. The program starts with the parent reinforcing stutter-free speech by providing verbal contingencies during daily conversations with the child. Verbal contingencies for stuttering are introduced when it is considered safe to do so. Unlike in GILCU and ELU, children in the Lidcombe Program do not linearly increase the length or complexity of their stutter-free utterances during treatment conversations with their parents. Parents adjust the treatment conversation to the stuttering severity of their children at the moment, namely, children can have conversations with short or longer utterances during structured treatment conversations. Treatment conversations can be different every day and even within a day, if

more than one treatment conversation is occurring. Once the stuttering is decreasing parents start providing verbal contingencies during everyday conversations. During the weekly clinic-based visits, parents demonstrate how they conduct treatment at home, and speech pathologists discuss treatment components. Speech pathologists also discuss children's stuttering severity ratings (SRs) from the previous week, which were recorded by the parents each day. Once the stuttering has reached the predetermined low criteria, children progress into Stage 2 of the program. In Stage 2, the clinic-based visits become less frequent, and treatment times and verbal contingencies are gradually withdrawn (Onslow et al., 2003; Packman et al., 2014).

Much research has been done to establish the efficacy of the Lidcombe Program including randomised controlled trials (Jones, Onslow, Harrison & Packman, 2000; Jones et al., 2005; Lattermann, Euler & Neumann, 2008) and long-term effects have been established (Femrell, Avall & Lindstrom, 2012; Jones et al., 2008). Research on various aspects related to the Lidcombe Program has been published with positive results, including the impact of the Lidcombe Program on the language and speech of children and parents (Bonelli, Dixon, Ratner & Onslow, 2000; Lattermann, Shenker & Thordardottir, 2005; Onslow, Stocker, Packman & McLeod, 2002) and on their relationship (Woods, Shearsby, Onslow & Burnham, 2002). The Lidcombe Program is currently considered the treatment with the strongest evidence for preschool age children who stutter (Bothe et al., 2006; Nye & Hahs-Vaughn, 2011; Nye et al., 2013).

1.10 CONCLUSION

Stuttering can have a serious or even devastating impact on an individual's social development and life, from as young as 3 years of age and throughout adulthood. Even though recovery without treatment occurs in many children who start to stutter and treatment does not need to be routinely initiated immediately after onset, it should not be delayed too

much either. Stuttering treatment is most successful within the preschool years and can be offered with various programs. Some programs focus on children's environment, while others include teaching children a new speech pattern or focus on providing response contingent stimulation for their talking. The treatment program for early stuttering with the strongest efficacy evidence to date is the Lidcombe Program and is therefore the preferred delivered program for preschool age children who stutter in Australia.

CHAPTER 2 THE LIDCOMBE PROGRAM

2.1 INTRODUCTION

By comparing available programs to treat early stuttering, it has become clear that the Lidcombe Program is supported by the strongest efficacy evidence. The Lidcombe Program is conducted by parents at home with their child. The term *parent* is used in this thesis to refer to the primary caregiver(s) of the child who receives treatment. This chapter explains in more detail how the Lidcombe Program is conducted and discusses the relevant supporting evidence.

2.2 BASIC PRINCIPLES OF THE LIDCOMBE PROGRAM

When the Lidcombe Program is initiated, speech pathologists train parents to recognise their child's stuttering and to reliably rate their child's stuttering severity using a 10-point scale. In this scale, severity rating (SR) 1 is *no stuttering*, SR2 is *extremely mild stuttering* and SR10 is *extremely severe stuttering*. Parents are instructed to give a SR each day to record the course of the child's stuttering beyond the clinic. The parental SRs of the previous week are discussed at the start of each clinic visit and if treatment problems emerge, they are addressed. To monitor whether parents are reliable in giving SRs for their child's stuttering severity beyond the clinic, they are asked during each clinic visit to assign a SR while conversing with their child. The speech pathologist also rates the severity of the child's stuttering during that conversation. If both SRs differ by more than one scale point, the discrepancy between the SRs is discussed and parents may receive some additional training (Onslow et al., 2003; Packman et al., 2014).

At the start of the program, parents are instructed to have a conversation with their child for 10 to 15 minutes each day, during which they deliver verbal contingencies. Speech pathologists explain and demonstrate to parents how to do this. Parents need to adjust their

treatment conversations to the stuttering severity of their child at that moment; that is, to structure conversations so that the child's speech is predominantly stutter-free. Hence, treatment conversations need to be more structured on days when the severity is higher and less structured when the severity is lower. Treatment conversations can be more structured with one or more of the following:

- using specific activities, e.g. memory, lift-the-flap books or lotto;
- choosing an appropriate environment, e.g. at a table at home, during a quiet moment and when siblings cannot interrupt;
- encouraging stutter-free speech, e.g. by using questions that require short answers, by using familiar language and by avoiding exciting topics;
- adjusting other aspects tailored to the family.

When stuttering starts to reduce beyond the treatment conversations and generalisation gradually increases, the treatment conversations usually become more unstructured. This can be established for example by changing the environment of treatment conversations to other places than the home, such as the supermarket or the park, changing activities to more natural conversation such as simple reporting of an event that occurred in the child's life, or by changing other aspects, tailored to the family. Parents learn to judge how to do treatment conversations each day based on the information they receive from the speech pathologist during the clinic visits. Verbal contingencies are also delivered during everyday conversations, in which parents do not manipulate anything.

Parents provide three types of contingencies for stutter-free speech and two types for stuttering, that often contain the words *smooth* and *bumpy*. The contingencies for stutter-free speech are praise (e.g. *Great job for saying [words] smoothly!*), acknowledgement (e.g. *That was smooth.*) and request for self-evaluation (e.g. *Were you smooth when you said*

[words]?). Parents can acknowledge stuttering (e.g. *I heard a bump*) or can request the child to correct (e.g. *Can you say [words] again without bumps?*). How the verbal contingencies are given depends on the personality of the child and the style of the family. Children may like certain types of verbal contingencies more than other types, and parents may prefer certain verbal contingencies over others. In general, parents are asked to vary the types of verbal contingency and to monitor their child's responses to the verbal contingencies at all times. They need to react appropriately to their child's responses.

Children move into Stage 2 when their speech is stutter-free or predominantly stutter-free. The predetermined criterion necessary to move to Stage 2 is having more SR1s than SR2s for the previous (consecutive) 3 weeks (Onslow et al., 2003; Packman et al., 2014). The frequency of clinic visits and treatment gradually reduces if children sustain their stutter-free speech. The intervals between visits in Stage 2 are 2, 2, 4, 4, 8, 8 and 16 weeks. This schedule is revised if children do not maintain their low levels of stuttering or no stuttering (Onslow et al., 2003; Packman et al., 2014). Webber and Onslow (2003) found in a file audit that 52% of the 25 children in the audit did not achieve the Stage 2 criterion for at least one clinic visit during Stage 2. Three quarters of these relapses occurred within the first 8 weeks after entering Stage 2. Speech pathologists and parents need to respond appropriately if relapses occur, and depending on the characteristics of the relapse they may need to increase the frequency of treatment conversations, verbal contingencies and/or clinic visits. Stage 2 is an essential part of the Lidcombe Program, as great vigilance of parents and speech pathologists is required to allow the child's stutter-free speech to further stabilise.

2.3 EVIDENCE SUPPORTING THE LIDCOMBE PROGRAM

2.3.1 Introduction

The Lidcombe Program is not driven by causal theory but evolved from evidence that stuttering responds to contingent stimulation. The program is supported by an extensive

amount of evidence accumulated over more than two decades. An overview of the evidence is given in this chapter, varying from efficacy (randomised controlled) trials to smaller studies that investigated components of the Lidcombe Program and qualitative studies. Studies of alternative delivery formats of the Lidcombe Program are also reported, as well as research of how the Lidcombe Program translates into everyday speech pathology practice.

2.3.2 The Lidcombe Program is efficacious

The Lidcombe Program is considered the intervention with strongest outcome data (see reviews by Bothe et al., 2006; Nye & Hahs-Vaughn, 2011; Nye et al., 2013). Jones et al. (2000) reported a file audit of 261 preschool age children, 250 of whom completed the program successfully. Kingston, Hubert, Onslow, Jones and Packman (2003) also reported a file audit of 66 children in the United Kingdom, and a meta-analysis of this study with the Jones et al. study demonstrated similar outcome for both studies. In 2005, Jones et al. conducted a randomised controlled trial of the Lidcombe Program with 54 children below 6 years of age, with 29 children in the treatment group and 25 in the control group. The children who received the Lidcombe Program were more than seven times more likely to achieve (near) zero levels of stuttering 9 months after randomisation than the children who did not receive treatment. A randomised controlled trial conducted with German preschool age children indicated a treatment effect, but only provided outcome data for 16 weeks of treatment (Lattermann et al., 2008). A meta-analysis that combined the findings of two Phase III randomised controlled trials and two randomised controlled experiments (Onslow, Jones, Menzies, O'Brian & Packman, 2012) found the odds of reaching minimal stuttering compared with the control group to be seven and a half.

Twenty children and parents who participated in the study of Jones et al. in 2005 could be contacted again about 5 years after randomisation to investigate the long-term effects of the Lidcombe Program (Jones et al., 2008). Although a minority relapsed, most

children (80%) were able to keep their (near) zero stuttering levels. In this study, scores between 0 and 1.1%SS were considered (near) zero levels of stuttering, based on findings of the Lincoln et al. study (1997), in which the speech of preschool age children post-treatment was perceived to be indistinguishable from that of age matched controls, and was rated within this range. Similar long-term results were obtained in a Swedish 2-year and in an American 1-year follow-up study of the Lidcombe Program (Femrell et al., 2012; Miller & Guitar, 2009).

2.3.3 The Lidcombe Program is safe

Treatment with the Lidcombe Program does not seem to impact on the quality of the attachment relationship between children and the treating parents, who were all mothers in the study of Woods et al. (2002). The Lidcombe Program also does not seem to negatively impact on the speech and language of parents and children (Bonelli et al., 2000; Onslow et al., 2002); on the contrary, children seem to increase their linguistic complexity over the course of the Lidcombe Program (Lattermann et al., 2005).

2.3.4 Individual components of the Lidcombe Program

2.3.4.1 Timing of intervention

Before the Lidcombe Program is initiated, a decision needs to be taken about the timing of intervention. Several factors, including age, time since onset, stuttering severity and distress level of children and parents support this decision (Packman et al., 2003). Kingston et al. (2003) found in their study that waiting up to 1 year after onset did not affect children's responsiveness to the program. Based on these findings and on findings about natural recovery, the following guidelines have been developed about the timing of initiating the Lidcombe Program: (1) delaying treatment with the Lidcombe Program to see if natural recovery occurs is acceptable for up to 1 year if the child is still below 6 years of age when

the Lidcombe Program is initiated; and (2) the Lidcombe Program should be initiated if individual circumstances indicate, such as high levels of parent and/or child distress or negative social experiences such as bullying. The stuttering needs to be actively monitored if the Lidcombe Program is not initiated immediately, for example by parents scoring the child's stuttering regularly and contacting the speech pathologist from time to time.

2.3.4.2 Number of clinic visits in Stage 1

The reported median number of weekly clinic visits to complete Stage 1 of the Lidcombe Program varies between 11 and 17, and children who stutter more severely seem to take more visits (Jones et al., 2000; Kingston et al., 2003; Koushik, Hewat, Shenker, Jones & Onslow, 2011; Miller & Guitar, 2009; O'Brian et al., 2013; Rousseau, Packman, Onslow, Harrison & Jones, 2007). It must be noted that in the early studies, Stage 2 criterion had to be achieved for only 1 week, whereas in the later studies they needed to be achieved for 3 consecutive weeks. This difference most likely accounts for the reported variation. O'Brian et al. (2013) observed that the number of clinic visits increased by 17% with each scale score increase in SR, as reported by the parents pre-treatment, which supports previous findings (Miller & Guitar, 2009; Onslow, Harrison, Jones & Packman, 2002; Rousseau et al., 2007). O'Brian et al. investigated how the Lidcombe Program translates into everyday speech pathology practice. Interestingly, they found another predictive factor with regard to treatment duration of Stage 1. Children who were treated by speech pathologists who had received training with the Lidcombe Program Consortium (see http://sydney.edu.au/health-sciences/asrc/health_professionals/index.shtml) took 76% more clinic visits to complete Stage 1 than those treated by untrained speech pathologists, but they achieved better treatment outcome. More details of this study follow in this chapter.

Neither gender nor age significantly predicted the number of weeks in Stage 1 (Jones et al., 2000; Kingston et al., 2003; Miller & Guitar, 2009; Rousseau et al., 2007). Even

though time since onset was not statistically significant, Kingston et al. found that it was a clinically significant predictor, namely that children progressed more quickly through the program if they started the Lidcombe Program more than 1 year after stuttering onset. Rousseau et al. (2007) found that children's phonological skills were not associated with the duration of Stage 1, but that higher MLU levels were associated with shorter duration of Stage 1 and higher CELF Receptive scores with longer duration of Stage 1.

2.3.4.3 Severity ratings

The use of the 10-point scale was investigated in the early days of the Lidcombe Program, and it proved to be a tool that could be used reliably by parents after little training (Eve, Onslow, Andrews & Adams, 1995; Onslow, Andrews & Costa, 1990; Onslow et al., 2002). Harrison, Onslow and Menzies (2004) found no relationship between daily SR recording and treatment outcome.

2.3.4.4 Verbal contingencies

It is generally thought that the verbal contingencies given by parents are the active agent in the Lidcombe Program. An attempt to provide support for this was made in an experiment in which the Lidcombe Program was conducted for 4 weeks without the verbal contingencies for stuttering, followed by 4 weeks of no treatment (Harrison et al., 2004). The trial indicated that verbal contingencies for stuttering were likely to contribute to treatment effects, but the trial was not large enough to provide strong evidence. Hayhow (2011) supported this finding by taking a theoretical perspective, claiming that requests for self-correction, a type of the verbal contingency for stuttering, could be seen as "encouragement to regain control by fixing or smoothing bumpy words" (p. 164) and that such a request "provides children with opportunities to develop successful coping strategies rather than rely upon extra effort and avoidance to get them through their immediate difficulties" (p. 164). However, a recent randomised controlled trial (Donaghy et al., 2013) has shown that not

providing requests for self-correction does not impact on treatment outcome or on the number of clinic visits to reach a 50% stuttering reduction.

It is known that many children respond differently to verbal contingencies during the course of the Lidcombe Program (Goodhue et al., 2010; Harrison, Ttofari, Rousseau & Andrews, 2003; Hayhow, 2009; Hewat, Harris & Harrison, 2003). For example, a child may like praise initially but then come to dislike it. Hayhow (2011) wanted to better understand what verbal contingencies in the Lidcombe Program could mean to preschool age children who stutter and why their responses differ. Therefore she investigated this topic from a theoretical perspective.

Hayhow (2011) made a distinction between verbal rewards and tangible rewards, and explained that verbal rewards seem to be able to increase “a sense of potential because they can carry more information” (p. 162). In the Lidcombe Program, children’s intrinsic motivation to talk without stuttering can be increased by providing verbal contingencies that encourage feelings of autonomy, such as praise and acknowledgement of stutter-free speech, when given not too often, informatively and specifically, reliably, genuinely and in a non-controlling manner. Tangible rewards are likely to be more controlling. They may be effective in controlling children’s behaviour in the short term but children may lose interest, fail to persist and prefer challenge in the long term.

In an interesting discussion of the effectiveness of the verbal contingencies (Hayhow, 2011), it is suggested that 5-year-old children are likely to have developed the ability to internally experience pride when succeeding and shame when failing an easy task without an adult assisting them to have those feelings. Whether a speaking task is easy or difficult depends on the child’s age and parental responses. This self-evaluation is assumed to play a major role at some level in the acquisition of speech and language and may explain why children respond differently to verbal contingencies and why they change with age. For

example, it could be assumed that older preschool age children do not feel encouraged by praise but experience it as a reminder of the fact that they, unlike their peers, fail to talk without stuttering, and they may be ashamed of their stuttering. Hayhow also explains that 4-year-old children may feel embarrassed when they evaluate themselves negatively or when they feel exposed to others' attention. Hayhow's contribution is important for gaining better understanding of the different responses of children towards verbal contingencies, and may be important for the speech pathologist's role in assisting parents to implement Lidcombe Program components successfully.

2.3.5 Alternative delivery formats of the Lidcombe Program

2.3.5.1 Group delivery

The Lidcombe Program has recently been trialled in group delivery, with up to four parent-child pairs in each group (Arnott, 2011). Group treatment of the Lidcombe Program was efficacious and was more efficient than individual delivery. The trial showed that families who received group treatment consumed around 46% fewer speech pathology hours to complete Stage 1. Furthermore, the number of clinic visits as well as the number of weeks to complete Stage 1 was similar in both treatment groups.

2.3.5.2 Telehealth delivery

"Telehealth is the use of information technologies and telecommunications to support or deliver health services to remotely located sites" (Wilson, Onslow & Lincoln, 2004, p. 82). The technology includes telephone, videoconferencing and Internet among others. The Lidcombe Program has been trialled several times as a telehealth intervention. It has been delivered successfully via telephone sessions in a case study, a Phase I and a Phase II trial (Harrison, Wilson & Onslow, 1999; Lewis, Packman, Onslow, Simpson & Jones, 2008; Wilson et al., 2004). Harrison et al. described the delivery of the Lidcombe Program by an Australian speech pathologist to a nearly 6-year-old English boy over the phone. The clinic

visits were replaced by telephone sessions and were supplemented by videotapes and audiotapes recorded and mailed by the parents. Twenty five (mainly) weekly telephone sessions led to very low stuttering levels over a period of 9 months. Follow-up data suggest that the low stuttering levels were maintained for at least 23 months post-treatment.

Five preschool age children between 3 and 6 years of age were treated with the Lidcombe Program over the telephone in a Phase I study (Wilson et al., 2004). The parents of these children received videos and information sheets during the program, in addition to information given during the telephone sessions. The telephone sessions were scheduled at regular intervals, depending on the children's progress in treatment. In this study, when parents found it difficult to accurately identify stuttering, the speech pathologist (1) played previously recorded speech samples of the child over the telephone (using a hands-free phone) to review stuttering with the parents or (2) dubbed some of the child's speech samples onto an audiotape and pointed out (announced) unambiguous stuttering. Both strategies helped parents to identify their child's stuttering accurately. One participant dropped out of the study. Four children attained less than 1.5 %SS levels of stuttering 12 months post-treatment. One participant had a significant relapse during Stage 2, most likely due to parents' poor compliance, but recovered.

Subsequently, a Phase II trial was conducted with 22 preschool age children who stuttered. These children were allocated either to a treatment group that received the Lidcombe Program from a speech pathologist via telephone sessions or to a non-treatment control group that received the Lidcombe Program after a delay of 9 months (Lewis et al., 2008). Telephone sessions were conducted at regular times and were supplemented by video demonstrations. Parents recorded and mailed audiotapes of their child's speech at regular intervals, which were used in the clinic to measure %SS, the primary stuttering outcome. Lewis et al. found a 73% decrease in frequency of stuttering in the treatment group compared with the non-treatment group at 9 months post-treatment. Despite the positive

treatment outcome, this delivery format of the Lidcombe Program required about three times more speech pathology time than the clinic-based Lidcombe Program, due to the need to analyse the recordings and to conduct more sessions with the parents.

Webcam delivery of the Lidcombe Program was trialled in a recent Phase III randomised controlled trial with 49 preschool age children who stuttered (Bridgeman, Onslow, O'Brian & Block, 2013). The children were randomised into an experimental treatment group and a standard treatment (control) group. The experimental treatment group received the Lidcombe Program via webcam, and the control group received it at the clinic. Preliminary results indicated that delivering the Lidcombe Program via webcam was successful: there was no statistical difference in stuttering reduction, in the number of weeks or in the number of sessions to complete Stage 1 of the program. When parents were asked about learning to use the severity scale and to deliver or adjust treatment, their reports revealed no difference between the clinic and webcam groups. Also no difference was found between the two groups for the relationship development between speech pathologist and parent, and speech pathologist and child. Furthermore, 85% of the webcam families agreed that webcam treatment made attending sessions easier and 100% felt that it was non-invasive. Eighty-one percent reported that webcam quality was sufficient and all families would choose webcam treatment again. Families reported webcam was convenient, comfortable or a more natural option for their child.

2.4 THE LIDCOMBE PROGRAM IN EVERYDAY SPEECH PATHOLOGY PRACTICE

Rousseau et al. (2002) and O'Brian et al. (2013) reported how and/or how effectively the Lidcombe Program is delivered in everyday speech pathology practice. Rousseau et al. conducted a survey in Australia with 277 speech pathologists and O'Brian et al. studied 31 speech pathologists and their clients in Australian clinics.

First, they found that speech pathologists did not adhere to all treatment components

of the Lidcombe Program, as described in the Lidcombe Program Treatment Guides (Onslow et al., 2003; Packman et al., 2014). O'Brian et al. (2013) found that 49% of speech pathologists did not have 45-60 minute clinic visits and 53% did not request parents to demonstrate how they implemented treatment at home. These findings supported the findings of Rousseau et al., who also found that only 55% of the speech pathologists scheduled weekly clinic visits during Stage 1 and only 68% scheduled regular clinic visits during Stage 2. O'Brian et al. similarly found that visits in Stage 1 were often scheduled with an interval exceeding 1 week. The main reason reported for the lack of adherence to the Lidcombe Program Treatment Guides for the reported components was time restrictions of the speech pathologists due to heavy caseloads and workplace restrictions.

Secondly, as reported previously in this chapter (see 2.3.4.2), insufficient training in delivering the Lidcombe Program seemed to have an immediate impact on treatment outcome (O'Brian et al., 2013). O'Brian et al. found that the 14 speech pathologists who had received training with the Lidcombe Program Consortium achieved better outcomes with their clients. They achieved 54% lower levels of stuttering in their clients after 9 months treatment with the Lidcombe Program than untrained speech pathologists.

2.5 ACCESS TO THE LIDCOMBE PROGRAM

Thus, there is a safe and efficacious treatment for early stuttering, but exactly how accessible is the Lidcombe Program, delivered according to the Treatment Guides (Onslow et al., 2003; Packman et al., 2014), for families who need it? Knowing that the cumulative incidence of stuttering in Australia is 11.2% by 4 years of age (Reilly et al., 2013), with a proportion expected to recover naturally (Yairi & Ambrose, 1999), it can be presumed that still many preschool age children need to receive treatment for their stuttering. Considering that speech pathologists who are Lidcombe Program Consortium trained achieve better treatment outcomes, preschool age children who stutter should receive the Lidcombe

Program from a Consortium trained speech pathologist. However, observing that only 45% of the speech pathologists in the study of O'Brian et al. (2013) were Consortium trained, it could be presumed that many families cannot access a Consortium trained speech pathologist who delivers the Lidcombe Program according to the Lidcombe Program Treatment Guides (Onslow et al., 2003; Packman et al., 2014). A stand-alone version of the Internet Lidcombe Program could increase access to the Lidcombe Program, delivered according to the Treatment Guides, for families of preschool age children who stutter.

2.6 CONCLUSION

The Lidcombe Program is well researched for efficacy and safety. Long-term outcome data suggest that the vast majority of treated children are able to maintain (near) zero levels of stuttering. The Lidcombe Program is similarly effective in everyday speech pathology practice, if delivered by speech pathologists who are trained by the Lidcombe Program Trainers Consortium. Considering the high cumulative stuttering incidence 11.2% by 4 years of age and considering the fact that optimal treatment with the Lidcombe Program is achieved when delivered by Consortium trained speech pathologists, it can be assumed that many children cannot receive the Lidcombe Program most effectively due to compromised quality or a lack of clinical resources.

The existing telehealth delivery formats of the Lidcombe Program have shown success, but they all require the physical involvement of a (Consortium trained) speech pathologist in the delivery of treatment. A carefully constructed and trialled stand-alone, Internet-based version of the Lidcombe Program, that is, an intervention that does not require the involvement of a speech pathologist, could overcome these access barriers to the Lidcombe Program. Its development is the topic of this thesis.

2.7 THESIS OVERVIEW

This thesis reports on the development, construction and trialling of the Internet Parent Training, the first part of an Internet-based version of the Lidcombe Program, and the investigation of problem-solving and the construction of this component in the Internet Lidcombe Program. The thesis is divided into six sections. Section I (Chapters 1 and 2) gives the necessary background to stuttering and the Lidcombe Program. Chapter 1 has introduced stuttering, including its impact on social development and an overview of stuttering intervention at different ages. Chapter 2 reviews the evidence that supports the Lidcombe Program. It also introduces different delivery formats of the Lidcombe Program and its translation into everyday speech pathology practice.

Section II (Chapters 3, 4 and 5) focuses on theoretical issues that underlie the planning of the Internet Lidcombe Program. Chapter 3 describes available telehealth interventions in speech pathology and aspects related to Internet-based health interventions. Chapter 4 introduces parent training in early intervention, adult education principles and Internet-based learning experiences. Potential theoretical issues for the development of the Internet Lidcombe Program are identified in these chapters. Chapter 5 then outlines the design of the Internet Lidcombe Program, including the necessary adaptations of its treatment components.

Section III (Chapters 6, 7 and 8) describes problem-solving in the Lidcombe Program. Chapter 6 describes parent experiences of doing the Lidcombe Program and the important problem-solving role of speech pathologists. This literature review clearly establishes the need to conduct a study for the purposes of integrating problem-solving into the Internet Lidcombe Program. Chapter 7 reports on Part I of the qualitative problem-solving study, conducted to identify treatment problems that parents can encounter during the course of the Lidcombe Program. Chapter 8 explains how Part II of the problem-solving

study was conducted to accumulate potential solutions to the treatment problems.

Section IV (Chapter 9) illustrates the construction of the Internet Parent Training, which is the first part of the Internet Lidcombe Program, by explaining and illustrating how findings from the literature and from the empirical problem-solving study are implemented in the Internet Lidcombe Program.

Section V (Chapter 10) reports on the feasibility study of the Internet Parent Training, in which six parents of children who stutter completed this part of the program.

Section VI (Chapter 11) concludes the thesis, with implications for the development of the Internet Lidcombe Program and with suggestions for future research.

SECTION II

DEVELOPMENT OF THE INTERNET LIDCOMBE PROGRAM -

THEORETICAL ISSUES

CHAPTER 3 TELEHEALTH AND INTERNET-BASED HEALTH INTERVENTIONS

3.1 INTRODUCTION

This chapter explores theoretical issues related to telehealth interventions that could directly affect the development of the Internet Lidcombe Program. The aim of telehealth interventions is to deliver treatment to remote sites using telecommunication (Wilson et al., 2004). Telehealth interventions are useful in a vast country like Australia to reach remotely located families for the treatment of health-related issues, including communication disorders. Telehealth interventions can be delivered in various ways, from established suites built by the Health Department to simple webcam treatment from a laptop. Speech pathologists aim for equity of treatment, that is, that every client should be able to receive the necessary treatment for his/her condition, but it is known that some speech pathology services cannot be accessed regularly (Wilson et al., 2002).

3.2 BARRIERS TO ACCESS SPEECH PATHOLOGY SERVICES

The majority of rural speech pathology services in Australia are insufficient for or unavailable to rural and remotely-located families (O'Callaghan, McAllister & Wilson, 2005; Verdon, Wilson, Smith-Tamaray & McAllister, 2011; Wilson et al., 2002). An overview of the reported barriers is presented in Table 3.1.

Table 3.1

Reported Barriers of Access to Rural Speech Pathology Services

Theme	Barrier
Availability	Lack or limited number of speech pathologists ^{a, b}
	Compromised duration, frequency and/or quantity of treatment sessions ^{a, c}
	Lack of services ^{a, b, c}
	Increased costs for clients ^a
	Delays in treatment ^b
Regular access	Long travel distances ^{a, b, c}
	Travel expenses ^{a, b}
	Lack of public transport ^{a, b}
Service	Compromised quality ^{a, c}
	Poor awareness of clients about services ^b

^a Wilson et al., 2002.

^b O'Callaghan et al., 2005.

^c Verdon et al., 2011.

Unfortunately, these barriers are not limited to accessing rural speech pathology services. Ruggero, McCabe, Ballard, and Munro (2012) reported that paediatric speech pathology services are often difficult to access regardless of whether clients live in rural or in metropolitan regions.

3.3 TELEHEALTH INTERVENTIONS IN SPEECH PATHOLOGY

The main benefit of telehealth interventions in speech pathology is the capacity to deliver treatment in the (natural) home environment, which often leads to positive effects in generalisation of behaviour, functional outcomes, client satisfaction and self-management in various conditions (Theodoros, 2012). Telehealth interventions can be time- and cost-efficient. Moreover, they potentially increase client focus, facilitate caseload management and improve client access to speech pathology treatment (Hill & Miller, 2012; Mashima & Doarn, 2008).

Typically, three types of research have been conducted in telehealth interventions in speech pathology: (1) individual trials (e.g. Carey et al., 2012; Swanepoel, Koekemoer & Clark, 2010), (2) reviews of conducted trials (Mashima & Doarn, 2008; Reynolds, Vick & Haak, 2009; Theodoros, 2012) and (3) surveys or interviews to investigate the use of the interventions in everyday speech pathology practice (Dunkley, Pattie, Wilson & McAllister, 2010; Hill & Miller, 2012; Zabiela, Leitao & Williams, 2007). In this chapter, the two latter types of research are discussed.

3.3.1 Reviews of telehealth interventions

Even though Theodoros (2012), Reynolds et al. (2009) and Mashima and Doarn (2008) all applied narrative review in their research, only Reynolds et al. included (informal) quality assessment procedures: each article was rated on a checklist by two researchers and a descriptive analysis included a numerical rating for the study type, participants, selection criteria and measured outcomes. Reynolds et al. concluded that sufficient positive evidence is available to support telehealth intervention for adults with neurogenic communication and voice disorders, but identified a clear lack of evidence for interventions in other speech and language areas and for paediatric interventions. Mashima and Doarn and Theodoros systematically discussed all telehealth interventions. Theodoros found only a small number of telehealth interventions for children with speech, language and/or literacy difficulties, without strong evidence for the feasibility and validity of telehealth delivery in this group of disorders. This is surprising, as children with speech, language and/or literacy difficulties often build up the majority of clinical caseloads. Telehealth interventions for adults with dysphagia and laryngectomy focus on assessment and evaluation, and trials of telehealth intervention for adults with voice disorders produced promising results (Mashima & Doarn, 2008; Theodoros, 2012). Wilson et al. (2004) and Carey et al. (2010) provided strong evidence for telehealth treatments for stuttering in children (Lidcombe Program) and adults (Camperdown Program). Surprisingly, the study of Lewis et al. (2008) was included in only one of the three reviews (Mashima & Doarn, 2008). Most trials were conducted in the

USA and Australia.

Theodoros (2012) concluded that there has been a lack of cost-benefit analysis of telehealth interventions in speech pathology. Other conclusions were that researchers most often delivered intervention in traditional telehealth settings, that is, with a researcher in an office providing treatment to a client in a different location, in controlled research environments, and that videoconferencing, which ensures simultaneous communication between two or more locations by two-way video and audio transmissions, was the most commonly used technique (Mashima & Doarn; 2008; Reynolds et al., 2009; Theodoros, 2012).

3.3.2 Surveys/interviews of telehealth interventions in Australia

Hill and Miller (2012), Dunkley et al. (2010) and Zabiela et al. (2007) surveyed or interviewed speech pathologists about the actual application of telehealth interventions in everyday speech pathology practice in Australia. Zabiela et al. found that rural speech pathologists often had limited access to technology to deliver telehealth interventions due to workplace or health department guidelines. Dunkley et al. unravelled a mismatch between rural families and rural speech pathologists, in that rural speech pathologists thought that families evaluated telehealth intervention negatively but the rural families in the study seemed eager to try telehealth intervention. As well, rural speech pathologists, with an often restricted access to technology at their workplace, presumed that rural families also had limited access to technology. This, however, appeared not to be the case: at the time of the Dunkley et al. study, 61% of rural families had access to the Internet. Hill and Miller surveyed 57 metropolitan and rural speech pathologists and found that the most frequently used techniques in the delivery of telehealth interventions were telephone and email. The authors also found that speech pathologists used telehealth twice as often for delivering treatment components including direct intervention, consultation, follow-up and support as for assessment, and more to treat children than adults. The survey also showed that telehealth

intervention was mainly used in paediatric clients to address expressive language difficulties, stuttering, articulation, phonology and oromotor intervention; in adult clients it was most frequently used for intervention of stuttering, dysarthria and voice disorders.

3.3.3 Discrepancy between reviews and surveys/interviews of telehealth interventions

Discrepancies are clearly present between the research evidence and the clinical application of telehealth interventions in speech pathology. Most significant is the discrepancy between the technology most frequently applied in research studies (videoconferencing) and that used in everyday speech pathology practice (telephone and email). Even though the most frequently applied intervention tool, videoconferencing, could be established by using simple and cheap technology, research studies often use it in combination with complex technology, for example interactive custom-built touch screens (Mashima & Doarn, 2008). Hill and Miller (2012) explained that the complexity and cost of the technology used in research trials may discourage speech pathologists and clients from using more advanced technology than telephone and email.

3.3.4 More accessible, cheap and simple technology: The Internet

The Internet, accessible to many individuals nowadays, can offer sufficient technology for distance intervention, for example via webcam. Many households and speech pathologists have Internet on their (home) computer, computer tablet or smart phone. Worldwide, more than one third of households have Internet access (List of countries by number of Internet users, 2013). Internet usage is the highest (approximately 80% or more) in developed countries including central and northern Europe, Australia, the USA, Canada, Japan and Korea. More specifically, Ruggero et al. (2012) found that 92% of the 154 Australian families included in their survey had a broadband Internet subscription. Once the National Broadband Plan is finalised in Australia, Internet usage in Australia is expected to be higher than this (http://www.dbcde.gov.au/broadband/national_broadband_network).

Distance intervention can become costly, however, if a speech pathologist is conducting the treatment, especially in long-term interventions such as stuttering treatment. Internet-based interventions, based on delivery with little or no involvement of a speech pathologist could provide relatively cheap and easily accessible intervention for its users, both clients *and* speech pathologists.

There is gradual recognition of the Internet as a possible, low-cost medium for delivery of distant speech pathology intervention, which can be observed in recent publications such as the overview of available speech and language applications (Bowen, 2012) and stuttering applications (Packman and Meredith, 2011). There is clearly a lack of evidence for Internet-based speech pathology interventions with little or no speech pathologist involvement. Therefore, Internet-based health interventions in other health domains are reviewed here.

3.4 NON-SPEECH PATHOLOGY INTERNET-BASED HEALTH INTERVENTIONS

3.4.1 Introduction

Internet-based distance interventions with little or no clinician involvement are beginning to emerge in the health sector. The majority of the available Internet-based health interventions address psychological disorders, including mental health disorders. It is useful to investigate the available Internet-based interventions that aim to deliver distance intervention with little or no clinician involvement in areas other than speech pathology in order to identify issues that might need to be taken into account when developing the stand-alone Internet-based version of the Lidcombe Program.

In the Lidcombe Program, it is the parents who implement the actual treatment with their child at home. Hence, selection of the studies of Internet-based interventions in which parents learn how to conduct treatment with their child to obtain a behaviour change seemed a logical first step to explore potential theoretical issues and, in addition, to find indications of

the viability of Internet-based interventions with little or no clinician involvement. Internet-based interventions that require intensive clinician involvement, such as intervention using videoconferencing or webcam delivery, were not included in this overview.

3.4.2 Internet-based health interventions for preschool age children

Studies of Internet-based behaviour change interventions for preschool age children have been published sparingly and include interventions for children with conduct problems (Enebrink, Hogstrom, Forster & Ghaderi, 2012; Taylor et al., 2008), autism spectrum disorders (Wainer & Ingersoll, 2013; Walingorska, Pisula, Waligorska & Letachowicz, 2012) and traumatic brain injury (Wade, Oberjohn, Conaway, Osinska & Bangert, 2011). Wainer and Ingersoll developed a stand-alone Internet-based parent training in reciprocal imitation techniques for children with autism spectrum disorders. Three parents completed the Internet-based parent training at home without the involvement of a clinician. The interaction between the parents and child was then evaluated for fidelity of technique implementation and child imitation, as well as parent knowledge of the techniques and usage data. Finally, feasibility, acceptability and effectiveness of the delivery model and intervention program were analysed. Even though the results were based on only three participants, they were promising. Parents gained knowledge and children improved in the target behaviour (imitation). The participants reported that they would have liked more video demonstrations. Two participants, who achieved fidelity of technique implementation, indicated they had liked additional feedback or coaching during the parent training.

The other studies all included some clinician involvement, varying from giving feedback (reinforcement, problem-solving support and/or advice) upon completion of each session and giving access to the next session (Enebrink et al., 2012), to monthly consulting with the client at one of the centres (Walingorska et al., 2012), videoconferencing/coaching sessions linked to each self-guided web session (Wade et al., 2011) and home visits during the course of the intervention (Taylor et al., 2008). Results were promising but more

research needs to be conducted to obtain more significant outcome data because all but one (Enebrink et al., 2012) were feasibility studies.

Due to the limited number of studies published on Internet-based interventions for preschool age children, Internet-based interventions for infants and adults were also evaluated. As with Internet-based interventions for preschool age children, the recipients in Internet-based interventions for infants and for adults were parents/adults.

3.4.3 Internet-based health interventions for infants

Internet-based interventions for infants seem to be even rarer than Internet-based interventions for preschool age children. Baggett et al. (2009) compared child behaviour after parents completed a program to prevent child maltreatment in families at risk with behaviour of children in a control group. The control group received a computer and Internet connection, but had no access to the online program. Parents who completed the program learned effective parent-infant interaction strategies. Infants in the intervention group showed significantly more social engagement with their mothers and their environment than infants in the control group. This program required clinicians to contact parents (phone, email) and to analyse parent skills on videos. Mindell et al. (2011a) found that a stand-alone, 3-week Internet-based intervention for infants with sleeping problems improved child sleeping behaviour. Furthermore, they found long-term effects in several aspects of children's sleep 1 year after the Internet-based intervention (Mindell et al., 2011b).

3.4.4 Internet-based health interventions for adults

Most of the research, published on Internet-based interventions, has related to adults, including interventions for depression, anxiety, alcohol over-consumption, smoking, asthma, heart disease, diabetes, arthritis and obesity (Rosser, Vowles, Keogh, Eccleston & Mountain, 2009; Spek et al., 2007; Webb, Joseph, Yardley & Michie, 2010). Different aspects of Internet-based interventions for adults are discussed in the remainder of this

chapter, including efficacy, clinician involvement, reminder applications, tailored feedback, reasons for dropout and predictors of adherence.

3.4.4.1 Efficacy

Reviews generally show that Internet-based intervention to change health behaviour holds promising results (Andersson, Ljottsson & Weise, 2011; Cheng & Dizon, 2012; Dellifraime & Dansky, 2008; Ekeland, Bowes & Flottorp, 2011), with particularly positive results for depression and anxiety (Andrews, Cuijpers, Craske, McEvoy & Titov, 2010; Cuijpers, van Straten & Andersson, 2008; Ferooshani, Schneider & Assareh, 2011; Griffiths, Farrer & Christensen, 2010; Helgadottir et al., 2009; Penate, 2012; Spek et al., 2007).

Some Internet-based interventions have a theoretical basis (Webb et al., 2010), referring to the use of theory to develop the intervention. Theory can be applied in various ways in Internet-based interventions, such as to identify theoretical constructs to be targeted (e.g. self-efficacy), to identify mechanisms underlying particular behaviour change techniques (e.g. learning by modelling), or to select participants who are most likely to benefit (e.g. individuals with depression). More extensive use of theory in Internet-based interventions seemed to be associated with larger effect sizes (Webb et al., 2010, based on 85 studies). Also, Internet-based interventions that include a greater variety of behaviour change techniques, such as facilitation of problem-solving, relapse prevention or coping and action planning, tend to have larger effects than those that incorporate fewer.

3.4.4.2 Clinician involvement

During the last few years there has been ongoing debate about the impact of clinician involvement on treatment outcome in Internet-based interventions for psychological conditions. A correlation has become evident between the effect sizes of Internet-based cognitive behaviour therapy for psychological conditions and the amount of clinician involvement (Andersson, 2009; Newman, Szkodny, Llera & Przeworski, 2011; Penate, 2012). Andersson found a correlation between the amount of clinician contact in minutes and

the between-group effect size when comparing 15 Internet-based interventions for psychiatric conditions. He concluded that the presence of an online clinician guiding users through the program and providing feedback is important for adherence and outcome, and that the level of expertise matters. Newman et al. (2011) claimed that interventions for certain disorders, such as depression, require more clinician involvement than others to be most efficacious. Developers of Internet-based interventions in the domain of speech pathology have not yet participated in this discussion. It is worthwhile making the observation that in the literature, clinician involvement is often referred to as the physical involvement of a clinician, such as answering client emails or analysing videos. However, clinicians might also be involved in a non-physical or *virtual* way, such as in a pre-recorded audio or video to explain treatment techniques.

In his review of 26 Internet-based interventions for depression and anxiety, Talbot (2012) looked at clinician involvement from another angle. He separated *guidance contact*, that is, assistance in specific therapy techniques, from *non-guidance contact*, that is, other ways clinicians could be involved, such as sending reminder emails, ongoing symptom monitoring and conducting telephone calls. He found that clinical guidance contact was not required as long as minimal non-guidance contact was provided. Much non-guidance contact, such as sending reminder emails, can be automated.

3.4.4.3 Reminder applications

An example of a reminder application is sending messages, such as mobile phone or email messages. Studies have shown that the simple procedure of sending (automated) email messages (monitoring, following-up) increased adherence to Internet-based interventions (Christensen, Griffiths & Farrer, 2009; Clarke et al., 2005; Kelders, Kok, Ossebaard & Van Gemert-Pijnen, 2012; Webb et al., 2010).

3.4.4.4 Tailored feedback

Feedback, which includes all types of written communication, generated as a response to users' input, needs to be personalised in accordance with the condition of the client. Individually tailored feedback is a necessary element in Internet-based interventions (Evers et al., 2003; Kreuter, Strecher & Glassman, 1999).

3.4.4.5 Reasons for dropout and predictors of adherence

It is well known that Internet-based interventions have high dropout rates and decreased adherence. Rosser et al. (2009) reported an average dropout of 26% (ranging from zero to 84%) in their review of 45 Internet-based behaviour change interventions. Self-reported reasons for dropout in a review based on 23 randomised controlled Internet-based interventions for depression and anxiety (Christensen et al., 2009) were time constraints, lack of motivation, technical or computer-access problems, depressive episode or physical illness, preference for taking medication, perceived lack of treatment effectiveness, improvement in condition, burden of the program and lack of face-to-face contact. This latter reason was also reported by Rosser et al., who claimed that completely automated interventions — often educational and simple skill-training modules — had almost twice as many dropouts on average than interventions that included some clinician involvement. However, Rosser et al. only took direct, physical clinician involvement into account and did not consider virtual clinician involvement.

Predictors of adherence seem to differ according to disorder. For example, predictors of increased adherence for Internet-based interventions for depression were found to be lower baseline rates of depression, younger age and poorer knowledge of psychological treatments, whereas for anxiety they included lower symptom levels (Christensen et al., 2009). In a review that included 101 Internet-based interventions, Kelders et al. (2012) agreed that adherence often depends on the type of intervention. Lifestyle change behaviour interventions such as losing weight, which tended to be long and less strictly formatted, often

resulted in lower adherence than mental health interventions, which were usually short and strict. They also found that it was not the health condition per se that predicted better adherence, but the technological and interactional elements applied in the Internet-based interventions, including:

- a randomised controlled trial design (as opposed to an observational study);
- increased interaction with a counsellor;
- more frequent intended usage, that is, the extent to which individuals should experience the content of the intervention to derive maximum benefit from it as defined or implied by its creators;
- more frequent updates;
- more extensive employment of dialogue support, such as supportive emails or positive feedback upon completion of a questionnaire.

Finally, Christensen et al. (2009) found that users seemed to be more likely to adhere to Internet-based interventions if they had realistic expectations of the program.

3.5 CONCLUSION

Telehealth and Internet-based interventions offer distance interventions to families who cannot access the necessary treatment otherwise, for example due to living remotely. Telehealth interventions for speech pathology disorders are available to deliver distance intervention but are not used in everyday speech pathology practice as expected. Expense and complex technology are possible barriers to speech pathologist for using telehealth interventions in their practice. Stand-alone Internet-based interventions would increase access to interventions because using the Internet as intervention technology can be simple, cheap and easily accessible to clients and speech pathologists, and there is no need for

speech pathologists to be physically involved.

Important lessons from the reviewed Internet-based health interventions related to clinician involvement, reminder applications and tailoring feedback were learned for the development of the Internet Lidcombe Program.

CHAPTER 4 ADULT LEARNING

4.1 INTRODUCTION

It is generally accepted that involving parents in early intervention health-related programs results in better outcomes because (1) parents' understanding of effective treatment increases, (2) generalisation occurs more easily, (3) treatment gains are better maintained, and (4) interventions are less resource-intensive and cheaper (Burrell & Borrego, 2012; Kaiser & Hancock, 2003; Matson, Mahan & LoVullo, 2009; Matson, Mahan & Matson, 2009). Parents need to learn how to implement treatment procedures that will result in a behaviour change for their child and this can occur in parent training. This chapter gives an overview of different parent training formats used in early intervention, and reviews the domain of adult education, including Internet-based learning.

4.2 ADULT LEARNING IN EARLY INTERVENTION PROGRAMS

4.2.1 Parent training in early intervention programs

Well-established speech pathology interventions for young children often train parents. Examples include The Hanen Program (Girolametto, Verbey & Tannock, 1994), Enhanced Milieu Teaching (Kaiser & Hancock, 2003), The Lidcombe Program (Onslow et al., 2003; Packman et al., 2014) and many autism spectrum disorder interventions (Burrell & Borrego, 2012). Typically, parents are supported by a speech pathologist to learn and acquire new skills and receive feedback upon demonstration of their acquired skills, which then are applied to treat their child.

The Internet Lidcombe Program will also train parents. Due to the nature of the program, this will occur in a stand-alone format, that is, without the physical involvement of a speech pathologist. Interestingly, research has been conducted into different parent training formats, including stand-alone training packages, which indicate its viability.

4.2.2 Parent training formats

Some individual face-to-face interventions include parent training as a separate component of their intervention. Studies, mainly in the domain of psychology, have been conducted to investigate aspects related to this separate parent training component and have revealed interesting findings. One of these aspects is clinician involvement. Clinician involvement in parent training, discussed here, is separated from clinician involvement in Internet-based health interventions, because clinicians involved in Internet-based interventions focus directly on treatment, whereas clinicians involved in parent training focus on helping parents to acquire skills; thus a learning component is involved. Eventually, with these acquired skills, parents will treat their children. Regardless of the training format, results are usually based on several measures including treatment outcome. A summary of studies investigating different training formats is presented in Table 4.1. The information in Table 4.1 is limited to the number of participants, training format groups and most significant outcome measures. More details of the studies can be found in the individual publications (see References).

Table 4.1

Comparison of Different Parent Training Formats

Authors	Study	Findings
Heifetz, 1977 ^a	<ul style="list-style-type: none"> • 160 parents of children with an intellectual disability • Reading manual • Reading manual plus telephone support • Reading manual plus group sessions • Reading manual plus group sessions and home visits • Control group (no training) • 20 weeks 	<ul style="list-style-type: none"> • Trained parents knew significantly more • Reading manual as effective as other formats
Del Giudice, 2006 ^a	<ul style="list-style-type: none"> • 47 parents of children with Down syndrome • Parent-implemented training • Training at the clinic • Evaluation 12 months post treatment 	<ul style="list-style-type: none"> • Child developmental gains in both groups • Scores higher in parent-implemented format
Kling et al., 2010	<ul style="list-style-type: none"> • 159 parents of children aged 3 to 10 years • Training in clinician-assisted group sessions • Single workshop • Control group (no training) 	<ul style="list-style-type: none"> • Better intervention outcomes of trained parents • Outcome maintained 6 months after study
MacKenzie & Hilgedick, 2008	<ul style="list-style-type: none"> • 46 parents of children aged 3 to 5 years • Training for behavioural parenting concepts • Computer-based training • Reading manual • No training • Evaluation in 4 weekly and 1 month session 	<ul style="list-style-type: none"> • Maintenance of involvement in computer-trained parents compared with other or untrained parents

^a Cited in Matson et al., 2009.

Table 4.1 cont'd

Comparison of Different Parent Training Formats

Authors	Study	Findings
Kashima et al., 1988 ^a	<ul style="list-style-type: none"> • 61 parents of children with an intellectual disability • Media-based training • Training with a clinician • No training (delayed control condition) 	<ul style="list-style-type: none"> • Better results for all but one measure with media-based training than no training • More knowledge of behavioural principles with training with a clinician than media-based training • Other measures similar in both training groups
Hudson et al., 2003	<ul style="list-style-type: none"> • 115 parents of children with an intellectual disability and challenging behaviour • Group sessions with a clinician • Self-help training plus fortnightly telephone support • Self-directed training • No training • Evaluation 4 to 6 months after training 	<ul style="list-style-type: none"> • Most measures significantly better in trained parents • Minimal differences between training formats • Drop-out rates higher for self-directed training
Nefdt et al., 2010	<ul style="list-style-type: none"> • 27 parents of children with autism spectrum disorders • Self-directed training • No training • Evaluation based on 10 minute videos of parent-child interactions 	<ul style="list-style-type: none"> • Significant differences on all measures between both groups • Parents very satisfied with self-directed training
Hudson, 1982	<ul style="list-style-type: none"> • 40 parents of infants with developmental delay • Verbal instruction training • Verbal instruction training plus teaching • Verbal instruction training plus modelling and role-playing • No training 	<ul style="list-style-type: none"> • No better outcome for training combined with teaching • Modelling and role-playing were beneficial

^a Cited in Matson et al., 2009.

In summary, these studies have demonstrated that parent training for behavioural modification techniques does not require clinician involvement to result in parent competence and child behavioural gains (Del Giudice, as cited in Matson et al., 2009; Heifetz, as cited in Matson et al., 2009). A parent training format without clinician involvement that was both engaging and successful was media-based training, that is, training that included media-based resources such as video models or video instruction (Hudson et al., 2003; Kashima et al., as cited in Matson et al., 2009; MacKenzie & Hilgedick, 2008; Nefdt, Koegel, Singer & Gerber, 2010). However, higher dropout rates were observed in stand-alone parent training (Hudson et al., 2003; Matson et al., 2009). Furthermore, modelling and role-playing in addition to verbal instructions were found to be the most powerful techniques to teach parents behavioural principles (Hudson, 1982).

Due to the learning component that is involved in training packages, it is essential to understand the relevant principles of adult education and Internet-based education and to detect potential theoretical issues for the development of the Internet Lidcombe Program. The literature of adult education and Internet-based education is therefore reviewed.

4.3 ADULT EDUCATION

4.3.1 Adult education principles

Adult education is a relatively new discipline with distinctive adult learner assumptions and principles. In the '70s and '80s, Knowles introduced the term *andragogy*, which means – *Andros* – adult man and – *ago* – I guide, to refer to adult education (Kaufman, 2003; Merriam, 2001; Zmeyov, 1998). He also introduced five fundamental assumptions, based on the nature of adult learners, to differentiate from other areas of education such as pedagogy. Adult learners:

- have an independent self-concept and can direct their learning. Instructors should serve as facilitators and must actively involve adult learners and guide them to their own knowledge rather than supplying them with facts.
- have accumulated a reservoir of life experiences that is a rich resource for learning. They need to connect theories and concepts to these experiences.
- have learning needs closely related to the demands of their everyday life. Adult learners know what goal they want to attain. Providing them with a well-organised program containing clear defined elements and objectives, identified prior to the learning process, is therefore extremely important.
- are problem-centred and interested in immediate application of knowledge. Instructors should explicitly tell adult learners how information is useful for their own life.
- are motivated to learn by internal rather than external factors. Motivation can have different sources such as cognitive interest, social welfare or personal advancement.

The following seven principles of andragogy, derived by Knowles, are generally accepted as guidelines for adult teaching practice (Kaufman, 2003):

- Learners should actively contribute to the educational process.
- Learning should closely relate to understanding and solving real-life problems.
- Learners' current knowledge and experience are critical in new learning situations and need to be taken into account.
- Learners should be given the opportunity and support to use self-direction in their learning.

- Learners should be given opportunities and support for practice, accompanied by self-assessment and constructive feedback from teachers and peers.
- Learners should be given opportunities to reflect on their practice; this involves analysing and assessing their own performance and developing new perspectives and options.
- Learning is highly affected by the use of role models by educators. Teachers often teach the way they were taught. Educators should therefore model these educational principles with their students, to help the next generation of teachers and learners become more effective.

4.3.2 Self-directed learning

At the same time as andragogy was introduced, *self-directed learning* appeared as a model that also separated adult learners from children (Kaufman, 2003; Merriam, 2001). Learning in this model is widespread and occurs as part of adults' everyday life. It is systematic without being dependent on an instructor or classroom. Self-directed learning, together with andragogy, are considered as the two pillars of adult learning theory (Merriam, 2001).

4.3.3 Educational concepts in the health profession context

Kaufman (2003) suggested that the educational concepts of self-efficacy, constructivism and reflective practice, which all relate to adult education, improve teaching in the health profession context. These educational concepts are listed in Table 4.2. with their related teaching strategies.

Table 4.2

Adult Education Concepts and Related Teaching Strategies in the Health Profession Context
(Kaufman, 2003)

Concepts	Teaching strategies
Self-efficacy ^a	modelling or demonstrating setting a clear goal or image of the desired outcome providing basic knowledge and skills needed as the foundation for the task providing guided practice with corrective feedback giving students the opportunity to reflect on their own learning
Constructivism	being the guide who facilitates learning providing learning experiences that expose inconsistencies between students' current understanding and their new experiences because learning is based on what learners already know actively engaging learners in their learning, using relevant problems and group interaction providing sufficient time for in-depth examination of new experiences to achieve active acquiring of knowledge
Reflective practice ^b (includes reflection in action ^c and reflection on action ^d)	providing opportunities to debrief with peers or learners seeking feedback from learners on a regular basis asking learners to keep a journal

^a Refers to learners' judgements of their ability to deal with different situations; such judgements are central to their actions.

^b Triggered by unexpected events or surprises.

^c Occurs immediately and is the ability to learn and develop continually by creatively applying current and past experiences and reasoning to unfamiliar events while they are occurring.

^d Process of thinking back on what has happened in a past situation, what may have contributed to the unexpected event, whether appropriate actions were taken and how this situation may affect future practice.

The general principles, concepts and teaching strategies of adult education, as well as the concepts and strategies inherent to Internet-based learning, will need to be implemented in the Internet Lidcombe Program to guarantee acceptable quality.

4.4 INTERNET-BASED LEARNING

Internet-based learning uses the computer as a medium to transfer learning content to learners. Internet-based education is increasingly penetrating universities globally. Chumley-Jones, Dobbie and Alford (2002) reviewed medical, dental and nursing studies and found that the outcomes of Internet-based learning were comparable but not superior to those of other educational methods, such as text materials and classroom teaching.

4.4.1 Internet-based teaching techniques

Internet-based teaching techniques vary according to the context where the teaching is taking place. The following teaching techniques are frequently applied in the context of health profession education:

- *Problem-based learning* is learning through appropriate problems to increase knowledge and understanding but does not necessarily involve problem-solving (Wood, 2003).
- *Case-based learning* is learning through (computer) cases that include learning objectives and teaching points, and that are often based on patients/clients from the (medical) practice (Leong, Baldwin & Adelman, 2003).
- *Just-in-time learning* is learning by having the appropriate information available at the right time and place (Chueh & Barnett, 1997).
- *Self-assessment and reflection* is learning by reinforcing current knowledge or by highlighting differences between current understanding and new information (Cook & Dupras, 2004).

- *Self-directed learning* is learning through seeking answers to questions asked by learners themselves (Cook & Dupras, 2004).

Internet-based teaching techniques need to be linked to the educational principles discussed previously. Cook and Dupras (2004) suggested such links, displayed in Table 4.3.

Table 4.3

Internet-based Teaching Techniques Linked to Adult Education Principles (Cook & Dupras, 2004)

Principle	Teaching technique
Learners should actively contribute to the educational process	Learner interaction Problem-based learning Self-directed learning
Learning should closely relate to understanding and solving real life problems	Case-based learning Just-in-time learning
Learners' current knowledge and experience need to be taken into account	Learner interaction Problem-based learning
Learners should be given the opportunity and support to use self-direction in their learning	Self-directed learning
Learners should be given the opportunity and support for practice, accompanied by self-assessment and constructive feedback from educators and peers	Case-based learning Self-assessment Feedback
Learners should be given the opportunity to reflect on their practice	Self-assessment Case-based learning Journals and portfolios Learner interaction
Health professional educators should model good educational principles with their learners	Effective course and website design (active learning) Instructor feedback

4.4.2 Internet-based instructional applications

Cook et al. (2010) analysed the variety of instructional designs of Internet-based learning in the health profession context in 51 articles, of which 30 were randomised studies, and summarised the instructional modes or applications that significantly improved learning outcome:

- Enhancing interactivity by (1) using self-assessment questions, (2) requiring active responses to (case-based) questions, or (3) using example cases with intentional errors;
- Using a large amount of practice exercises;
- Giving more intensive feedback.

Synthesised information from the teacher, such as summaries, did not increase learning outcome, but had a large, statistically significant effect on learners' satisfaction.

4.4.3 The impact of personality on Internet-based interactions

4.4.3.1 General

Internet pages are explored by individuals in different ways; similarly, Internet-based learning occurs differently for individual learners. Chen and Macredie (2010) reviewed 60 articles to find influences of gender, prior knowledge and learning style on the use of Internet-based applications, and found that:

- females seem to have more orientation problems than males;
- individuals for whom the content is new benefit from structure;
- cognitive styles impact on navigation strategies and/or learning preferences.

Much research has been conducted on the topic of cognitive styles. Because cognitive styles seem to influence Internet-based learning, it is necessary to go back to the basics to understand the complex domain of cognitive styles and related concepts.

4.4.3.2 The impact of personality on the learning process

4.4.3.2.1 The learning process

Learning is a complex process with many cognitive activities. It has been investigated by many researchers who have introduced learning and cognitive theories, styles and labels. The interchangeable use of these theories, styles and labels has led to great confusion and made it hard to understand and interpret findings. Curry (1983) attempted to reorganise these theories by introducing a three-layer model, which is still widely used today to provide structure in the topic. The *outer layer* refers to *instructional format preference*, which is the individual's choice of environment in which to learn. This preference includes various modes of information delivery or access, such as environmental conditions (presence of light or sound) or social conditions (alone or with peers). This layer interacts with learner expectations, teacher expectations, learning environment and other external features. The *second layer* is the information processing style or *learning style*. It refers to the individual's intellectual approach to assimilate information following the information-processing model. This process can be modified by learning strategies. The *third or inner layer* is the *cognitive personality style* and refers to the individual's pattern of perception, memory, thinking and judgement (Cassidy, 2004; Cook, 2005; Curry, 1983). This is an underlying and relatively permanent personality dimension that forms part of the personality construct description.

To increase the likelihood of achieving learning gains in parents who will do the Internet Lidcombe Program, it is important, before its development, to consider the most important findings of Internet-based learning related to the three layers of the learning process.

4.4.3.2.2 The outer layer: instructional format preference

An example of the outer layer, which refers to the preference of instructional format, is VARK. This acronym stands for Visual, Aural, Reading/Writing and Kinaesthetic, and represents possible learning preferences for receiving information (Fleming, 1995; Fleming & Baume, 2006). It can be assumed that a variety of instructional formats accommodates all learning preferences. The VARK developers discovered some trends based on the data of more than 200,000 people who completed their online questionnaire (www.vark-learn.com). Even though these trends need to be interpreted with caution, they give an interesting indication of learning preferences that most likely will apply to the users of the Internet Lidcombe Program, that is, parents of preschool age children who stutter. These parents are expected to be mainly female and older than 25 years of age. The trends for this group are that:

- Females seem to learn more easily through reading/writing preferences, whereas males prefer kinaesthetic presentation of information.
- Learners older than 25 seem to have a higher preference for reading/writing, whereas learners younger than 25 years of age often have the strongest preference for kinaesthetic information.

Ross and Schulz (1999) suggested Internet-based applications that could accommodate three instructional formats:

- for visual preference: animations, hypertext or videos;
- for aural preference: recording of the complete lecture or summaries;
- for kinaesthetic preference: problems, physical activities or manipulative exercises.

4.4.3.2.3 The second layer: learning style

Examples of the *second layer*, the information processing style or *learning style*, include the dichotomies wholist-analytic, verbaliser-imager, concrete-abstract, active-reflective and sequential-global/random (Cassidy, 2004; Cook, 2005; Sabry & Baldwin, 2003; Zapalska & Dabb, 2002). Internet-based applications can often accommodate preferences for both dichotomies of learning styles, but sometimes a decision in favour of one type of learning style needs to be made, e.g. how content is provided. Sabry and Baldwin found that the majority of adult learners were sequential learners (68%) compared with global learners (32%). Sequential learners prefer to understand the content in a linear manner. This finding is similar to the finding of Dufresne and Turcotte (1997). They offered adult learners an open or a restricted program to learn the use of the database features in Microsoft Excel and concluded that a restricted, linear internet environment seemed easier to use than an open internet environment. A content overview, such as the main topics of a module, or connections between parts could be presented to also accommodate global learners.

Wholist learners do better in structured environments that give a global perspective whereas analytic learners perform better in less structured environments that encourage studying in-depth before presenting an overview (Cook, 2005). No relationship was found between Internet-based applications and concrete-abstract learning styles or between Internet-based applications and reflective-active learning styles. The latter is somewhat surprising because the asynchronous and independent nature of Internet-based applications could seem to favour reflective learners, who typically observe before passing judgement, examine from different perspectives and look for meaning as they create new knowledge.

Ross and Schulz (1999) suggested Internet-based applications for a combination of learners of the dichotomies concrete-abstract and sequential-random (Table 4.4).

Table 4.4

Internet-based Methods to Accommodate Different Learning Styles (Ross & Schulz, 1999)

Type of learner	Characteristics	Applications/instructional methods
Concrete sequential	linear processing of tasks	guidelines, summaries, PowerPoint presentations, concise directions for assignments
Abstract sequential	eager to learn	supplementary links to resources, online glossaries, short definitions
Concrete random	independent, self-motivated and creative	video-based case studies, practice problems
Abstract random	open and flexible	graphics, text, links, multimedia

4.4.3.2.4 The third layer: cognitive style

Examples of the *third or inner layer*, the *cognitive personality style*, are similar to learning style dichotomies and include wholist-analytic, verbaliser-imager, concrete-abstract, active-reflective, field dependent-field independent, reflector-impulsive (Cassidy, 2004; Chen & Macredie, 2010; Cook, 2005; Dufresne & Turcotte, 1997; Sternberg & Grigorenko, 1997). Wholist learners perceive information as a whole and therefore benefit from structure and guidance, whereas analytic learners independently separate content into its parts and need less structure.

Both ways of learning in the dichotomy verbaliser-imager revealed mixed findings (Cook, 2005) and findings from studies involving the dichotomies concrete-abstract and active-reflective are similar to the studies involving those dichotomies in learning styles. Chen and Macredie (2010) found that field-dependent learners tend to prefer linear learning, to use additional notes or class resources and preferred to use hierarchical maps, whereas field-independent learners preferred non-linear learning and liked to use alphabetical

indexes to locate specific information. Dufresne and Turcotte (1997), however, found that both field-dependent and field-independent learners preferred linear learning.

4.5 CONCLUSION

Various parent training formats as part of early intervention have shown to result in child behaviour changes that can be maintained for a long period of time, including stand-alone parent training, that is, training without the involvement of a clinician. Parent training involves an educational component as parents need to acquire new skills. The Lidcombe Program trains parents in treatment and the Internet Lidcombe Program will too. Hence, it is necessary to understand adult education principles. Aspects from both instructor and learner perspectives will need to be taken into account during its development. Aspects from an instructor perspective include the training format, teaching techniques and instructional applications. Aspects from a learner perspective include adult education principles and individual learning characteristics. These aspects determine how the Internet Lidcombe Program will be presented, striving to achieve maximal knowledge gains while accommodating individual learning differences.

CHAPTER 5 DESIGNING THE INTERNET LIDCOMBE PROGRAM

5.1 INTRODUCTION

Previous chapters have presented the relevant background information on stuttering, the Lidcombe Program, Internet-based health interventions and adult education. An understanding of all this is essential knowledge for designing the Internet Lidcombe Program.

The Internet Lidcombe Program has two main objectives, similar to the clinic-based Lidcombe Program: (1) to teach parents of preschool age children who stutter about stuttering and the Lidcombe Program components, and (2) to guide them through the treatment process by evaluating their treatment implementation and their child's progress while providing them with treatment advice at regular intervals. In the clinic-based Lidcombe Program these two objectives are achieved more or less in parallel, but for the Internet Lidcombe Program it is logical to separate them into two independent parts: Part 1, Internet Parent Training, and Part 2, Internet Treatment. The Parent Training is developed as a standardised training package, whereas the Internet Treatment will focus on offering individualised treatment advice, based on what parents and children need.

The Internet Lidcombe Program is custom-built. That is, it is not designed to fit into existing systems, such as learning management systems. Specialist professionals will do the programming. Early discussion with these professionals on how to execute this task occurred prior to the development of the program, in order to facilitate long-term, clear communication between the two parties. Even though the researcher is developing the Internet Lidcombe Program in close collaboration with the IT specialists, both have distinct responsibilities: the researcher provides the content of the program, specifies the technical requirements per page, decides how much content is presented per page and prepares the program materials, such as the videos. The IT specialists will program the content onto the

screen, will discuss technical obstacles or inconsistencies with the researcher, and will trial the interactions in the program. Day-to-day communication needs to occur between the researcher and the IT specialists; the rest of the team is consulted when important decisions need to be made. The researcher will continue with the development of Part 2 of the program if evaluation of the Internet Parent Training indicates that the training succeeds in preparing parents for delivering the Lidcombe Program. The development of Part 2 of the program, however, does not fall within the scope of this thesis.

This chapter describes the general flow of the Internet Lidcombe Program and also explains which Lidcombe Program components will be adapted for it. While the architecture of the entire program is presented in this chapter, it should be recalled that this thesis presents only the building and trialling of the first part, the Internet Parent Training.

5.2 FLOW OF THE INTERNET LIDCOMBE PROGRAM

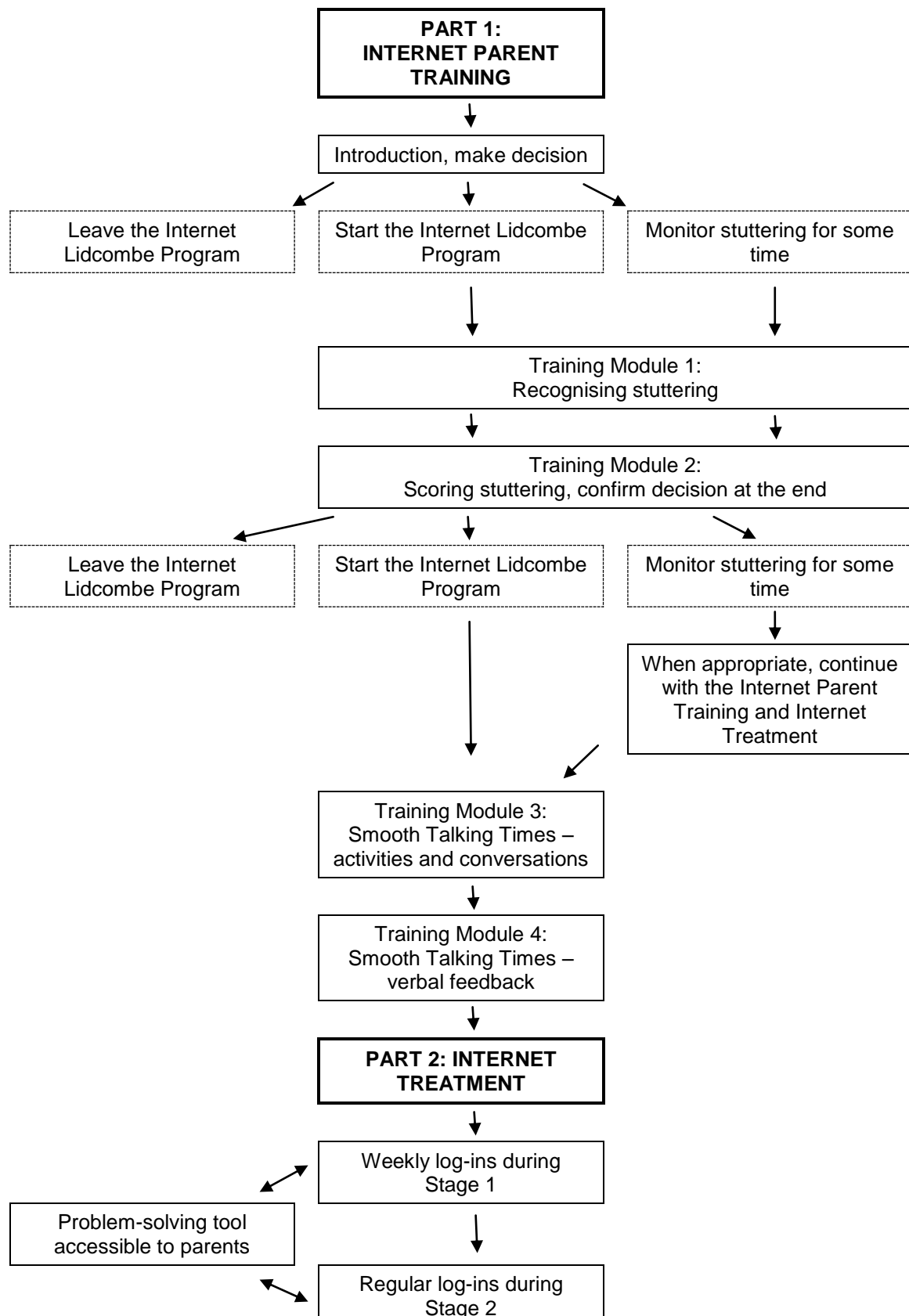
On the basis of the research findings that learners benefit from receiving new content in a structured way and that the majority of learners are sequential rather than global learners (see Chapter 4), a sequential, linear system was chosen for the Internet Lidcombe Program. Moreover, a sequential system was believed to offer a safer approach than an open environment in both parts of the program. As described above, parents will first be introduced to basic components before they move on to more advanced treatment components in the Parent Training. For example, they will learn to identify their child's stuttering before they are taught how to rate stuttering severity and give verbal contingencies. Parents learn these components through simulated learning, that is, they first practise what they learnt before they implement them as treatment with their child under strict follow-up. Additional applications will be provided to accommodate global learners in the Internet Parent Training, such as an overview of the content or the possibility to return to any page they have completed already. A sequential approach will also offer a safer option in Internet Treatment because treatment advice will be released gradually, depending on

what the parent and child have achieved.

The architecture of the Internet Lidcombe Program is depicted in Figure 5.1. Simulated learning of four individual components, necessary to deliver the Lidcombe Program, will occur in individual training modules in the Parent Training. Four components essential to conducting the Lidcombe Program were identified: (1) recognising stuttering, (2) scoring stuttering severity, (3) organising treatment conversations, and (4) providing verbal contingencies for the child's stutter-free speech during treatment conversations. Parents will be able to complete the Internet Parent Training at their own pace at home and will then proceed to the Internet Treatment. A *virtual* speech pathologist, that is, a speech pathologist appearing in videos or audios, will guide parents through the program and will provide detailed feedback.

Figure 5.1

Flowchart of the Internet Lidcombe Program



5.3 THE INTERNET PARENT TRAINING

5.3.1 Architecture

5.3.1.1 The Introduction

An Introduction (see Figure 5.1) will provide background information on stuttering and the Lidcombe Program, as well as realistic expectations about doing the Internet Lidcombe Program. Both items (background information and realistic expectations) have been shown to impact on treatment outcome and adherence (see Chapter 3, section 3.4.4.5).

A screening of parent and child will occur by having the parents answer questions about themselves and their child. Parent details (age, gender, employment status, familial status, language spoken at home and country of residence), and child details (age, gender, family history, onset and stuttering history, treatment history, the presence of negative social experiences and feelings of distress) are believed to provide sufficient information to generate individually tailored background information on stuttering and treatment advice as to whether to start the program, monitor the child's speech for some time or leave the program. The treatment advice given will be similar to that provided in the clinic-based Lidcombe Program (Appendix A) and will be based on the time since stuttering onset in combination with the child's age, knowing that a proportion of children recover from stuttering without treatment (Reilly et al., 2013; Yairi & Ambrose, 1999). However, when parents and/or children suffer from abnormal distress or negative social experiences as a consequence of the stuttering, a suggestion to start treatment sooner will be generated regardless of the other details, including time since onset and the child's age. If parents decide to: (1) start the program, they will complete the four training modules before the actual treatment starts (the Internet Treatment); (2) leave the program, further access will be denied; (3) monitor their child's speech for some time, they will need to complete training modules 1 and 2 as they need to acquire certain components essential for active monitoring

of the stuttering. Parents will then start to receive monthly emails and will need to provide detailed information about the child's stuttering. Parents are allowed to monitor their child's stuttering for up to 9 months after they start monitoring but then must decide whether to leave the program or to start treatment.

5.3.1.2 Training module 1

Training module 1 will teach parents how to recognise their child's stuttering. It will include video demonstrations of children with different stuttering behaviour (repetitions, prolongations and blocks), in which the stuttering behaviour is clearly pointed out. Not only will video demonstrations be provided; also video exercises will be included. Video exercises will invite parents to actively participate in recognising stuttering behaviour. Identifying stuttering is a basic component, and knowing that parents in the Lidcombe Program telehealth study of Wilson et al. (2004, see Chapter 2) experienced difficulty recognising stuttering and received additional coaching, it is given great attention in the Internet Lidcombe Program.

5.3.1.3 Training module 2

Training module 2 will introduce the 10-point severity scale used in the Lidcombe Program. Videos will show stuttering at various severity levels, and parents will be invited to actively participate in scoring them.

5.3.1.4 Training module 3

Training module 3 will teach parents how treatment conversations can be organised in order to be optimally effective. Video demonstrations in this module will offer parents ideas about activities they can use during treatment conversations, based on their child's current stuttering severity. Video demonstrations will also show how conversations can be manipulated in a natural way so that the child has minimal or no stuttering, such as by using questions that have short answers. Parents will be invited to practise this in several

exercises in the Parent Training, and will be encouraged to conduct treatment conversations with their child at home to practise finding appropriate activities and adjusting conversations to what their child needs to be stutter-free. This is not regarded as delivering treatment, because verbal contingencies are missing. Treatment is expected to be delivered when all components are combined (after completing training module 4) and regular follow-up is provided.

Treatment conversations are ineffective in some circumstances, such as when children are stuttering too severely or when they are not enjoying themselves. Hence, parents will also be asked to identify in videos which adjustments were executed in order to make the treatment conversations more conducive to providing verbal contingencies more effectively. Because this is an essential topic for effective treatment, many video exercises will be included, as a large amount of practice exercises has been shown to improve learning outcome (see Chapter 4, section 4.4.2). More teaching techniques and instructional applications that will be used in this module are discussed later in this chapter.

5.3.1.5 Training module 4

This final training module will introduce verbal contingencies. It was considered safer to limit the verbal contingencies at this point to those for stutter-free speech during treatment conversations, in case parents do not continue with the remainder of the program and following up of what parents do and how children respond is not possible. Verbal contingencies for stuttering will be introduced in the Internet Treatment, once parents have demonstrated accurate implementation of the other Lidcombe Program components.

In this module, videos will demonstrate the three types of verbal contingency for stutter-free speech, namely praise, acknowledgement and requests for self-evaluation. A speech pathologist will guide parents through the videos while pointing them out. Video exercises will include examples with intentional errors, such as inadequate parent actions, as this has been shown to increase awareness of the adequate actions (see Chapter 4).

At this point of the program, parents will have been introduced to all basic components necessary to deliver the Lidcombe Program. After having practised how to give verbal contingencies for stutter-free speech during treatment conversations in the Parent Training, the action plan in training module 4 will encourage them to implement all components on a daily basis at home with their child, which is the start of delivering the Lidcombe Program. If parents score their child each day and conduct treatment conversations on a daily basis, the detailed questions in the first consultation (virtual visit) of Part 2 of the program, which are offered one week after parents completed the Parent Training, will decide whether treatment is implemented correctly. Parents will proceed through the program more quickly than parents who only occasionally practised the components after completing training module 4. Parents who only occasionally practised the components will receive information about what the expectations are for them in the Internet Lidcombe program, and will be encouraged to deliver the Lidcombe Program up to expectations.

The four training modules will embed self-assessment questions, interactive exercises and intense feedback. As well, there will be tips on how to transfer learned components to the home environment (action plans) and printable summaries of the essential information of each module (print packages). The decision to add print packages is based on the trends suggested by the VARK developers that females older than 25 years of age prefer learning through reading and writing (see Chapter 4). These features will encourage active learning and will accommodate individual learning differences (see Chapter 4).

5.3.2 Teaching techniques and instructional applications

The Internet Parent Training will embed videos that demonstrate cases and problems, which are based on the case-based and problem-based teaching techniques discussed in Chapter 4. More teaching techniques and instructional applications will be

used. They are listed in Table 5.1.

Table 5.1

*Teaching Techniques and Instructional Applications Suggested for the Internet Parent**Training*

Objective	Teaching technique (TT)/ instructional application (IA)	Method
Demonstrating different types of stuttering behaviour, stuttering severity, treatment and verbal contingencies	Case-based learning (TT)	Videos
Illustrating difficulty of recognising stuttering if ambiguous	Case-based learning (TT)	Videos
Showing scenarios in which treatment is not therapeutic and adjustments are necessary	Problem-based learning (TT)	Videos
Demonstrating scenarios in which verbal contingencies are given inappropriately	Problem-based learning (TT)	Videos
Building up parental skills progressively throughout the Internet Parent Training	Just-in-time learning (TT)	Content
Facilitating gradual transfer of learned components to parents' own life	Just-in-time learning (TT)	Action plans
Encouraging parents to reflect about stuttering behaviour of own child	Self-assessment and reflection (TT)	Videos
Stimulating active participation to identify and score stuttering	Self-assessment and reflection (TT)	Videos
Increasing interaction between parents and program by writing and label-dragging	Self-directed learning (TT)	Exercises
Establishing learning based on personal motivation	Self-directed learning (TT)	No fixed time frame for completion
Stimulating problem-solving in recognising and scoring stuttering, conducting treatment and providing verbal contingencies	Self-directed learning (TT)	Videos
Encouraging reflection about Lidcombe Program components in an interactive way	Self-directed learning (TT)	Quiz
Offering information that can be used in parent's own life	Self-directed learning (TT)	Actions plans, print packages
Using self-assessment questions	Degree of interaction (IA)	Parent-o-meters
Requiring active responses	Degree of interaction (IA)	Videos, exercises
Using examples with intentional errors	Degree of interaction (IA)	Videos
Providing intensive feedback when active participation is required	Level of feedback (IA)	Videos, exercises
Providing sufficient practice	Quantity of exercises (IA)	Videos, exercises

In addition to these teaching techniques and instructional applications, instructional formats in the four domains, visual, aural, reading/writing and kinaesthetic, will be provided to accommodate learners with different learning preferences (see Chapter 4). It is known that parents like to see videos and receive intensive feedback in a parent training (see Chapter 3) and therefore they will be provided. Throughout the Internet Parent Training, the focus on achieving a high level of interaction between parents and the program will be maintained.

5.3.3 Videos

Case-based learning about different stuttering behaviour and stuttering severities will occur in videos in the Internet Parent Training. Hence, children who stutter need to be recruited. It was expected that finding parents who would give consent to having their children on the Internet while stuttering could be challenging. A plan to pixelate the children's faces in the videos to de-identify them and to offer the videos via streaming, not as downloadable files, was thought to facilitate the recruitment process. Streaming videos also prevents users from having to download large files, which can be problematic if technology or Internet plan is inadequate (see Chapter 4).

In addition to these case-based videos, problem-based videos will focus on what parents do during treatment conversations, for example, how they give verbal contingencies, aiming at demonstrating treatment problems that parents may face when implementing the program with their children at home. In order to capture the desired parent actions in the videos, the researcher decided to script the videos. It would be unethical to recruit children who stutter and their parent to simulate these situations. It was therefore decided that children who do not stutter and their parent would be recruited to demonstrate the parent actions. Application for ethical approval at the University of Sydney to recruit both groups of children (stuttering and non stuttering) and parents was initiated and approved. The application is shown in Appendix B.

To maximise the quality of the video recordings, a video suite was installed at the Australian Stuttering Research Centre (ASRC), where the recordings would be captured. Specific insulation covered the walls and ceiling of this video suite for sound-proofing. Two standing cameras, type MICS Sony Digital HD Video Camera Recorder HXR-NX5E, were bought to capture the recordings. One will be used to zoom in for close-ups of the children and/or parents and the other will be used to frame them from a wider angle. The latter type of recordings will serve as backup recordings. A lavalier wireless microphone UWPC1 system will be attached to the child's shirt to maximise the quality of the audio. The researcher knew that the videos would need to be edited once captured to incorporate only the essential information in the few-minute-videos. Final Cut Pro was therefore installed on her computer and she familiarised herself with the software.

5.3.4 Parent-o-meters

Goodhue et al. (2010) and Hayhow (2009) revealed that parents often experience a range of feelings when doing the Lidcombe Program, including being unconfident, feeling anxious and having feelings associated with their child's stuttering severity, such as sadness when stuttering increases (parent experiences are reviewed in more detail in the next chapter). Being aware of the possibility of experiencing such feelings, the researcher decided to add emotional support at the end of each training module. Possible feelings will be depicted in pictures related to the content of each training module. The feelings will be genuinely acknowledged but at the same time, the researcher felt it appropriate to offer this in a pleasant way. The researcher decided to also include pictures of an individual who is frustrated at doing the Internet Parent Training and shows this in an exaggerated way, such as by hitting the computer with a hammer or pouring coffee over it. The pictures will be presented on a continuum with a handle that parents can move to the feeling they recognise. Hence it is called a *parent-o-meter*.

5.3.5 Reminder emails

A reminder email system will be activated during the Internet Parent Training to increase adherence to the program (see Chapter 4).

5.4 THE INTERNET TREATMENT

5.4.1 Architecture

The Internet Treatment will start when parents have learned the Lidcombe Program components introduced in the Internet Parent Training, so after completing training module 4. The Internet Treatment will aim to evaluate how the Lidcombe Program is delivered and whether things can be improved, how treatment progresses and whether treatment problems have emerged that need to be solved. The Internet Treatment will focus on dealing with individual differences, needs and support by tailoring treatment advice to each family. The interaction between parent and program will operate on a regular basis. Parents will be asked to log in to the program, to enter their children's daily SRs and to answer detailed questions about recognising and scoring their child's stuttering, about treatment conversations and verbal contingencies. Parents' input of the entered SRs and treatment information will be combined and will be used to decide how parents progress through the Internet Treatment. For example, parents who are not compliant in doing treatment conversations most days of the week will receive advice about how they can increase treatment frequency. They will need to conduct the treatment more regularly up to the standard of (nearly) each day before they can move on.

Additional safety measures will prevent long-term and/or ineffective treatment. Two examples of safety measures are (1) giving advice to consult a speech pathologist before proceeding and (2) preventing a parent from proceeding in the program.

Parents will learn about other treatment components when treatment progresses, such as providing verbal contingencies for stuttering or moving on to unstructured treatment

conversations. Parents will receive additional training in these more advanced treatment components at appropriate times.

5.4.2 Question system

The answers parents give to the detailed questions during the log-ins in the Internet Treatment will, together with the entered SRs, determine whether and how treatment progresses. This question system will contain three types of question. The underlying principle of the questions is similar, in that they all generate treatment advice when an answer is given. However, they have different purposes: one type of question will simply provide treatment advice; one type of question will monitor whether parents fulfil the required actions in order to conduct the program effectively, such as doing daily treatment; the third type of question will function as an *alarm*. Alarm questions will address specific treatment problems. For example, during the first log-in after having completed the Internet Parent Training, parents will be asked *Did you find it difficult to know whether your child is really stuttering?* If parents answer *yes*, the question will re-appear when they log in the next week. If the question is answered *yes* for 3 consecutive weeks, it will raise huge concerns and the parent will be instructed to leave the program, to stop treatment and to seek advice from a speech pathologist. This type of question is embedded to protect the safety of the children.

5.4.3 Problem-solving tool

It can be expected that some parents will need support when they experience a treatment problem that is not addressed in the questions when they logged in. Therefore a problem-solving tool will be provided that parents can consult when they experience difficulty implementing treatment. This topic is discussed in more detail in the next section (Chapters 6, 7 and 8).

5.4.4 Email system

A reminder email system will be activated in the Internet Treatment to increase

adherence (see Chapter 4).

5.5 ADAPTATIONS FOR THE INTERNET LIDCOMBE PROGRAM

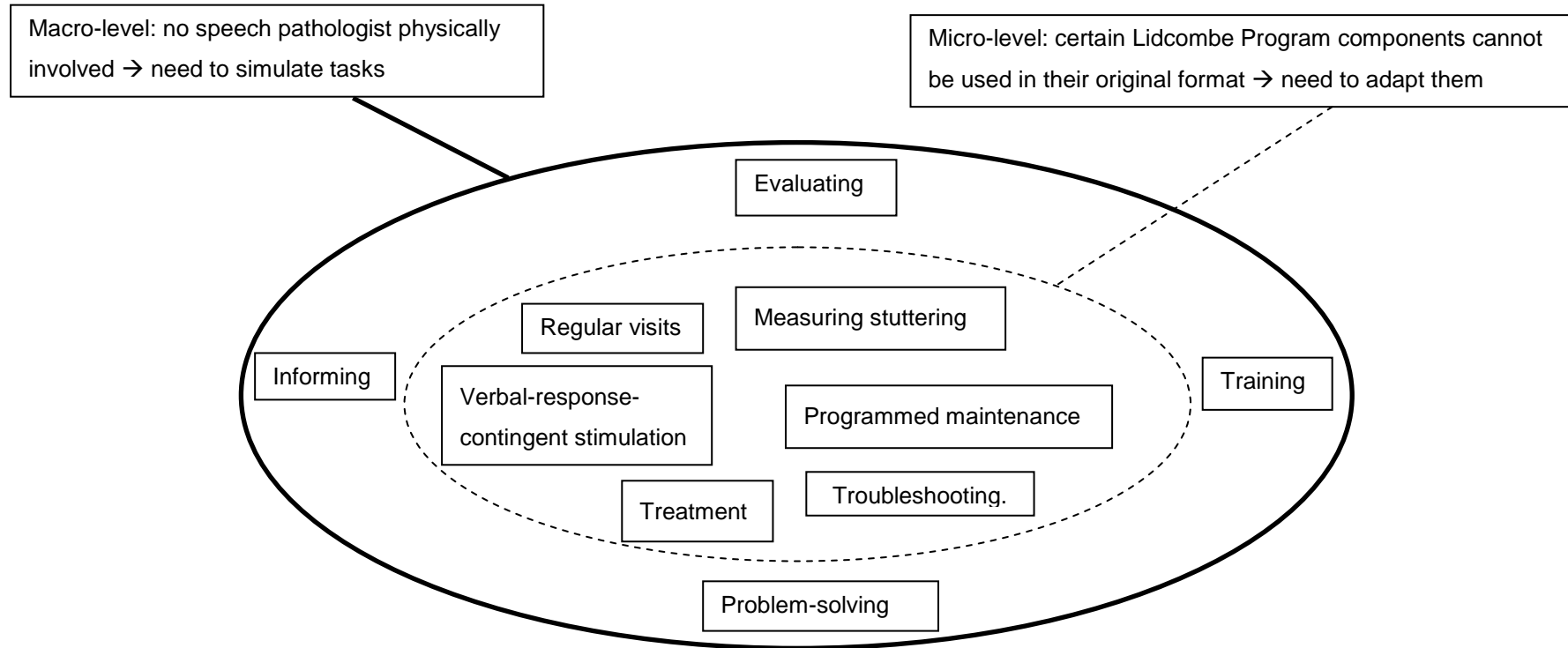
5.5.1 Differences at macro- and micro-level

There are clear differences between the Internet Lidcombe Program and the clinic-based Lidcombe Program at both macro-level and micro-level. The obvious difference at macro-level is that the Internet Lidcombe Program will not have a speech pathologist physically involved to deliver the program. This difference implies that the tasks from the speech pathologist in the clinic-based Lidcombe Program will need to be simulated and incorporated into the Internet Lidcombe Program. These tasks can be filtered as: (1) providing information, (2) training parents how to implement the program components, (3) evaluating responses of child and parents to treatment, which includes motivating and encouraging, and (4) assisting parents to solve treatment problems when they occur. The difference between the Internet Lidcombe Program and the clinic-based Lidcombe Program at micro-level is that some Lidcombe Program components, based on the Lidcombe Program Treatment Guides (Onslow et al., 2003; Packman et al., 2014), cannot be implemented in the Internet Lidcombe Program in their original form.

The implications of the differences at both levels are represented in Figure 5.2. Most Lidcombe Program components in Figure 5.2 are based on the recently updated Lidcombe Program Treatment Guide (Packman et al., 2014). However, one component (troubleshooting) was added from the original Lidcombe Program Treatment Guide (Onslow et al., 2003).

Figure 5.2

Implications of Differences at Macro- and Micro-level



5.5.2 Macro-level: Speech pathologist tasks

The four speech pathologist tasks (training, informing, evaluating and problem-solving) will be simulated in the Internet Lidcombe Program by using tailored answers to questions, embedding a virtual speech pathologist and offering problem-solving support. At this stage, however, the Internet Lidcombe Program is only designed and illustrations of the simulation of these four tasks cannot yet be given. They will follow later in this thesis, when the construction of the Internet Parent Training is discussed (Chapter 9).

5.5.3 Micro-level: Adaptations to Lidcombe Program components

5.5.3.1 Introduction

Adaptations to the Lidcombe Program are suggested in Figure 5.2 and are described in detail in subsequent paragraphs. Despite the adaptations, the Internet Lidcombe Program components will remain similar to the original, clinic-based Lidcombe Program components.

Table 5.2

Adaptations for the Internet Lidcombe Program at Micro-level

Component	Clinic-based Lidcombe Program	Adaptation for the Internet Lidcombe Program	Support to compensate for adaptation
Regular visits: assessment	Speech pathologist assesses child's stuttering; parents and speech pathologist decide whether the child should start the program or not	Parents will make an informed decision whether their child should start the program or not	Theoretical information about stuttering and the Lidcombe Program, recommendation based on answers to personal questions
Regular visits: Stage 1 and Stage 2	Regular visits at the clinic	Regular virtual visits	Compliance email system
Measuring stuttering	Measures: SRs (speech pathologist and parents) and/or %SS (speech pathologists)	Measure: SRs (parents)	Article by Bridgeman, Onslow, O'Brian & Block, 2011
	Speech pathologist explains and demonstrates rating severity	Videos will explain and demonstrate rating severity	Videos; exercises
	Speech pathologist evaluates parents' rating skills	Indirect evaluation of how parents rate their child's stuttering severity	Detailed questions about measuring stuttering during virtual visits
	Speech pathologist evaluates progress of stuttering based on direct evaluation and outcome measurements (SRs and/or %SS)	Indirect evaluation of SRs	Automated evaluation system based on uploaded SRs

Table 5.2 cont'd

Adaptations for the Internet Lidcombe Program on Micro-level

Component	Clinic-based Lidcombe Program	Adaptation to the Internet Lidcombe Program	Support to compensate for adaptation
Treatment	Speech pathologist explains and demonstrates how to do treatment	Videos will explain and demonstrate how to do treatment	Videos; exercises
	Speech pathologist evaluates how parents do treatment	Indirect evaluation of how parents do treatment and how children respond	Detailed questions during virtual visits, videos and problem-solving tool
	Speech pathologist explains and/or demonstrates how to adjust treatment	Videos will explain and demonstrate how to adjust treatment	Videos; exercises

Table 5.2 cont'd

Adaptations for the Internet Lidcombe Program on Micro-level

Component	Clinic-based Lidcombe Program	Adaptation to the Internet Lidcombe Program	Support to compensate for adaptation
Verbal response-contingent stimulation	Speech pathologist introduces the types of verbal contingencies during one or more visits	Only verbal contingencies for stutter-free speech will be introduced in the Internet Parent Training	Safety measure: verbal contingencies for stuttering not introduced until parent and child are ready
	Speech pathologist explains and demonstrates verbal contingencies	Videos will explain and demonstrate verbal contingencies	Videos; exercises
	Speech pathologist evaluates how parents give verbal contingencies and how children respond	Indirect evaluation of how parents give verbal contingencies and how children respond	Detailed questions during virtual visits, videos and problem-solving tool
Troubleshooting	Speech pathologist asks relevant questions and observes parents to detect treatment problems	Detection of treatment problems via questions during the virtual visits	Detailed questions about all components during virtual visits; problem-solving tool
Programmed maintenance	Speech pathologist evaluates child's stuttering and detects treatment problems by questioning parents	Detection of treatment problems via questions during the virtual visits	Detailed questions about all components during virtual visits; automated evaluation of progress of stuttering; problem-solving tool

5.5.3.2 Assessment

Assessment in the Internet Lidcombe Program will be different from assessment in the clinic-based Lidcombe Program because there will be no speech pathologist physically involved to observe the child's stuttering. Assessment in the Internet Lidcombe Program will be adapted according to the available technological possibilities of the program.

Parents are believed to be able to accurately notice stuttering in their children's speech (Einarsdottir & Ingham, 2009) and they typically contact a speech pathologist when they notice that their child has started to stutter. The same process is expected to happen for parents who do the Internet Lidcombe Program. They will consult the Internet Lidcombe Program because they have noticed that their child is stuttering. The program will help parents further by gaining background information about the child and family, by giving relevant information and by recommending whether to start the Lidcombe Program, whether to monitor the stuttering for some time or whether to leave the program. Speech pathologists in the clinic would never force parents to follow their recommendation about whether to start the Lidcombe Program or not; similarly in the Internet Lidcombe Program, parents will be asked to make the final decision by themselves. This is based on the *informed choice model*, used in medicine, where "the ultimate decision is formulated by patients based on medical information presented by their treating doctor" (Ilic, 2010, p. 666). In the Internet Lidcombe Program, parents who are not sure whether their child is stuttering or not will be advised to consult a speech pathologist to confirm their child's stuttering before they make any decision in the program. If parents decide to start the program, they will be able to change or confirm this decision after the second training module in the Internet Parent Training. Confirmation of the previously taken decision is strategically located at that point in the program, because the skills parents have learned in the first two training modules are necessary for either monitoring their child's stuttering or starting the program.

5.5.3.3 Regular virtual visits

The Internet Lidcombe Program will aim to obtain the same information as a speech pathologist would obtain during regular visits at the clinic. Parents in the Internet Lidcombe Program will be asked to log in regularly for a *virtual visit*. As mentioned previously, parents will be required to answer specific questions related to the implementation of treatment components and may receive additional training. They will receive treatment advice tailored to their family. An automated email system will support regular interaction with the program.

5.5.3.4 Measuring stuttering

There are a few differences in measuring stuttering between the clinic-based Lidcombe Program and the Internet Lidcombe Program. The first difference is the use of %SS. This measure has become an optional measure for the speech pathologist in the clinic-based Lidcombe Program (Bridgeman et al. 2011), and will not be used in the Internet Lidcombe Program.

Another difference lies in the way parents are introduced to rating the severity of their child's stuttering. In the clinic-based Lidcombe Program, a speech pathologist explains and describes how to give SRs. In the Internet Lidcombe Program, parents will watch videos and practise before they practise this component at home. In both programs, the 10-point stuttering severity scale is used.

Two more differences are the evaluation of parents' rating skills and of the children's progress. In the clinic-based format, speech pathologists can directly check the reliability of parents' SRs and the course of the stuttering. Speech pathologists give parents additional training in rating stuttering severity if deemed necessary. In the Internet Lidcombe Program, two systems will compensate for this. One system, the question system mentioned previously, will evaluate the parent's ratings skills. Parents will be asked to answer detailed questions about how, how often, and how parents feel about scoring, as well as about how the child's stuttering is presented. Information and advice will assist parents to score the

severity of their child's stuttering. The second system will automatically analyse the entered SRs for compliance and progress.

5.5.3.5 Treatment

In the clinic-based Lidcombe Program, speech pathologists introduce and demonstrate how treatment is to be conducted. They move from structured treatment conversations with planned activities towards unstructured treatment, depending on the child's progress and the parent's capacity to deliver treatment. In the Internet Lidcombe Program a similar approach is taken. All parents will be introduced to doing treatment with planned activities, such as picture description in a book or simple games such as memory in the Parent Training. They can practice this in the program and at home. Once they conduct them on a daily basis and give verbal contingencies for their child's stutter-free speech, which is after completing the Parent Training, and they report their child to be mostly stutter-free during treatment conversations, the program will advise parents to conduct treatment in a less structured way, for example with the activities becoming less controlled or conversations becoming more natural. Less controlled activities can be activities in which the child talks more, such as predicting an end to a story. Once the child becomes more stutter-free during everyday conversations, parents will be instructed to do treatment differently, for example during unplanned activities such as giving the child a bath or shopping. When stuttering is only triggered in certain circumstances, such as when the child is tired or excited, parents will receive treatment advice to manage those situations.

Parents will watch videos in which treatment conversations and treatment adjustments are shown in the Internet Parent Training. In the Internet Treatment, they will answer detailed questions that indirectly evaluate how they deliver treatment and how their child responds to treatment. Treatment advice will be tailored to each family. This tailoring however, is limited as a prefixed variety of answers is used for each question. Parents will be able to consult a Problem-solving tool if treatment problems are not addressed appropriately

in the virtual visits.

5.5.3.6 Verbal response-contingent stimulation

The order and timing of introducing verbal contingencies is often a personal decision of speech pathologists in the clinic. In the Internet Lidcombe Program, the order and timing will be similar for all families: verbal contingencies will be limited to stutter-free speech in the Internet Parent Training. Once parents are guided more regularly in the Internet Treatment, and verbal contingencies are given accurately and are well responded to by the child, verbal contingencies for stuttering will be added to treatment. This approach is chosen to maximise the child's safety.

Speech pathologists in the clinic-based Lidcombe Program typically explain and demonstrate how verbal contingencies are to be given during treatment in structured conversations. In the Internet Lidcombe Program, parents will watch videos and practise before they provide verbal contingencies for stutter-free speech during treatment conversations with their child at home.

Parent-child interactions are directly observed by speech pathologists in the clinic-based Lidcombe Program. In the Internet Lidcombe Program, parents' skills of giving verbal contingencies will not be directly evaluated by a speech pathologist, but detailed questions during the virtual visits will aim to detect treatment problems related to verbal contingencies. If parents encounter treatment problems that are not solved during the virtual visits, they will be able to consult a Problem-solving tool.

5.5.3.7 Troubleshooting

The component *troubleshooting*, refers to “establishing the most common treatment problems that occur while using the [Lidcombe Program] treatment” (Harrison et al., 2003, p. 91,) and is a synonym for detecting treatment problems. In the clinic-based Lidcombe Program, the speech pathologist detects treatment problems during the weekly visits. In the

Internet Lidcombe Program, treatment problems will be detected by detailed questions in the virtual visits. It is critical to know which treatment problems can occur during the Lidcombe Program and how they can be solved. The question system will need to be thorough: questions will need to be detailed and located strategically in the program. More research may be necessary to develop them. This is discussed in the next section (Chapters 6, 7 and 8). However, even with a thorough question system, it is only realistic to expect that sometimes a treatment problem will not be detected. Parents should therefore be able to consult a separate problem-solving tool.

5.5.3.8 Programmed maintenance (Stage 2)

Once children reach Stage 2 of the Lidcombe Program, the virtual visits are scheduled at increasing intervals. The visits in the clinic-based Lidcombe Program are scheduled after 2, 2, 4, 4, 8, 8 and 16 weeks if the child does not exhibit any stuttering. The virtual visits in the Internet Lidcombe Program will be scheduled at the same intervals as in the clinic-based Lidcombe Program, but an extra fortnightly visit will be added to the two fortnightly visits. This decision is based on the finding of Webber and Onslow (2003) that most stuttering relapses occur within the first 8 weeks after entering Stage 2. Detailed questions will be used to detect the presence of stuttering during Stage 2, and advice about how to prevent or manage stuttering relapse will be provided. In addition to this, SRs will automatically be analysed and parents will be able to find more specific support about treatment problems related to maintaining treatment effects in the Problem-solving tool.

By now it has become clear that developing, constructing and evaluating the Internet Parent Training, including investigating problem-solving and developing this component in the Internet Lidcombe Program, *and* developing the Internet Treatment would be too extensive to be executed as a single PhD project. Hence, while the entire Internet Lidcombe Program has been conceptually designed for this thesis, the research presented in it is confined to the development, construction and evaluation of the Internet Parent Training.

5.6 CONCLUSION

The necessary background information on stuttering, the Lidcombe Program, Internet-based health interventions, adult education and Internet-based education allows the researcher to design the Internet Lidcombe Program with empirical bases. The Internet Lidcombe Program will consist of an Internet Parent Training and an Internet Treatment. The Internet Parent Training will provide interactive, simulated learning opportunities for parents to acquire the necessary skills to conduct the Lidcombe Program with their child, in an Introduction and four training modules. Parents will be able to complete the Internet Parent Training at their own pace at home. Parents will be expected to start implementing the program components up to expectations when they completed training module 4. The Internet Treatment will require regular interaction between parents and the program as a necessary condition to progress through the program. Answers to detailed questions and daily SRs will determine how treatment progresses. Treatment advice in the Internet Treatment will be tailored to each child and family. The Internet Treatment will also have a problem-solving tool that parents can consult to find additional support when they experience difficulties implementing the program.

Differences between the clinic-based Lidcombe Program and the Internet Lidcombe Program were identified at macro- and micro-levels. At macro-level, four speech pathologist tasks (informing, training, evaluating and problem-solving) will need to be simulated. At micro-level, adaptations for the Internet Lidcombe Program are necessary to mirror the clinic-based Lidcombe Program, with regard to regular visits, measuring stuttering, treatment, verbal contingencies, Stage 2 and troubleshooting.

It becomes clear from the description of the Internet Lidcombe Program that problem-solving will play a major role throughout. This topic is addressed in the following section.

SECTION III

DEVELOPMENT OF THE INTERNET LIDCOMBE PROGRAM – PROBLEM-SOLVING STUDY

CHAPTER 6 PROBLEM-SOLVING IN THE LIDCOMBE PROGRAM

6.1 INTRODUCTION

Problem-solving, that is, finding solutions for problems that emerge during the treatment process, is an important component in the Lidcombe Program. This chapter describes problem-solving in the Lidcombe Program, reports how it is experienced by parents and speech pathologists, and investigates the available Lidcombe Program problem-solving sources.

Conceptually, the Lidcombe Program is straightforward and simple: During Stage 1 of the program, parents deliver treatment with their child at home each day and provide verbal contingencies for their child's stutter-free speech and stuttering. Children proceed to Stage 2 of the program when stuttering is at a very low level and Stage 2 criteria are met. Anyone who has worked with the Lidcombe Program knows it is only that simple conceptually. Practically, speech pathologists help parents individualise many Lidcombe Program components including organising treatment, choosing activities, adjusting treatment conversations and providing verbal contingencies. These individualised components make the program complex because they are different for each family. In particular, speech pathologists must also guide parents to individualise components when treatment problems emerge. The term *problem-solving* is used hereafter to refer to this broader process of individualising Lidcombe Program components.

Problem-solving is an essential part of the speech pathologist's role in the Lidcombe Program. It was identified as one of the tasks speech pathologists perform in the Lidcombe Program in the discussion about the difference at macro-level between the Lidcombe Program and the Internet Lidcombe Program (see Chapter 5), and is recognised by parents as necessary and helpful (Hayhow, 2009; Onslow, Attanasio & Harrison, 2003; Packman, Hansen & Herland, 2007).

6.2 PROBLEM-SOLVING IN THE LIDCOMBE PROGRAM: SPEECH PATHOLOGISTS

It could be expected that speech pathologists who have more experience in the Lidcombe Program and have encountered many treatment problems in their caseloads are not only able to anticipate treatment problems but can also solve them more easily than less experienced speech pathologists. In fact, Elstein and Schwartz (2002) found that experienced and inexperienced medical practitioners used different strategies when confronted with a clinical problem. Inexperienced clinicians typically generate a few hypotheses and use them to collect more information about the problem. In the collection process, both thoroughness and accuracy are essential; clinicians may collect information thoroughly but misinterpret or misunderstand findings or they may not collect enough information despite accurate analysis of the available information. Experienced clinicians also use this hypothesis-generating strategy for difficult clinical problems, but they use pattern recognition and automatic retrieval for most problems. With these latter two strategies, reasoning happens more quickly, more accurately and more efficiently. Even though Elstein and Schwartz investigated these processes in clinicians in the medical domain, the findings are also likely to apply to speech pathologists who work with the Lidcombe Program. Speech pathologists with a lot of experience may recognise treatment problems and retrieve solutions more quickly, more accurately and more efficiently than less experienced speech pathologists.

6.3 PARENT EXPERIENCES OF DOING THE LIDCOMBE PROGRAM

6.3.1 Available research on parent experiences

Many studies have shown that parents regularly encounter problems while doing the Lidcombe Program (Franken, Kielstra-Van der Schalk & Boelens, 2005; Goodhue et al., 2010; Hayhow, 2009; Hayhow, Enderby & Kingston, 2000; Onslow et al., 2003; Packman et al., 2007). Hayhow et al. asked 52 parents to respond to items related to the Lidcombe

Program after completing the program. Packman et al. surveyed 35 parents about how they and their child experienced the Lidcombe Program and how effective they thought the program was. The qualitative studies of Hayhow and Goodhue et al. included interviews with 14 and 16 parents respectively. Onslow et al. transcribed a short, informal interview with four parents. The results of Franken et al. were not included in this overview because they did not adhere to the Lidcombe Program described in the Lidcombe Program Treatment Guide (Onslow et al., 2003), in that treatment was terminated after 12 weeks or sooner. Experiences were recorded, reported, scale-scored, for example, with extremes (agree/disagree or easy/difficult), and matched to questions, such as yes/no. Findings were analysed using qualitative procedures, quantitative procedures, mixed methods or were simply reported. Even though the five studies used different methods, which made comparison of the findings difficult, the researcher categorised them into main themes to attain a clearer overview. This informal representation is presented in Table 6.1.

Table 6.1 displays experiences related to three major categories: (1) Lidcombe Program components, (2) the Lidcombe Program as a treatment, and (3) child experiences. Each category contains experiences grouped in themes. The researcher labelled the majority (47/84, 56%) of the experiences in Table 6.1 as positive experiences. Three experiences were assessed as either positive or negative experiences: *found own ways to implement treatment, the program requires commitment, dedication and consistent focus to be successful* and *parent's confidence followed the child's stuttering severity*. Despite the mainly positive experiences of doing the Lidcombe Program, the researcher concluded that also a considerably large amount of negative experiences were reported across the studies (35/85, 41.2%), often better called *treatment problems*. Most of these treatment problems (13/35, 37.1%) were related to the important role of parents in the Lidcombe Program and include *not confident of doing the program correctly at start, parents who talked more about feelings of inadequacy, anxiety, guilt and distress had more problems during treatment than others; and weight of responsibility led to feelings of failure when treatment was not*

successful. A second large group of treatment problems was related to verbal contingencies (10/35, 28.6%) and included *child is sometimes more sensitive (mood-related) [to verbal contingencies]*; *praise is given less frequently when severity is low; keeping the ratio between praise and correction [was difficult]*; and *child could not fix a stutter*. Some treatment problems (5/35, 14.3%) were related to structured treatment conversations, including *difficult to find time to do treatment at home every day; forgetting to do treatment, especially when the child was more stutter-free; parents found it difficult to take a firm lead; and having siblings around during treatment*. Other treatment problems were dispersed over the themes: expectations, clinic visits, having an impact on the family, the child's stuttering and comments from other children related to child's stuttering. Many experiences recurred in more than one study.

In conclusion, although the majority of parents and children who did the Lidcombe Program seemed to have mainly positive experiences, treatment problems were encountered as well. The majority of the treatment problems reported by parents were related to the important role of parents in the program and to verbal contingencies.

Table 6.1

Summary of Parent Experiences of Doing the Lidcombe Program

Topic	Parent experience	Outcome, as reported in article
	Lidcombe Program components	
Stuttering scale	Easy to use ^c	Agree (91%)
Verbal contingencies	Child is sometimes more sensitive (mood-related) ^b	2 respondents
	Child usually accepts verbal contingencies well ^b	2 respondents
	Child accepts different ways of giving verbal contingencies from different people ^b	1 respondent
	Praise is very powerful ^b	1 respondent
	Praise increases awareness ^b	1 respondent
	Correction is necessary to increase awareness ^b	2 respondents
	Child is seeking for praise ^b	4 respondents
	Praise is given less frequently when severity is low ^b	1 respondent
	Using each of the four groups of verbal contingencies (excluding request for self-evaluation) ^c	Easy > Difficult
	Keeping the ratio between praise and correction ^c	Difficult > Easy
	Child is proud after verbal contingencies for stutter-free speech ^c	Positive comment
	Child uses non-verbal signs to verbal contingencies ^c	Positive comment
	Child found interruptions of verbal contingencies for stuttering irritating or frustrating ^c	Negative comment
	Child reacted negatively to feedback (praise, smooth) ^e	Several respondents
	Child did not correct stutter but continued story ^c	Negative comment
	Child could not fix a stutter ^c	Negative comment
Child is less responsive to verbal contingencies for stutter-free speech/irritated by requests for self-correction ^d	Problematic journey	
Difficult to implement verbal contingencies for stuttering ^d	Problematic journey	
Child felt as if s/he had done something wrong by stuttering ^e	2 respondents	

^a = Hayhow et al., 2000.

^b = Onslow et al., 2003.

^c = Packman et al., 2007.

^d = Hayhow, 2009.

^e = Goodhue et al., 2010.

Table 6.1 cont'd

Summary of Parent Experiences of Doing the Lidcombe Program

Topic	Parent experience	Outcome, as reported in article
	Lidcombe Program components	
Treatment in structured conversations	Difficult to find time to do treatment at home every day ^{c, e}	Agree (66%), obstacle
	Forgetting to do treatment, especially when child was more stutter-free ^e	Obstacle
	Child was motivated ^{c, e}	Agree (74%), many respondents
	Parent and child enjoyed treatment ^{d, e}	Straightforward journey, many respondents
	Parent integrated components into daily life ^d	Straightforward journey
	Parents found it difficult to take a firm lead ^d	Problematic journey
	Parents doubted their ability to help ^d	Problematic journey
	Having siblings around during treatment ^e	Obstacle
	Increase in quality time with the child who stutters ^e	Benefit
	Child reminded parent ^e	Many respondents
Clinic visits	Visits were well structured ^a	Agree (87%)
	Appreciate time of speech pathologist for parent during clinic visits ^b	4 respondents
	Feedback from speech pathologist helped progress through program ^c	Agree (100%)
	Feeling that speech pathologist was always accessible ^c	Agree (89%)
	Treatment problems were solved at visit or by experimenting parent ^d	Straightforward journey
	Visits became a burden ^d	Problematic journey

^a = Hayhow et al., 2000.

^b = Onslow et al., 2003.

^c = Packman et al., 2007.

^d = Hayhow, 2009.

^e = Goodhue et al., 2010.

Table 6.1 cont'd

Summary of Parent Experiences of Doing the Lidcombe Program

Topic	Parent experience	Outcome, as reported in article
The Lidcombe Program as a treatment		
Effectiveness of the treatment	Found the Lidcombe Program effective ^{c, d, e}	Agree (91%), straightforward journey, most respondents
Having an impact on the family	Was disruptive for the rest of the family ^a	Disagree (73%)
	Suited the family ^c	Agree (86%)
	Child starting school ^d	Problematic journey
Expectations	The Lidcombe Program expects too much from the parents ^a	Disagree (73%)
	Expectations were too high ^e	Nearly all respondents (15/16)
	Different parental beliefs than program's ^d	Problematic journey
	Parents did not expect to have to do so much and to be on the case the entire time ^e	Most respondents
Parent being the person who treats	Pleased to be able to help the child ^a	Agree (94%)
	Is a personal decision ^b	2 respondents
	Not confident of doing the program correctly at start ^{b, c}	4 respondents, one respondent
	After a while the program becomes second nature ^b	4 respondents
	Parent knows child best/spends most time with child ^c	Positive comment
	Being able to give treatment when child is most responsive ^c	Positive comment
	Tuning in to the level of stuttering on a daily basis ^c	Positive comment
	Doing the program is worth the hard work ^c	Positive comment
	Hard to be the only one responsible for the treatment ^c	One respondent
Found own ways to implement treatment ^d	Straightforward journey	

^a = Hayhow et al., 2000.

^b = Onslow et al., 2003.

^c = Packman et al., 2007.

^d = Hayhow, 2009.

^e = Goodhue et al., 2010.

Table 6.1 cont'd

Summary of Parent Experiences of Doing the Lidcombe Program

Topic	Parent experience	Outcome, as reported in article
The Lidcombe Program as a treatment		
Parent being the person who treats (cont'd)	Needed support in implementing treatment components ^d	Problematic journey
	More focused on treatment problems than on progress ^d	Problematic journey
	Parents who talked more about feelings of inadequacy, anxiety, guilt and distress had more treatment problems during treatment than others ^d	Problematic journey
	Parents at a loss to know how to manage child's speaking ^d	Problematic journey
	Improved parenting skills ^e	Benefit
	Program requires commitment, dedication and consistent focus to be successful ^e	Many respondents
	Treatment was not difficult to learn ^e	Nearly all respondents
	Uncertainty about the process, need for more documentation ^e	Many respondents
	Need of support group ^e	
	Feelings of empowerment (managing child's stuttering treatment and having great responsibility) ^e	Few respondents Some respondents
	Great responsibility led to feelings of anxiety and pressure ^e	Many respondents
	Weight of responsibility led to feelings of failure when treatment was not successful ^e	Some respondents
	Worried about child being teased (when starting school) ^e	
	Parent felt as if child's stuttering was his/her fault and resulted from not doing treatment every day ^e	Some respondents Some respondents
	Feelings of distress related to stuttering severity and general experience of conducting the Lidcombe Program ^e	Half of the respondents
Parent's confidence followed the child's stuttering severity ^e	Many respondents	
Level of contentment	Would recommend it to other parents ^a	Agree (90%)
	Enthusiastic to give it a go ^d	Straightforward journey

^a = Hayhow et al., 2000.

^b = Onslow et al., 2003.

^c = Packman et al., 2007.

^d = Hayhow, 2009.

^e = Goodhue et al., 2010.

Table 6.1 cont'd

Summary of Parent Experiences of Doing the Lidcombe Program

Topic	Parent experience	Outcome, as reported in article
Child experiences		
Child's stuttering	Child stutters rarely or never ^a	67%
	Stuttering became more predictable ^d	Straightforward journey
	Increase in knowledge and management of the stuttering ^e	Benefit
	Difficult to keep momentum of treatment going when stuttering increased ^d	Problematic journey
	Reduced stuttering probably led to increased confidence ^{a, e}	42%, many respondents
Child's talking	Talks (much) more	54%
	Feels mostly happy about talking ^a	92%
Changes in child's life	More confident, general improvement in lifestyle ^{b, c, e}	1 respondent, positive comment, many respondents
	No drastic changes ^b	1 respondent
	Positive changes in child including more talkative, improved speech and more aware of and pleased with their own performance ^c	Positive comment
	Gradual shift in child taking more responsibility for talking ^d	Straightforward journey
	Increase of child's awareness of stutter-free speech ^e	Almost half of the respondents
Experience of the treatment in general	Child was happy ^b	3 respondents
Comments from other children to the child who stutters	Child received negative comments from other children ^b	3 respondents

^a = Hayhow et al., 2000.

^b = Onslow et al., 2003.

^c = Packman et al., 2007.

^d = Hayhow, 2009.

^e = Goodhue et al., 2010.

6.3.2 Problem-solving in the Lidcombe Program: Parents

Some parents who encountered treatment problems seemed to have “found their own ways of implementing the components” (Hayhow, 2009, p. 22) or they resolved their treatment problems “by experimentation” (p.22). Other parents were not as confident and “had more problems during treatment than others” (p.23), “were at a loss to know how to manage their child’s speaking” (p.23), and “were uncertain about the process” (p. 23). Parents who experienced the Lidcombe Program as not straightforward often “needed support in implementing the treatment components at home” (p. 23). Indications that parents experienced treatment problems and needed help from the speech pathologist to solve them were also reported in other studies, including “feedback speech pathologist helped progressing through the program” (Packman et al., 2007, p. 420) and “then [during clinic visits] I can say if things are going well or if it’s not going well or what’s happening” (Onslow et al., 2003, p. 197). In conclusion, when parents experienced treatment problems during the course of the Lidcombe Program, most of them reported needing help from a speech pathologist to solve them.

6.4 THE NEED FOR AN EMPIRICAL STUDY

In the previous chapter, the need for a problem-solving tool was mentioned, as well as the importance of detecting and solving treatment problems throughout the Internet Lidcombe Program. The review of the literature in this chapter confirms these reports.

Yet the available problem-solving sources related to the Lidcombe Program are not adequate as a base for treatment problem detection and problem-solving for the Internet Lidcombe Program, or to build a problem-solving tool. Firstly, publications about how parents experienced the Lidcombe Program have reported only a handful of treatment problems *with* suggested solutions (Goodhue et al., 2010; Hayhow, 2009). Secondly, two chapters in the Lidcombe Program Treatment Guide (Harrison et al., 2003; Hewat et al., 2003) describe

problem-solving but the treatment problems reported in these chapters are limited and the solutions are directed to speech pathologists, not to parents. Thirdly, the Lidcombe Program Treatment Guides (Onslow et al., 2003; Packman et al., 2014) provide a thorough understanding of the Lidcombe Program components and will be used as the main guidance for developing the Internet Lidcombe Program, but this information is theoretical and is not sufficient as the sole source to support its development.

The researcher and her team could identify treatment problems and develop recommendations based on their experience with the Lidcombe Program, but the content would then be opinion-based whereas it is preferable to have evidence-based content (see Chapter 4).

Hence, the need for an empirical study to obtain more knowledge about problem-solving for the Internet Lidcombe Program has become evident. This study should yield information that will be used interactively throughout the Internet Lidcombe Program and contribute to the construction of a problem-solving tool, that parents in the program can access at any time and that will support them when they encounter difficulty implementing treatment components.

6.5 CONCLUSION

Parents commonly experience difficulties when implementing the Lidcombe Program with their child and often need assistance from the speech pathologist. This assistance will need to be provided in the Internet Lidcombe Program. Available problem-solving sources related to the Lidcombe Program do not offer sufficient information to provide a basis for identifying and solving treatment problems or to adequately construct a problem-solving tool for the Internet Lidcombe Program. Hence an empirical study is needed to (1) find out which treatment problems parents may encounter and (2) develop potential solutions to solve these treatment problems.

CHAPTER 7 PROBLEM-SOLVING STUDY, PART I

TREATMENT PROBLEMS AS IDENTIFIED BY SPEECH PATHOLOGISTS

7.1 INTRODUCTION

A problem-solving study is needed to answer the two research questions: (1) *what treatment problems do speech pathologists report that parents encounter when they implement the Lidcombe Program?* and (2) *how can speech pathologists assist parents to solve these treatment problems?* A qualitative study is the most appropriate approach to this study because its methods can be applied in a flexible way to accommodate the needs of the study (Boeije, 2009). This study, however, is not the 'typical' qualitative study in which the researcher constructs new ideas or discovers new themes, because the researcher has sufficient background knowledge of the Lidcombe Program. The study mainly aims to report treatment problems and scenarios to solve them.

While the two research questions are closely linked, the data collection methods needed to answer both research questions are significantly different. To answer the first research question, various sources must be consulted to find the maximum number of potential treatment problems. To answer the second research question, in-depth information from speech pathologists experienced with the Lidcombe Program must be collected to describe potential solutions to the treatment problems. This study is therefore conducted and reported in two parts. Part I explores which treatment problems parents can encounter when implementing the Lidcombe Program. The data are analysed to detect themes and subthemes and are represented in a template, which resembles a table of contents. This template is used as a data management system to easily manage the large amount of data. Part II attempts to develop ways to solve the treatment problems found in Part I of the study. This is done by analysing interviews with speech pathologists experienced with the

Lidcombe Program. The findings are added to the template, resulting in a qualitative report. The qualitative report is thus the result of both parts of the study.

Prior to this study, the researcher noticed some confusion among speech pathologists about the terminology used for treatment (Onslow et al., 2003): “treatment in structured conversations/unstructured conversations” (p. 75) and “structured/unstructured treatment” (Figure 6.2, p. 76). The confusion is related to labelling treatment between the two extremes of structured and unstructured treatment when represented on a continuum (Onslow et al., 2003, p. 76), for example, when treatment is done with unplanned activities. The researcher therefore sent an email to five speech pathologists who regularly use the Lidcombe Program in their clinic (of which three later participated in the problem-solving study), describing this situation:

After a few weeks of starting the Lidcombe Program, you instruct parents to present verbal contingencies to their child in bath or in the car without doing a structured activity. However, you ask parents to tell their child before they start that they will listen for smooth speech.

The researcher soon understood that the confusion was only a theoretical issue as speech pathologists conducted the Lidcombe Program similarly regardless of the terminology used to specify treatment. However, two speech pathologists labelled this example as treatment in structured conversations or structured treatment because (1) parents clearly told their child that they would listen for stutter-free speech and (2) they gave the verbal contingencies more frequently than they would do during treatment in unstructured conversations or unstructured treatment. The other three speech pathologists called this situation treatment in unstructured conversations or unstructured treatment because (1) the conversations were not structured or (2) treatment did not happen during a planned activity.

To avoid confusion in the interpretation of the problem-solving study findings (Part I

and Part II), the researcher asked the participating speech pathologists how they defined and labelled structured treatment and unstructured treatment, and more specifically treatment between these two extremes. For structured treatment conversations, interviewees reported using terminology of *smooth talking times*, *daily treatment sessions* or *sessional practice*. Interviewees also call treatment conversations in more natural situations *natural smooth talking times* or *treatment in natural settings*. Unstructured treatment conversations, referring to the feedback given throughout the day, are also called *praise and correction*, or *online feedback*. The researcher opted to use the terms treatment conversations (that can have different degrees of structure) and everyday conversations (that have no structure in them) in the thesis and in the Internet Lidcombe Program, terms upon which the team agreed.

This chapter focuses on Part I of the study, which is designed to identify which treatment problems parents can encounter when they implement the Lidcombe Program.

7.2 METHOD

7.2.1 Study design

The methodology of Part I of the study is qualitative exploration, and the methods of triangulation and maximum variation sampling for recruitment were chosen to maximise the study's explorative power. The method to collect the data (treatment problems) was triangulation. Triangulation is a surveying technique and according to Denzin (1978) is "the combination of methodologies in the study of the same phenomenon" (p. 291). This term originates from the navigation and military industries and is used for the strategy of detecting a person's exact location by using multiple reference points. The metaphor in qualitative research refers to the fact that different views can give a more accurate picture of a phenomenon (Gibbs, 2008).

The study used four different sources to identify treatment problems: (1) a

brainstorming meeting with five speech pathologists experienced with the Lidcombe Program, (2) publications about the Lidcombe Program, (3) collection of treatment problems from participants at different sites and (4) semi-structured interviews with three speech pathologists experienced with the Lidcombe Program.

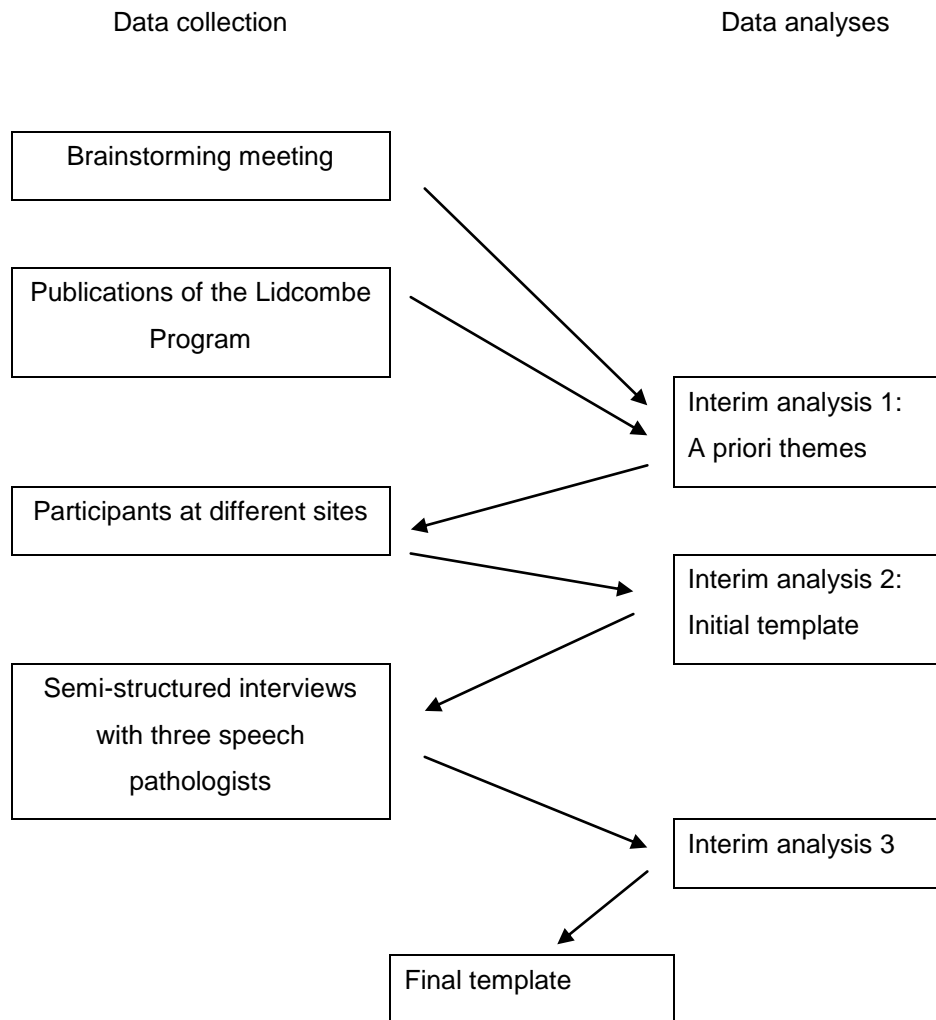
The data were analysed with template analysis (Crabtree & Miller, 1999; King, 2007; 2012). King (2007) explained that “template analysis involves the development of a coded template, which summarises themes identified by the researcher(s) as important in a data set and organises them in a meaningful and useful manner” (basic description of approach, first paragraph). A template is focused on hierarchical coding and needs to be revised and adjusted until it represents all the data. This approach was ideal for this study, as a template would give a clear overview of the themes that were found. To report the results of the study, descriptive statistics were used.

Data collection and analysis occurred in iterative cycles, a procedure often observed in qualitative research (Boeije, 2009). Data were collected and analysed, and repeatedly prompted additional data collection. The cycles of collection and analysis continued until the findings indicated saturation. Collection and analyses are discussed in chronological order, as displayed in Figure 7.1.

Nine speech pathologists participated in this part of the study. One of them participated in the brainstorming meeting, the ongoing collection of parental treatment problems on her site and in an interview. Two of her team members attended the brainstorming meeting and assisted in the ongoing collection. One speech pathologist participated in the ongoing collection of treatment problems and in an interview. The other speech pathologists only participated in one collection method.

Figure 7.1

Data Collection and Analyses



7.2.2 Data collection and analyses

7.2.2.1 Brainstorming meeting

Ethical approval was obtained from the University of Sydney to conduct the study (Appendix B). A brainstorming meeting with five speech pathologists experienced with the Lidcombe Program was held at the Stuttering Unit at Bankstown, a centre that provides stuttering treatment services including treatment with the Lidcombe Program, to identify potential treatment problems. The speech pathologists had more than 5 years of experience with the Lidcombe Program and deliver the program on a daily basis. The researcher asked the group of speech pathologists: *What are the first things that come to your mind when talking about treatment problems that parents could encounter during the course of the Lidcombe Program?* The speech pathologists reported important problems related to reliable measurement, stuttering identification, problem-solving, family dynamics and emotional components. The researcher recorded the meeting using an Olympus Digital Voice Recorder 450-S and summarised the content.

7.2.2.2 Publications of the Lidcombe Program

The researcher also consulted written resources. As discussed in the previous chapter, treatment problems are described in two chapters of the Lidcombe Program Treatment Guide (Hewat et al., 2003; Harrison et al., 2003), in studies of parent experiences (Goodhue et al., 2010; Hayhow, 2009; Hayhow et al., 2000; Onslow et al., 2003; Packman et al., 2007) and in the informal British quarterly *Lidcombe News* (Editions 1 to 38, available to the researcher). The researcher read and listed the treatment problems described in the sources. At this stage, the listed treatment problems were brought together for a first analysis.

7.2.2.3 Interim analysis 1: A priori themes

In template analysis, it is common to use *a priori* themes, that is, themes defined by

the researchers before data analysis (King, 2007) that change during the analysis process. The a priori themes used in study were the three main themes listed in the study of Harrison et al. (2003): “treatment problems directly related to application of the Lidcombe Program” (p. 93), “parent and child issues that were considered to be hindering treatment progress” (p. 96) and “child-related factors not directly related to the Lidcombe Program” (p. 98). These three themes were used to categorise the treatment problems that were found in the brainstorming meeting and publications, but changed and became gradually more specific throughout the analysis process.

Some treatment problems were found in more than one source. Hence, they strengthened the validity of the data. Even though a substantial number of treatment problems was found, the researcher felt it necessary to collect more treatment problems to validate the treatment problems found at this stage of the study and to accumulate more data.

7.2.2.4 Participants at different sites

Treatment problems identified by speech pathologists as experienced by parents were collected at different sites. Participants were speech pathologists, located at different clinics, with different levels of experience and different numbers of clients per week. The different participant characteristics varied the sampling of the data collection (Table 7.1). Maximum variation sampling refers to the exploration of “common and unique manifestations of a target phenomenon across a broad range of phenomenally and/or demographically varied cases” (Sandelowski, 2000, p. 338) and is thought to be extremely useful in qualitative descriptive studies. In this study, maximum variation sampling was not taken across a broad range, but was varied across two important parameters: experience and caseload.

Table 7.1

Participant Characteristics

Participant	Lidcombe Program experience (years)	Lidcombe Program caseload (number of children/week)
1	< 2	< 5
2	< 2	< 5
3	18	10 - 15
4	23	10 - 15

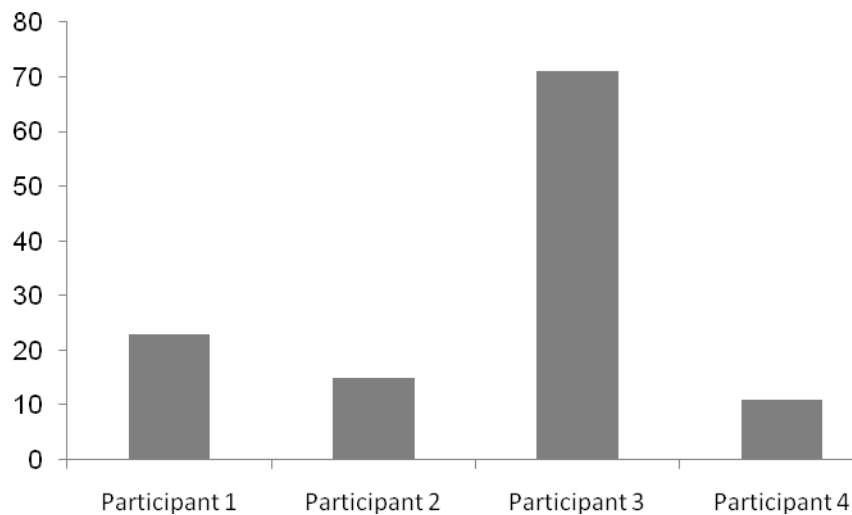
Participants at two sites had less than 2 years' experience with the Lidcombe Program; participants at the other two sites had been treating children with the Lidcombe Program for 18 and 23 years. The experienced participants reported to often anticipate emerging treatment problems and intercept them before they had fully evolved. The researcher encouraged them to also report these treatment problems. The sites were randomly chosen; three sites were in New South Wales, one in South Australia.

The participants knew why and when they would be contacted and what the researcher would ask. They wrote down the treatment problems that parents brought to the clinic in order to remember them at the time they were contacted by the researcher. The researcher contacted them by telephone or in person and used an open, single question interview: *Have parents encountered or reported treatment problems last week?* The participants reported the treatment problems that had emerged and clarified if necessary. One participant collected problems from her team and wrote them down. Initially, the participants were contacted weekly but soon the intervals between the contacts increased (fortnightly, then monthly) because no new treatment problems had emerged. Finally the participants agreed to email the researcher if they collected new treatment problems. Saturation was reached after 7 months. At that point, 120 treatment problems had been collected. The numbers of treatment problems found per participant are illustrated in Figure 7.2. Most data were obtained from the participant who collected treatment problems from her

team.

Figure 7.2

Treatment Problems (N) Collected per Participant



7.2.2.5 Interim analysis 2: Initial template

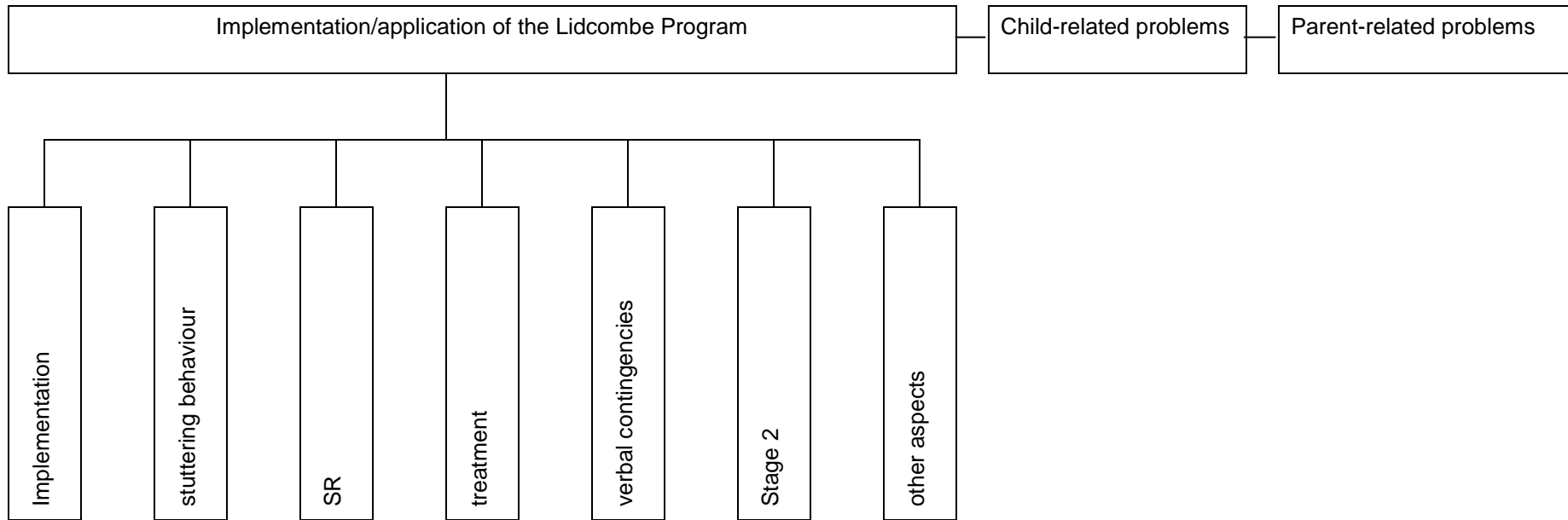
At this stage, the reported treatment problems needed to be investigated thoroughly because some of them overlapped, had been previously identified, needed adjustment or were simple requests for additional treatment information.

Compared with the treatment problems collected at the brainstorming meeting and from the Lidcombe Program publications, the treatment problems reported by the participants at the different sites contained much more information and were more personal. Some treatment problems were not immediately useable, e.g.: *This is an observation I have made. I was doing an assessment on a child who just, very young child, 2-year-old who just started stuttering. Her older sibling, a boy who had been treated by the Lidcombe Program both Stage 1 and Stage 2 in another country. From what I could gather the therapy was done appropriately. When I was assessing the younger sibling, just to determine if and when treatment was needed, I heard the older child stuttering. So the issue came up how to address to the parent that the older child is showing some stuttering behaviour when they*

actually thought it was finished. The researcher identified the interesting elements of the reported treatment problem: (1) timing of initiating treatment, (2) relapse prevention and (3) relapse management, and they were used as separate themes. After this process, the treatment problems were colour-coded according to three main themes, based on the three a priori themes. Within the first main theme, seven subthemes emerged. The subthemes all contained several treatment problems but, due to continuing analyses, no numbers of treatment problems per subtheme are presented at this stage. Even though the last two main themes contained treatment problems, no subthemes were identified at this stage to group the treatment problems. The basic structure of the template as is at this stage of the study is represented in Figure 7.3.

Figure 7.3

Basic Template Structure after Interim Analysis 2



7.2.2.6 Semi-structured interview with three speech pathologists

At that point, many treatment problems had been found and the researcher decided it was timely to probe the interviewees for possible solutions for Part II of the study. The treatment problems were transformed into interview questions and three speech pathologists were asked how they would solve them. It soon became clear, however, that by asking a few associated questions, the speech pathologists added treatment problems to the previously identified treatment problems that were asked as questions in the interview. It was then decided that the interviews would not only serve as the initial data collection for Part II of the study, but also as final data collection for Part I of the study. This decision reflects the potency of qualitative research to apply a flexible approach throughout data collection and analyses. This decision also explains why the interview preparation is discussed here, even though it was not originally planned as a data collection method in Part I of the study.

7.2.2.6.1 The interview

Some treatment problems needed rephrasing because they were worded from a parental perspective when reported by the participants at different sites. For example, *My child doesn't like it when I praise/correct their speech* was reconstructed as *A child doesn't like it when s/he is praised/asked for correction. What to suggest?* In total, 109 questions constructed the semi-structured interview.

7.2.2.6.2 The interviewees

The three speech pathologists were all experienced in the Lidcombe Program for over 18 years at the time of recruitment. Two of them also contributed to the data collection described in the previous paragraph. The speech pathologists knew the researcher and the ASRC. They were asked in an email if they wanted to participate in this study. Expectations were clearly described so that participating speech pathologists could make a well-informed decision.

The researcher physically met the speech pathologists to conduct each interview. The duration of the interviews ranged from 45 minutes to 3 hours. One interviewee was seen on two separate occasions as she could not complete the interview on the first occasion due to time constraints. The interviews were digitally recorded with an Olympus Digital Voice Recorder - 450S.

7.2.2.7 Interim analysis 3: Finalising the template

7.2.2.7.1 Transcripts

The recordings of the semi-structured interview, used for the three speech pathologists, were transcribed verbatim. The researcher familiarised herself with the transcripts by reading them through several times and by noting keywords and summarising phrases in front of the paragraphs.

7.2.2.7.2 Themes

The inductive focus of the analysis resulted in finding a substantial number of additional treatment problems in the transcripts. The treatment problems identified in the transcripts were represented by theme codes and subtheme codes (Table 7.2).

Table 7.2

Codes Used in Interim Analysis 3

Theme - subtheme	Code
Stuttering behaviour – type/frequency	SB-TF
Stuttering behaviour – listening	SB-L
Stuttering behaviour – change	SB-CH
Speech measures – SR/stuttering behaviour	SM-SR/SB
Speech measures – general	SM-G
Organising treatment – daily problems	OT-DI
Organising treatment – problems over time	OT-IOT
Treatment – in sessions	TM-IS
Treatment – outside sessions	TM-OS
Treatment – speech outside sessions	TM-SOS
Treatment – feedback	TM-FB
Characteristics child	CHAR
Parents	PAR

The researcher compared the themes and subthemes (representing the treatment problems) from the transcripts with the previously identified ones. Arrows connected them in parallel and hierarchical relationships. These *mind maps* illustrated the themes and subthemes identified so far and their hierarchical relationships and allowed further refinement of the template.

7.2.2.7.3 The template

The template was fine-tuned during this interim analysis. The three main themes, presented in Figure 7.3 changed and were extended to four. They were called *Part I, II, III* and *IV* to facilitate the process of defining themes and subthemes. Seventeen themes were allocated to *Part I: General problems about the Lidcombe Program; Part II: Procedures and components; Part III: Conditions parents/children; and Part IV: Reactions parents/children in*

the template, and subthemes were found for most of them. The template served as a data management system that gave a clear and concise overview of the treatment problems and that allowed easy navigation through the themes.

7.2.3 Validation

The method of triangulation was not just applied as a method to collect data, but it was also a validation method because new data strengthened previously found data. In addition to this, a transparent audit trail was created to allow easy retrieval of the different collection and analysis stages.

7.3 RESULTS

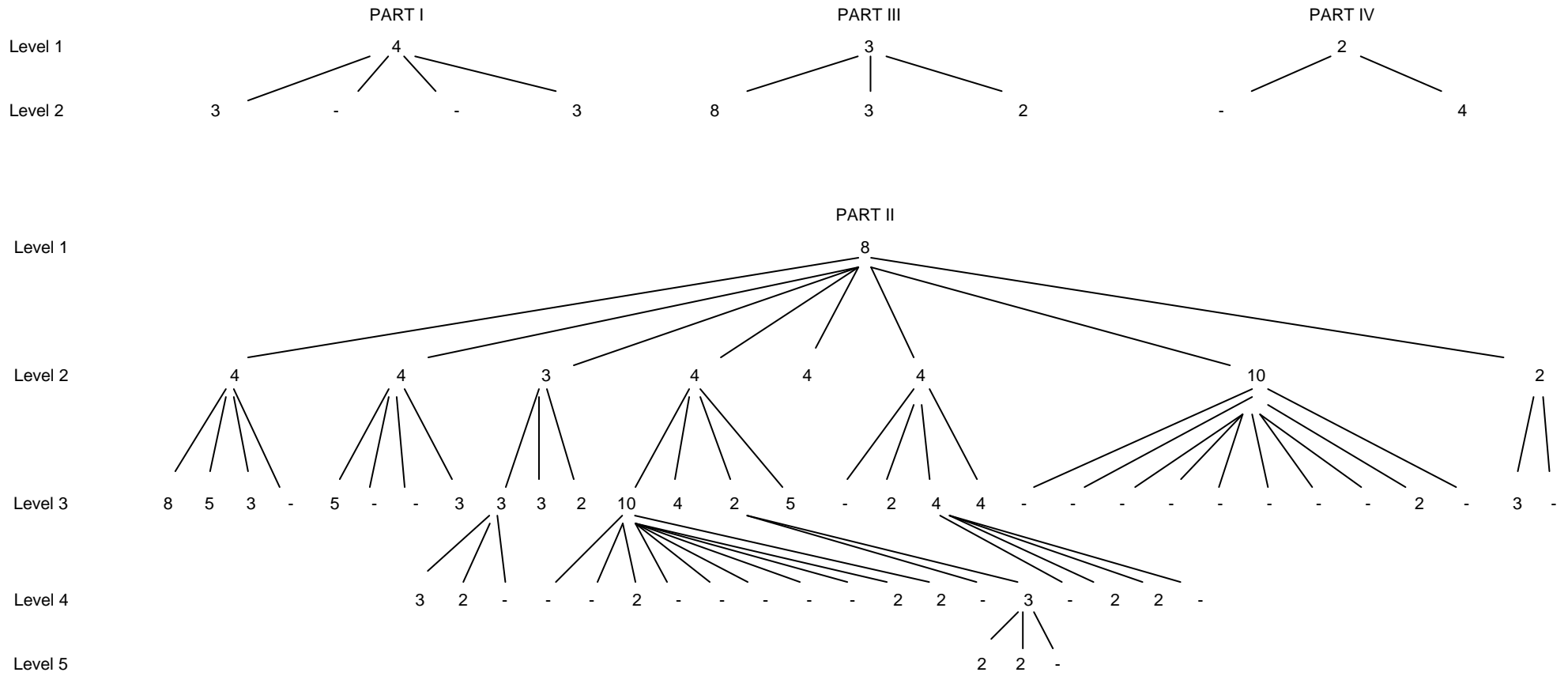
7.3.1 Distribution of treatment problems in the template

The template represents 124 treatment problems related to the parental implementation of the Lidcombe Program. The template has four parts, all of which have treatment problems across themes up to five different levels. Figure 7.4 illustrates the parts and the themes found in the data. More detail of the structure of the template can be found in Appendix C; however, due to space limitations, only the template table of contents is displayed and not the entire qualitative report.

Treatment problems were found across 17 themes, mostly (8) in Part II (Procedures and components). Treatment problems were found up to the second level in Part I, III and IV; in Part II, treatment problems were found across themes up to the fifth level (Figure 7.4).

Figure 7.4

Number of Themes (N) per Level



The distribution of the 124 treatment problems across the four parts is represented in Figure 7.5. The distribution of treatment problems per theme is displayed in Figure 7.6.

Figure 7.5

Themes (%) per Part

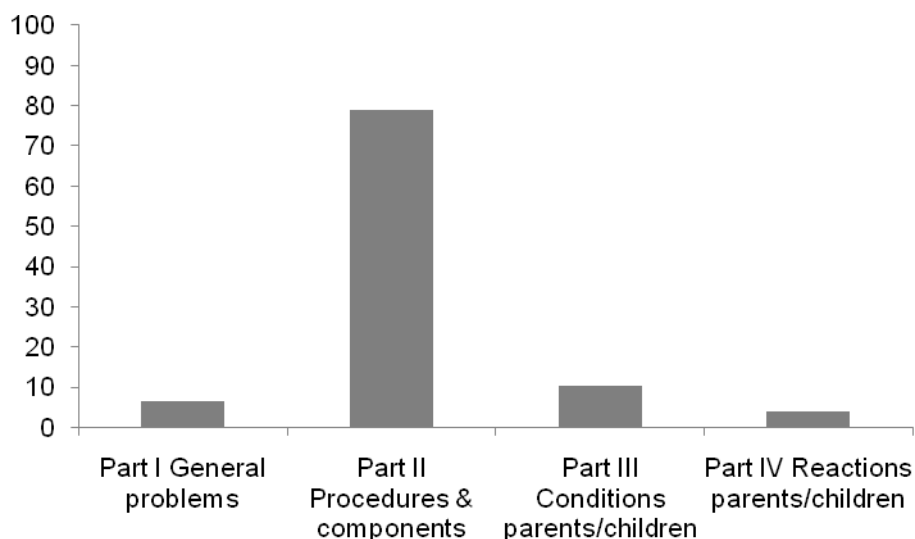
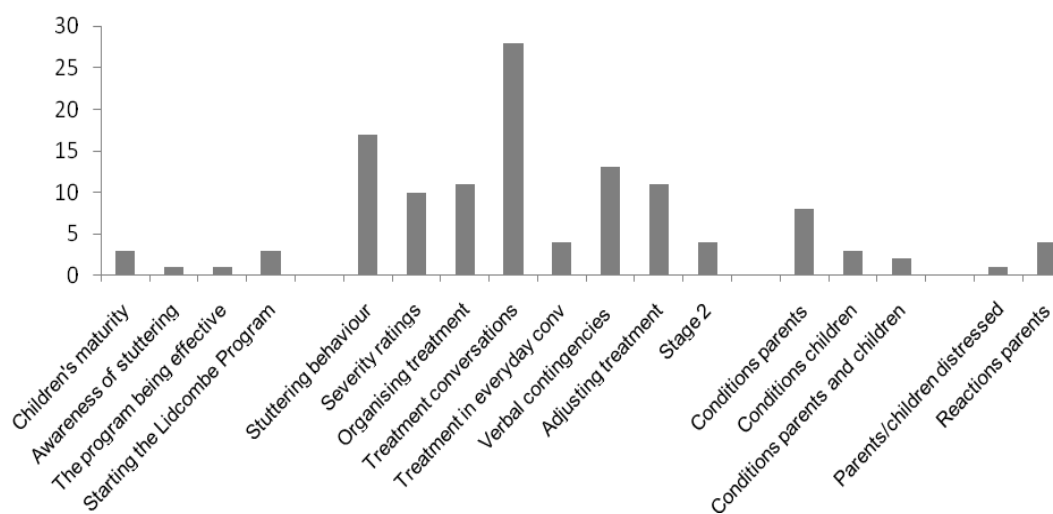


Figure 7.6

Treatment Problems (N) per Theme at Level 1



In Part II, themes are related to four Lidcombe Program components as described in the treatment guides (Onslow et al., 2003; Packman et al., 2014): *measuring stuttering*, *verbal contingencies*, *treatment during structured and unstructured conversations* and *programmed maintenance*. More themes, directly related to treatment were identified, such as *organising treatment* and *adjusting treatment*. The latter refers to the adjustments to the treatment conversations and to the verbal contingencies delivered during everyday conversations. As mentioned previously, the terminology used in the reporting of the themes in the template, which is constructed for parents, differs from that in the Lidcombe Program Treatment Guides (Onslow et al., 2003; Packman et al., 2014).

Not surprisingly, most treatment problems (79%) were linked to the implementation of Lidcombe Program procedures and components (Part II, eight themes). About one third of these problems (29%) were related to treatment conversations. Three subthemes emerged within this component: (1) treatment activities, (2) conversations and (3) verbal contingencies.

A large number of treatment problems within this group (17%) were related to *identifying and treating stuttering behaviour*, indicating that accurate identification is essential but not always evident. Another theme in which many problems (13%) emerged was *verbal contingencies*. These treatment problems were either related to the way parents provided verbal contingencies, how children received them or how children responded to them. A component that evoked many problems (11%) was *organising treatment*. This problem could be caused by parent or child characteristics, environmental or time constraints. Examples include organising treatment on busy days, when siblings are around, just before and after holidays and when treatment cannot be continued for a short or long period. This theme is known to be potentially problematic, and it was also identified by Goodhue et al. (2010).

Themes beyond the direct implementation of the Lidcombe Program components were identified, including some general problems that are often important prior to initiating

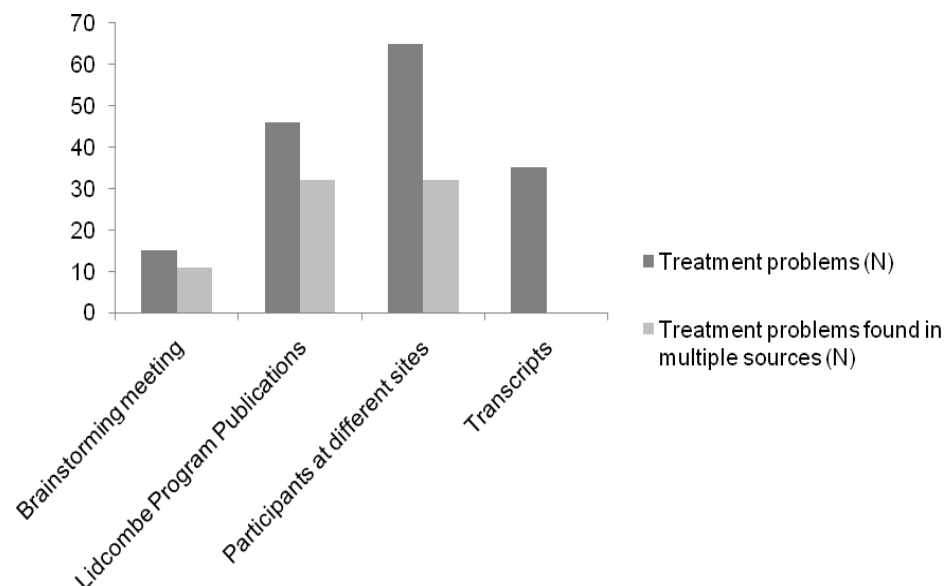
the program, for example if children need to have achieved a certain cognitive maturity level or need to have acquired certain language skills to start the Lidcombe Program, and conditions and reactions of parents and children, such as how to do the Lidcombe Program with sensitive children, when parents are separated or when parents or children are distressed about the stuttering. Even though they were a minority, still 21% of the problems were related to one of these themes.

7.3.2 Distribution of treatment problems per collection method

The distribution of the treatment problems is based on the final template. Hence numbers may differ from previously reported numbers. Most treatment problems originated from the participants at the sites, followed by treatment problems found in the Lidcombe Program publications and from the expert interviews (Figure 7.7). Many of the treatment problems were found in multiple sources.

Figure 7.7

Treatment Problems (N) Identified per Collection Method



Treatment problems from the transcripts were not found in other sources as the previously identified treatment problems were formulated in the interview questions. The ample number of themes found in multiple sources proved the validating power of the triangulation method in the study.

7.4 DISCUSSION

7.4.1 General

This study aimed to identify treatment problems related to parental implementation of the Lidcombe Program. Specific collection and analysis methods were chosen to maximise the study's explorative nature. The end product of the study is a template, listing 17 main themes with 124 treatment problems linked to them (see Appendix C). It was not surprising to find this large number of potential treatment problems, because implementing the Lidcombe Program happens differently for each family; hence a diversity of treatment problems was likely to emerge. The large number of treatment problems confirmed the need to conduct this study for the development of the Internet Lidcombe Program. The Internet Lidcombe Program will need to detect whether parents are experiencing any treatment-related difficulty and will need to provide treatment advice. Also, the findings of Part I will contribute to the construction of a problem-solving tool for parents in the Internet Lidcombe Program. Finally, the findings of this part of the study support the decision taken previously to have four separate training modules in the Internet Parent Training to focus on helping parents to 1) identify stuttering; 2) score stuttering severity; 3) use appropriate activities and conversation strategies; and 4) provide verbal contingencies during treatment conversations. Concrete implementation of the study findings in the Internet Parent Training is illustrated in Chapter 9.

Parents seem to experience most difficulties with the actual implementation of the treatment components. This is not a surprise, considering the parent experiences from the five studies, of which several were related to verbal contingencies and treatment during

structured conversations (see Table 6.1). This table also showed that a large number of treatment problems were immediately related to the parent role in the Lidcombe Program, such as not being confident at the start of the program and finding it difficult to be the only one responsible for the treatment. This type of problem, however, formed only a small theme in the present study. This could be explained by the fact that in this study, speech pathologists formulated the treatment problems, not parents, and that speech pathologists are more likely better at identifying the real origin of problems.

This study revealed that treatment problems can emerge during implementation of the main Lidcombe Program components, as described in the Lidcombe Program Treatment Guides (Onslow et al., 2003; Packman et al., 2014). As well, the implementation of other treatment-related components can evoke difficulty, such as identifying stuttering behaviour and adjusting treatment. Also, certain treatment problems related to verbal contingencies are related to treatment during structured conversations, but others are related to treatment in unstructured conversations. This indicates that different problem-solving approaches are needed, even though they are based on the same component (verbal contingencies). Treatment problems related to structured conversations were categorised into (1) activities, (2) conversations, and (3) verbal contingencies. Other treatment components also yield difficulties, for example, organising treatment while having specific day-to-day problems, while having problems over time and while having problems related to people involved in treatment. Treatment problems have not yet been specified with this level of detail in existing Lidcombe Program publications.

7.4.2 Strengths

The main strength of this study is its end product, the template, which lists a variety of treatment problems potentially necessary to be solved during the Lidcombe Program. This is critical for the construction of the Internet Lidcombe Program.

The template is the result of specifically chosen collection and analysis methods for

this study. Firstly, the collection methods of triangulation and maximising the sampling variation optimised data collection. Different resource formats, ranging from informal written resources (the Lidcombe News) to interviews with three highly experienced speech pathologists, significantly contributed to the range and depth of the collected data. Collecting the data through triangulation not only accumulated the data significantly, it also validated them. The participants recruited to report the treatment problems that parents brought to the clinic had various levels of experience and caseload size. Varying the sampling like this achieved this rich collection of treatment problems.

Secondly, template analysis allowed the researcher to manage the analysed data efficiently. In early stages of the template analysis, a priori themes were used to facilitate coding. Crabtree and Miller (1999) noticed that a priori themes can affect outcomes negatively when researchers refuse to look for themes beyond them. In light of this, a priori themes in this study were applied only in the initial stages to categorise the initial data, but were then gradually changed to alternative and additional themes on the basis of the emerging data. The template, resembling a table of contents, was the data management system that allowed efficient organisation and easy retrieval of the data throughout the study.

7.4.3 Limitations

The main limitation in this study is method-related. Using various resources resulted in collecting treatment problems that were formulated in different styles. The themes of the treatment problems in the Lidcombe Program publications were clearly defined, but the themes of the treatment problems, reported at the different sites and in the transcripts, were more difficult to identify. Some treatment problems fitted different themes and others overlapped. The researcher tried to stay as close as possible to the original data, but could not prevent manipulation of the original phrasing.

Parents were not directly involved into the study, even though the study identified

treatment problems that parents can experience when they implement the Lidcombe Program. The researcher thought that limiting participants to speech pathologists only would be sufficient to collect parental treatment problems. Including parents, however, could have enriched the data.

Another limitation is that the context of how and to whom the Lidcombe Program is delivered has not been taken into consideration. It would have been interesting to collect treatment problems from, for example, speech pathologists who deliver the Lidcombe Program via webcam or in group.

This study attempted to record what parents experience as difficult when implementing the Lidcombe Program at home. Coding of the treatment problems and finding the themes were straightforward, as the researcher was familiar with the Lidcombe Program and its implementation by parents, and no 'new' information was constructed. Although verification of the codes and themes was not thought to be an essential part of this study, it would have increased the study's methodological power.

7.5 CONCLUSION

This part of the study explored the treatment problems that parents can encounter when implementing the Lidcombe Program and identified 124 treatment problems related to 17 main themes. The themes and subthemes were concisely presented in a template (Appendix C). Most treatment problems were related to the component of doing treatment in structured conversations, including activities, conversations and verbal contingencies, and to identifying stuttering behaviour. These findings support the decision to have four separate training modules in the Internet Parent Training to introduce 1) identification of stuttering; 2) scoring of stuttering severity; 3) choosing activities and having conversations; and 4) providing verbal contingencies during treatment conversations. Treatment problems also involved aspects that complicate the organisation of treatment during structured conversations, including child and parent characteristics or environmental and time

constraints. The high number of treatment problems found in this study illustrates the necessity of detecting carefully whether parents in the Internet Lidcombe Program experience difficulty implementing the program.

Knowing the potential treatment problems is important, but knowing how to solve them is also essential. Part II of the study completes the template with this information.

CHAPTER 8 PROBLEM-SOLVING STUDY, PART II

POTENTIAL SOLUTIONS DEVELOPED BY SPEECH PATHOLOGISTS

8.1 INTRODUCTION

The Internet Lidcombe Program needs evidence-based, not opinion-based content for its treatment advice. The aim of Part II of the study was to find potential solutions for the treatment problems identified in Part I.

Understanding the problem-solving process facilitates the development of an optimal study design. Problem-solving is a complex cognitive process, influenced by personal characteristics and environmental factors. D’Zurilla and Goldfried (1971) proposed and Heppner (1978) elaborated on a five-step problem-solving process model. Even though this model originates from research in psychology, it can also be applied to problem-solving in the Lidcombe Program. This five-step model illustrates how individuals use their problem-solving skills in everyday life.

- 1) General orientation: The general orientation of an individual’s mental set plays an important role in how the individual behaves. An individual who accepts that problems happen in normal life, who can identify and label those problems and who does not avoid them or act impulsively on them may approximate an “optimal problem-solving set” (Heppner, 1978, p. 367) and will possibly problem-solve more easily.
- 2) Problem definition and formulation: Successful problem-solving is more likely achieved if an individual seeks information about the problem, can transform vague or unfamiliar terms into more concrete terms and thoroughly understands the problem.

- 3) **Generating alternatives:** This seemingly simple task is often not evident, for example when emotional components are linked to a problem, if a problem is too narrow to allow alternatives, or if an individual's response pattern is fixated. Tools such as brainstorming and idea checklists are helpful to create alternatives.
- 4) **Decision making:** An individual makes a selection from a list of alternatives. Selecting an alternative is often based on internal processes such as balancing positive and negative consequences.
- 5) **Verification and evaluation:** An individual identifies what the consequences of the chosen alternative are and compares them to a standard.

Parents who problem-solve within the Lidcombe Program context may follow a similar process. Part II of the problem-solving study aims to contribute to the information given at Step 3, generating alternatives. Parents who experience a treatment problem while doing the Internet Lidcombe Program must receive advice on how they can solve the problem.

8.2 METHOD

8.2.1 Study design

A qualitative study gathers rich information from a small number of participants while using a flexible, adaptable design (Denzin & Lincoln, 1998). This was the most obvious way to conduct this part of the study, as “the same phenomenon (solutions to treatment problems) can be described in different ways, giving rise to different ways of perceiving and understanding it, yet neither way of describing it is necessarily wrong” (Willig, 2000, p.7).

This study differs from that of Harrison et al. (2003) in nature (qualitative versus mixed methods, i.e. combining quantitative and qualitative procedures), type (prospective versus retrospective) and focus (focus on parent versus focus on speech pathologist

problem-solving). The findings of this study will provide the empirical bases for the Internet Lidcombe Program, enabling simulation of the problem-solving task of the speech pathologist in the clinic-based Lidcombe Program. They will also contribute to the construction of an independent problem-solving tool to assist parents during the Internet Lidcombe Program.

The methodology is qualitative description, which is “a description of the qualitative inquiry and is a complete and valued end product in itself” (Sandelowsky, 2000, p. 335). This methodology was chosen because it “does not require a conceptual or otherwise highly abstract rendering of data” (Sandelowsky, 2000, p.335). The template developed in Part I was further used to manage the data. Also, even though a qualitative description is never without any interpretation, it focuses on keeping close to the original formulation of the data; it therefore fits Part II of the study. This methodology is often considered as “less sexy” (Sandelowski, 2000, p. 334) and has influenced researchers to choose other methods incorrectly: researchers often claim to use phenomenologic, ethnographic or narrative methodologies, but they simply use qualitative descriptions with phenomenologic, ethnographic or narrative characteristics (Sandelowski, 2000).

The design of this study is not constructivist; this study does not attempt to construct reality, but rather aims to reflect it (Willig, 2001). The researcher did not expect to discover ‘new’ information, but rather sought evidence of what speech pathologist do in the clinic to solve problems. The relevant information was collected by using semi-structured interviews, which is a method widely used in different types of qualitative research, but the analysis of the transcripts in this study differs from analysis in constructivist studies.

In qualitative research there is no necessary relationship between the methodology and its methods (Green & Thorogood, 2009). The sampling procedures, collection and analysis methods, and quality checks were therefore selectively chosen.

8.2.2 Participants

Ethical approval was obtained from the University of Sydney to conduct the study (Appendix B). Participants were speech pathologists experienced with the Lidcombe Program because they are likely to use strategies of pattern recognition and automatic, direct retrieval (see Chapter 6). The level of Lidcombe Program experience in this study therefore determined the selection of the participating speech pathologists. However, they were also selected because their caseloads reflected a cross-section of the community, with families from different cultural and socio-economic backgrounds. The researcher emailed the speech pathologists to explain the study and to ask them if they would be interested to participate. The email clearly stated that participation was entirely voluntarily. The researcher recruited seven speech pathologists with between 15 and 23 years of experience with the Lidcombe Program. They all conducted clinical work or combined their clinical work with other activities such as consulting, teaching or research. Four speech pathologists were located in New South Wales, two in Victoria and one in Western Australia. Speech pathologist characteristics are presented in Table 8.1.

Table 8.1

Speech Pathologist Characteristics

Speech pathologist	Experience (years)	Location (state)	Professional activity
1	23	New South Wales	Clinical work, research
2	18	New South Wales	Clinical work, consulting
3	19	Victoria	Clinical work
4	17	Victoria	Clinical work, teaching
5	20	Western Australia	Clinical work, consulting
6	15	New South Wales	Clinical work
7	15	New South Wales	Clinical work

8.2.3 Data collection and analyses

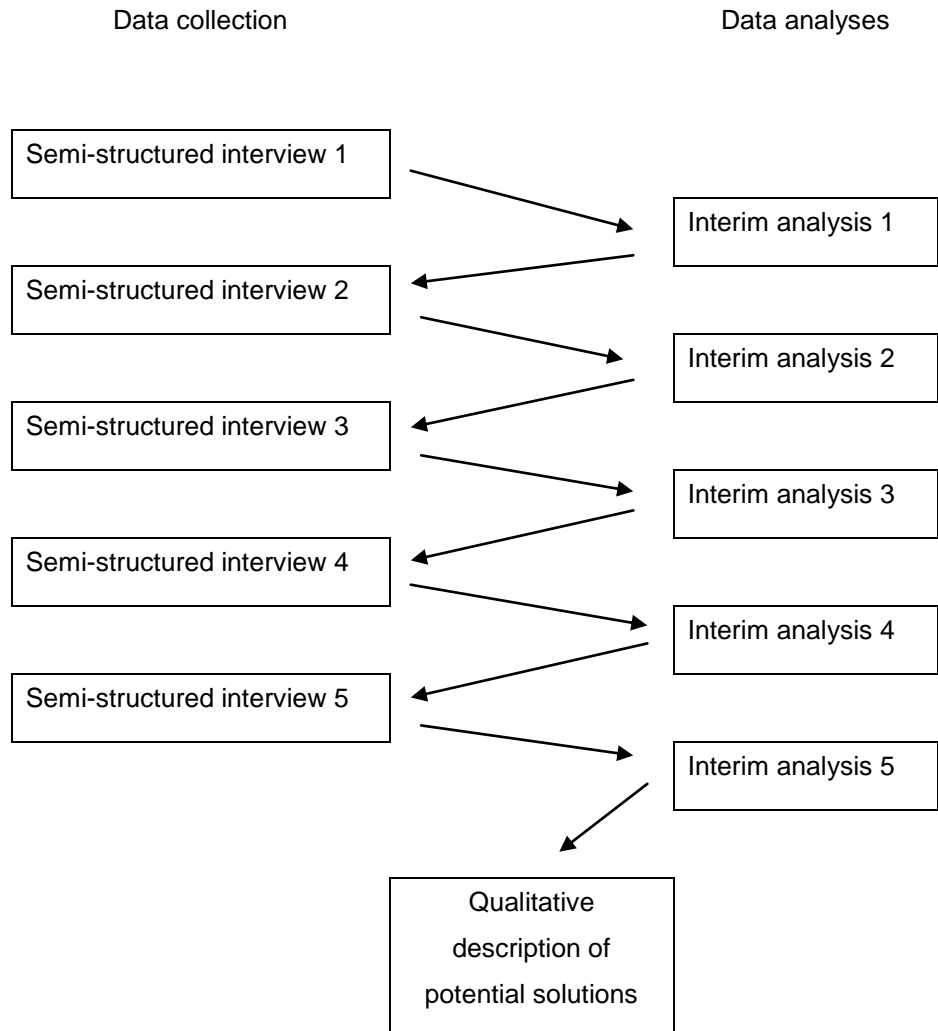
The seven speech pathologists were interviewed separately to collect potential solutions to the previously defined treatment problems. The order in which the speech pathologists were interviewed was randomly selected. Semi-structured interviews were used, allowing the researcher to ask follow-up questions if necessary. The interview questions were based on the treatment problems identified in Part I of the study that were listed as themes in the template (Appendix C).

Each interview was preceded by the instruction: *We asked several speech pathologists to write down questions about the Lidcombe Program that parents have asked them during their child's treatment. I will ask you these questions now, one by one. Could you tell me what you would say or do if parents asked you these questions during a clinical visit?* The researcher interviewed the speech pathologists face-to-face in a quiet, non-distracting environment. The researcher physically met four speech pathologists, and the other three interviews were via webcam. The duration of the interviews ranged from 45 minutes to 5 hours. For three speech pathologists, several interview blocks were organised. The interviews were digitally recorded with an Olympus Digital Voice Recorder - 450S.

An iterative process of data collection and analysis is common in qualitative research (Boeije, 2009). The zigzagging between interviewing the speech pathologists to gather potential solutions and analysing the data was steered by the emerging findings. Collection and analysis were repeated four times until sufficient data were collected. Figure 8.1 represents this process over time. Data collection and analyses are reported in chronological order to make the process transparent.

Figure 8.1

Data Collection and Analyses



8.2.3.1 Semi-structured interview 1

Data collection in this study began with interviews consisting of 109 questions with three speech pathologists. This interview was described in Part I of the study (see 7.2.2.6). The researcher and the three speech pathologists each physically met for the interview at separate times. The speech pathologists were asked to report their solutions to the treatment problems mentioned in the interview questions. The interviews were transcribed and analysed.

8.2.3.2 Interim analysis 1

The researcher read through the transcripts to become familiar with them. Potential solutions to treatment problems were segmented into meaningful phrases in each transcript and were then imported in the template. The meaningful phrases were clustered per topic in the template.

8.2.3.2.1 Potential solutions from interim analysis 1

The researcher decided to use the third person perspective throughout the template to increase consistency. Some solutions therefore needed subtle rephrasing such as using third person singular to describe the parent (s/he, him/her), using imperative verbs for actions (*Look at the cycles*) and changing personal speech pathologist opinions or emotional phrases (*I think it is better to* or *I sometimes would do*) into more general ones (*It is probably better to* or *It is also possible to*). The researcher aimed to retain the original meaning of the phrases to preserve their power by leaving them within their context and by frequently reading the original transcripts again.

8.2.3.2.2 Interview questions for the next interview

A number of additional treatment problems emerged from these transcripts, as reported in Part I of the study, because this interview was – rather unexpectedly - also used as final data collection there. As a consequence, the three speech pathologists did not give

solutions to these additional treatment problems. These additional treatment problems were therefore added to the next interview as extra questions. The interview questions were slightly reformulated to increase clarity and consistency throughout the study. The subsequent interview contained 138 questions (compared with 109 questions in the first interview).

8.2.3.2.3 The need for more data collection

The need to collect more data was obvious because:

- newly identified treatment problems had no potential solutions as they were only identified during interim analysis 1;
- some previously identified treatment problems had a broad variety of potential solutions, suggesting that there could still be more solutions;
- the collected potential solutions needed validation.

8.2.3.3 Semi-structured interview 2

In the next interview, a fourth speech pathologist was asked 138 questions. This interview had the largest number of questions in this part of the study and can be found in Appendix D. The interview was performed via webcam. The recording was verbatim transcribed and the researcher read through the transcript several times prior to analysis.

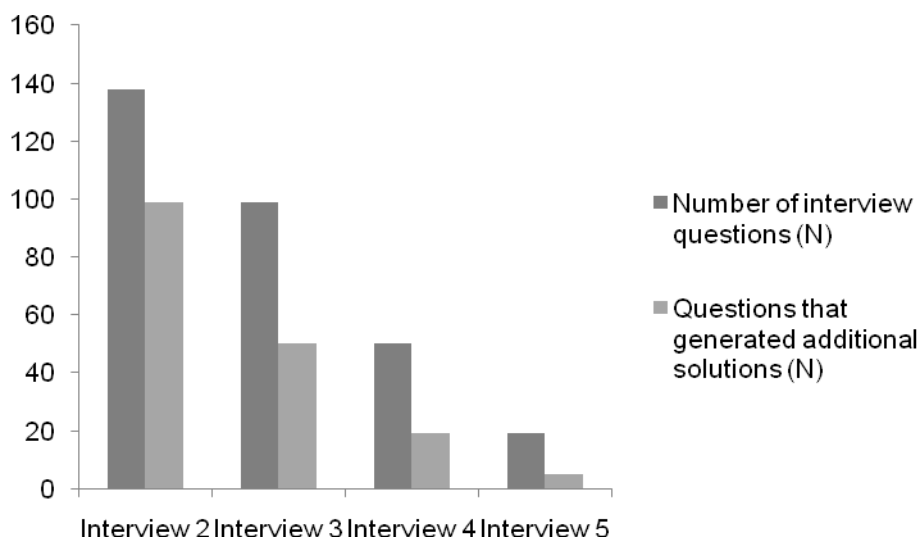
8.2.3.4 Interim analysis 2

For 28% (39/138) of the interview questions in this interview, new data (potential solutions) validated previously found solutions. For the remaining 72% (99/138) of the interview questions, additional solutions were added as meaningful phrases to the corresponding treatment problem in the template. The large amount of new potential solutions stimulated the researcher to collect more data to validate the solutions collected at this point in time.

This interview took around 5 hours. It could not be expected from speech pathologists to spend that amount of time to the study, given their work commitments. Subsequent interviews needed to have fewer than 138 interview questions. It was therefore decided that only interview questions that generated new potential solutions in this interview would be included in the next. The interview questions that did not generate new potential solutions simply validated previous solutions and were omitted in subsequent interviews. This approach was taken for the remainder of the study and resulted in a gradual decrease in the number of interview questions in subsequent interviews, indicating saturation of the data collection (Figure 8.2). To illustrate this, an interview with 99 questions was used for interview 3.

Figure 8.2

Number of Interview Questions per Interview



8.2.3.5 Semi-structured interview 3

The researcher conducted interview 3 (with the fifth speech pathologist) at the speech pathologist's workplace. In this interview, the researcher asked 99 questions. The

interview was transcribed and the researcher read the transcript several times to become familiar with the data.

8.2.3.6 Interim analysis 3

About half of the interview questions (51%, 50/99) elicited new potential solutions that enriched the existing ones. The meaningful phrases were added to the corresponding themes in the template. The large number of questions that generated new potential solutions indicated that further data collection was necessary. Nearly half of the interview questions validated previously found solutions and were therefore omitted from the next interview.

8.2.3.7 Semi-structured interview 4

New data were collected by interviewing the sixth speech pathologist. The interview, consisting of 50 questions, was executed via webcam. The interview was verbatim transcribed and the researcher read it several times before analysis.

8.2.3.8 Interim analysis 4

Only a limited amount of additional potential solutions emerged from this transcript (19/50, 38%). The new solutions supplemented the previously collected solutions in the template. Even though only 19 questions raised new potential solutions, the researcher decided to continue data collection. The 31 interview questions that validated previously found potential solutions were not included in the next interview.

8.2.3.9 Semi-structured interview 5

The last (seventh) speech pathologist experienced with the Lidcombe Program was interviewed. The interview was conducted via webcam and contained 19 questions. The interview was transcribed verbatim and was read through several times before analysis.

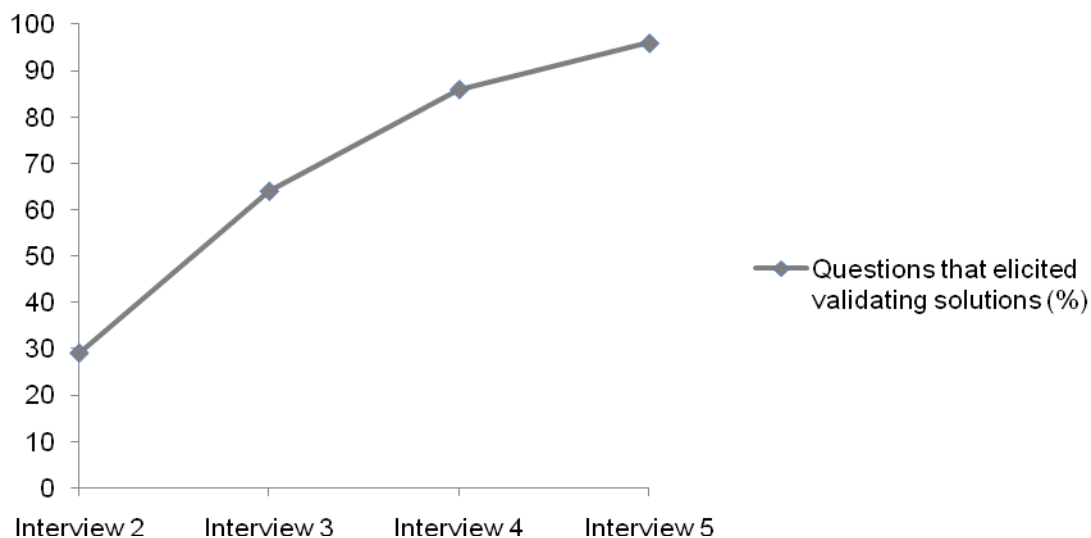
8.2.3.10 Interim analysis 5

This last interview revealed additional potential solutions for only five questions (5/19, 26%). By that time, potential solutions for nearly all interview questions ever asked (133/138, 96%) had been validated in subsequent interviews (Figure 8.3). The researcher decided that sufficient data had been collected for the aim of this study.

In the final step, the researcher processed the meaningful phrases in the template and transformed them into readable text.

Figure 8.3

Questions (%) That Elicited Validating Solutions



8.2.4 Validation

An audit trail of the subsequent steps in this part of the study was created by filing documents chronologically (numbered versions) in appropriate digital folders. All study material (e.g. audio files, mind maps, verbatim transcripts and interim analyses) was easily retrievable.

8.2.5 Reporting the results

The findings of the study are presented thematically. Extracts from the qualitative report and anecdotal citations from the original transcripts illustrate the key themes. A thematical presentation of the findings is an approach often taken in template analysis when a study produces many findings (King 2007; 2012).

8.3 RESULTS

The study accumulated many potential solutions for treatment problems that could emerge during the Lidcombe Program treatment process. This wealth of findings is qualitatively described in a separate report organised in the template. It must be noted that this report mainly includes potential solutions for parents, but at times solutions for speech pathologists are reported too.

The thematic presentation combines treatment problems and their potential solutions, as both are closely linked. The themes presented are (1) problem-solving approaches, (2) different opinions and (3) items for reflection. As mentioned previously, the terminology used to define treatment differs from that in the Lidcombe Program Treatment Guides (Onslow et al., 2003; Packman et al., 2014).

8.3.1 Problem-solving approaches

The study revealed that speech pathologists had preferences for certain approaches to solve treatment problems. Three problem-solving approaches are discussed in the sections that follow. The italic text refers to extracts from the qualitative report; citations from the original transcripts are italic and printed in a smaller font. Individual citations are mainly used in the sections where speech pathologists' opinions differed.

8.3.1.1 Adding a second treatment conversation

Some children indicate the need for or would benefit from more treatment

conversations. Speech pathologists may advise parents to introduce a second treatment conversation:

- if stuttering severity increases in the evening and parents do a treatment conversation in the morning. They could introduce a second treatment conversation when the stuttering is more severe in the evening.
- if children dislike verbal contingencies during everyday conversations. Parents should make sure their child talks a lot during the second treatment conversation.
- if children are stuttering severely during the entire day. A second treatment conversation gives those children an extra opportunity to be stutter-free and they hear more verbal contingencies, which they do not hear much during everyday conversations because of their severe stutter.
- if children have difficulty concentrating for about 15 minutes each day. However, children do not practise enough in one short treatment conversation. Parents should increase the duration of treatment conversations to build up to 15 minutes.
- if parents need to practise their treatment skills more.
- if parents give not enough verbal contingencies during everyday conversations.

Treatment conversations should always be monitored carefully and appropriate action should follow, i.e. if stuttering severity decreases, parents could continue doing a second treatment conversation. If stuttering severity does not decrease, parents should limit treatment conversations to one a day.

Children could be overwhelmed by two treatment conversations. They could feel as if they never just talk to their parents but always have a therapeutic conversation. Monitor carefully and take appropriate action if that would be the case. Introducing 10 minute listening zones, in which parents listen carefully to their child for 10 minutes to detect stuttering:

8.3.1.2 Practising the effects of changing language complexity or task demands during treatment conversations

The complexity of language and the length of utterances are two different aspects of treatment conversations. Children are more likely to stutter when they talk about an unfamiliar word, e.g. stethoscope, although it is at single word level, or in complex and linguistically diverse constructions regardless of the length of the sentence.

In the early stages of the program, 'easy' and 'boring' language should be used so that children do not have to think about the content or get excited when they talk because that could trigger stuttering.

Speech pathologists should explain the language demands of treatment conversations at the later stages of the program. Insufficient language challenges during treatment conversations may prevent stuttering to decrease from severity 3 to 2 during everyday conversations because more difficult language is used. Parents should make talking tasks more complex if their child can talk without stuttering during treatment conversations with open-ended questions that have long answers. Speech pathologists could demonstrate more difficult talking tasks and could ask parents to think about what these tasks were and why they were more difficult. Parents may need to demonstrate these talking tasks back to the speech pathologist. More complex talking tasks include:

- Talking about past events e.g. recent birthday party the child has been to;*
- Recalling information e.g. of story just told;*
- Predicting e.g. the end of a story;*
- Describing e.g. pictures;*
- Explaining e.g. rules of a game;*
- Imagining e.g. 'what if'-situations.*

Sometimes the pragmatic demands of talking make children stutter more, e.g. when children interrupt what the parents are doing to ask for a drink. The language is simple, but

the multitasking (running to the parent and getting the parent's attention) makes them stutter on that sentence.

8.3.1.3 Approaches that are not shared by the other speech pathologists

Some speech pathologists used approaches that were not shared, sometimes not even supported, by the other speech pathologists, such as

8.3.1.3.1 Using activities at an interim level

Activities used at an interim level could include barrier games or games with a carrier phrase, and are mainly used when children were stutter-free with short answers but could not be with longer answers.

Parents could work at an interim level and use activities with 'easy' language that require longer answers: barrier games with prepositions, operators or descriptors, or activities with a carrier phrase, i.e. a part of a sentence that re-appears in different sentences. Parents should avoid long-term use of carrier phrases because they are not part of normal conversations.

Some colleagues did not support the use of carrier phrases because they do not mirror natural conversations. One speech pathologist does not support this level approach because she believed that short answers should be mixed with longer answers in the same conversation.

8.3.1.3.2 Setting goals for stutter-free speech with rewards attached to them

A goal formulated as, for example, *if you can stay stutter-free for the next 2 minutes, you will get a reward*, is not accepted by any of the speech pathologists mainly because it sets up children for potential failure.

"I would like to say first that I never do that. I think it is dangerous because you are setting the child up for potential failure. I would be really concerned about that."

8.3.2 Different opinions

Some interview questions generated different opinions from speech pathologists. Three examples are given.

8.3.2.1 Conducting treatment in structured conversations in the car

The researcher explained that the parent who asked this question was driving the car. Some speech pathologists thought it was acceptable to do treatment in the car:

Some speech pathologists discourage parents to have treatment conversations in the car while they drive because:

- *of potential danger when parents cannot solely focus on their driving;*
- *parents may miss subtle stutters because they cannot look at their child's face. They could give verbal contingencies incorrectly;*
- *without looking at or touching their child, parents are limited in giving clues to their child for stutter-free speech or stuttering (e.g. high fives, touches or other physical prompts).*

"... It is really easy to miss stutters in the car because you are not watching your child and there is so much background noise."

"If they are driving, I would really recommend no because I would say to the parent that that is potentially dangerous. If you are not allowed to talk on a mobile phone in the car, I would say the LP is requiring possibly even more concentration than talking on the mobile phone."

Treatment conversations can only be done if parents stop their car (e.g. in traffic jams, on a parking) or face their child (e.g. when someone else is driving).

Other speech pathologists believe that parents could have valuable therapeutic time with their child while driving. Parents could have a short treatment conversation in the car in addition to a 10 to 15 minute one during the day. Having children captured in with a seat belt, especially active children, could help parents to control treatment conversations better.

At later stages of the program, treatment conversations in the car could be suggested for busy families. They could shape the conversation while their child describes random items from the 'Smooth Talking Box' or while they play a modified 'I Spy' game. The organisation and success of treatment conversations in the car need to be monitored carefully.

"But yes I think in most circumstances I think the car can be a great time especially with those, with those really high activity kids, where they are captured in with a seat belt that it can be really valuable time."

"initially, yes I guess the car is difficult because you cannot focusing 100% on the child so I would not recommend doing that as a first port-a-call; I wouldn't... Quite often it becomes part of the treatment process down the track but I suppose initially when initial phase of treatment begins, I wouldn't recommend starting structured treatment in car situations, no."

8.3.2.2 Conducting treatment instead of a child's reading time

Some speech pathologists believe that story time before bedtime is unsuitable for treatment conversations because:

- *it does not allow carry-over of stutter-free speech because children go to bed straight after;*
- *children may resent it if their story time is taken away; it is potentially punishing because story time is important and special to them;*
- *story time has a different but equally important purpose than treatment: children should learn to appreciate literature as much as they should practise to be stutter-free.*

Even though replacing story time with a treatment conversation could be successful, these speech pathologists never –irrespective of the parents' view- recommend it. They help parents find other times in the evening to do a treatment conversation.

"I think that is wrong. I think... I think what you are doing is potentially punishing your child because that reading time is special and important. And a child needs to learn to appreciate literature

in the same way that they need to learn to stay stutter-free.”

“do not let that take the place of the story reading. Kids really resent that, if they have been read to before they go to bed that that has stopped, it has become treatment; so you don’t want to get rid of that time.”

Other speech pathologists think that story time is an excellent opportunity to do a treatment conversation. Parents should positively introduce treatment, and not say ‘we need to have a treatment conversation so put that down’ or ‘once we have finished treatment, we can do the story time that we love’. The routine of story time should be kept but either a treatment conversation is added or the story time is changed into a treatment conversation. Parents should not read books but could have a casual, open-ended conversation about the book and then read it (or vice versa). Treatment conversations are fun and could replace story time without the child realises. For some families this is the only possibility to organise treatment conversations on some days. The organisation and success of treatment during story time need to be carefully monitored.

“we can make the structured conversation or the smooth talking time fit into that zone.”

8.3.2.3 The frequency of verbal contingencies during everyday conversations

The frequency of verbal contingencies is not a treatment problem in itself, but the researcher noticed that speech pathologists have different opinions about discussing the frequency and follow-up of verbal contingencies during everyday conversations, and therefore it was added here.

Some speech pathologists claim that parents should only give a handful of verbal contingencies during everyday conversations otherwise the child may feel as if treatment conversation lasts all day long and the verbal contingencies ‘wear off’. Some speech pathologists suggest parents to start with a handful of verbal contingencies for stutter-free speech first, maybe in specific contexts only, and then gradually build up to more. Once parents give 10 to 15 verbal contingencies for stutter-free speech during everyday

conversations, they can introduce a couple for stuttering. Some speech pathologists tell parents to give the amount of verbal contingencies that feels natural and effective to them: this can vary from 5 to 10 verbal contingencies during an entire day to 30 to 50.

“I just say: “I want more praises than stutter corrections.” And the biggest thing I do is I monitor how many times it has been done per hour. So I say: “I want you to only correct one stutter an hour.” And that’s it. And if you are only around them 3 hours a day because of work, I only want 3 corrections and I will be asking you that next week.” I say that in a really friendly manner but, and just say it is really counterproductive. And I say: “Trust me, you are going to think Wow, he gets rid of the stutter every time I correct, and you are going to want to do it more and I do not want you to do it more because it’s actually not what is going to get rid of the stutter.” So I say: “Once an hour and then double the amount of praise. Don’t do your next hour’s correction until you praised them a couple of times.”

“So I would not give them a ratio but I would give them a number and say: All right, I want you to give 20 verbal contingencies on stutter-free speech throughout the day.”

“it might be say 5 or 10, for another family that might be 30 or 50. So it depends on what feels natural and effective to the parent and what the child is happy with.”

Some parents need a fixed number, e.g. 20 verbal contingencies on stutter-free speech during the day and a few for stuttering. Parents should reflect whether they ‘annoy’ their child by interrupting the conversation too often to give verbal contingencies. Some children tolerate a high number of verbal contingencies, some children do not.

8.3.3 Items for reflection

Two treatment problems evoked some interesting findings for the development of the Internet Lidcombe Program. They are reported here but their implications for the development of the Internet Lidcombe Program are discussed in Chapter 11.

8.3.3.1 The descriptors on the stuttering severity scale

Parents seemed to want more descriptors on the 10-point stuttering scale than the three currently available (SR1 = *no stuttering*, SR2 = *extremely mild stuttering* and SR10 = *extremely severe stuttering*). One speech pathologist suggested:

“I think about when I am describing the scale to parents [...] I will say 1 if no stuttering, 10 is the most stuttering imaginable for anyone, so 5 sits in the middle so a 5 is moderate. So you’ve got none, moderate and severe and then you have got to decide is it mild to moderate or is it moderate to severe to sit either side of that number 5. And that kind of helps parents a lot to work out where they are going to put something.”

8.3.3.2 Strategies for how to use activities and have conversations

Nearly all speech pathologists gave detailed information about strategies that they recommend to parents to encourage stutter-free speech during treatment in structured conversations and about how and why they use certain activities. The level of detail with which speech pathologists elaborated on these topics and the amount of time they spent on them demonstrated their importance within the Lidcombe Program. Surprisingly, these strategies are mentioned only briefly in the Lidcombe Program Treatment Guides (Onslow et al., 2003; Packman et al., 2014).

8.4 DISCUSSION

8.4.1 General

Part II of the problem-solving study aimed to develop potential solutions to well defined treatment problems that can occur during the course of the Lidcombe Program. This aim was achieved by collecting data through interviews with seven speech pathologists experienced with the Lidcombe Program. Part II has produced a thorough, in-depth clinical view of how speech pathologists respond to treatment problems. Findings are available in a qualitative description.

Findings from both parts of this empirical study will not only form the clinical foundation of the Internet Lidcombe Program, but will also be used to develop a problem-solving tool that will be made available to parents once they have started treatment with their child. The qualitative report organised in the template is the conceptual design for the problem-solving tool and it is ready to be incorporated into the Internet Lidcombe Program. By clicking a treatment problem (keyword or phrase), potential solutions will be released to solve that treatment problem. An illustration of this concept is given in Figure 8.4. Advice appears on the treatment problem related to *Organising treatment times* → *Tricky days* → *Weekend days*. A separate search engine based on treatment problems (keywords) will also be embedded in this problem-solving tool. Parents will be able to actively type in a word and the program will match this word to treatment problems that have that word in them. This problem-solving tool will work independently of the regular interactions with the Internet Lidcombe Program, so that parents can consult this tool whenever they feel the need.

Figure 8.4

Concept of the Problem-solving Tool of the Internet Lidcombe Program

ORGANISING TREATMENT TIMES

Daily problems

Busy family schedule

Child is at preschool/day care/school

Parents are busy

Siblings

Tricky days



Weekend days

Some families organise treatment times more easily on the weekend because they have more time to spend with their child or siblings can be entertained by the other parent, but most families find it harder. Weekends are often without routine due to late evenings, sport training or unplanned events. You could plan treatment times in the morning before you go out. There is lots of lost time in which treatment times can happen e.g. when siblings do sporting activities and you and your child who stutters wait at the side or in the car. You should choose portable activities and make treatment times attractive, for example, the front car seat is the 'Smooth Talking Chair'. You could do longer treatment times or two treatment times on weekend days.

Week days

Doing treatment times when children are stutter-free or stuttering?

Problems over time

Holiday

Short term discontinuation (a few days)

Long term discontinuation (a few weeks/months)

People involved

Both parents

Other family members

8.4.2 Strengths

The main strength of Part II of the study is the amount of expertise that was brought together to develop potential solutions to treatment problems encountered during the Lidcombe Program. The participating speech pathologists answered the interview questions with much patience and generously shared their experiences, which took one speech pathologist up to 5 hours. It is a unique study in the Lidcombe Program history because so much problem-solving experience was accumulated, and because it is the first study to empirically establish potential solutions to treatment problems.

A second strength of Part II of the study is that potential solutions focus not on speech pathologist actions but primarily on parent actions. The qualitative description includes potential solutions for treatment problems experienced in the clinic-based Lidcombe Program but they also apply to the Internet Lidcombe Program.

Considered within the five-step problem-solving model, the findings of this study clearly supplied alternatives for Step 3 (generating alternatives). When parents consult the problem-solving tool in the Internet Lidcombe Program, they will need to select the solution that best fits the treatment problem they are experiencing (Step 4, decision making). Parents will then evaluate the consequences of this decision. In addition to parents' own evaluation, the Internet Lidcombe Program's evaluation of the uploaded SRs, parents' actions and the child's progress will contribute to the decision as to whether the problem-solving had been successful (Step 5: verification and evaluation).

8.4.3 Limitations

Qualitative research entails much time and labour. The most obvious limitations of this study therefore were the small number of participating speech pathologists and the need to omit interview questions in later interviews.

Another limitation, due to the chosen method of omitting questions in subsequent

interviews, is that some findings were based on the experience of only a few speech pathologists (at least two). To illustrate: a treatment problem could have emerged during interim analysis 1, based on what one of the three speech pathologists had said, and could have been confirmed in interim analysis 2. It would then be omitted from subsequent interviews. This happened to a small number of interview questions (12/138, 9%). Therefore the risk of over-generalisation of individual findings exists.

Some conforming editing was necessary to achieve a readable, consistent document. The researcher tried to stay as close as possible to the original transcripts, but the editing may have erased some individual nuances.

A final limitation is that creating an audit trail is the only validation method in Part II of the study. The validation power would be greater if other researchers were included in the qualitative process to validate data analysis. The decision to not include verification of the data in the template was based on the study's design: the study attempts to simply reflect reality, not to construct it (Willig, 2001). Not much interpretation was involved; hence, verification of the data was not considered to be essential.

8.5 CONCLUSION

Potential solutions were developed in this part of the study to address treatment problems that parents may encounter during implementation of the Lidcombe Program. Seven speech pathologists, highly experienced in delivering the Lidcombe Program, shared their personal expertise in in-depth interviews. The end product of the study, a qualitative description organised in a template, is of high empirical quality and is well suited as the clinical foundation for the development of the Internet Lidcombe Program. It also seems well suited for constructing a problem-solving tool that parents can access 24/7 when experiencing difficulty implementing components while doing the Internet Lidcombe Program.

With the findings of the empirical problem-solving study, the Internet Parent Training website could be constructed, which is reported in the following chapter.

SECTION IV

CONSTRUCTING THE INTERNET PARENT TRAINING WEBSITE

CHAPTER 9 CONSTRUCTING THE INTERNET PARENT TRAINING WEBSITE

9.1 INTRODUCTION

An external IT company programmed the custom-made website. Constant interaction between the company and the researcher ensured clear communication about the technical possibilities, the researcher's ideas and the content. For example, the company provided the researcher with information about the possibilities for embedding audios that play automatically when parents move to certain web pages in the program. The technological possibilities were further explored and exploited to fit the researcher's ideas, examples being the way of acknowledging possible parent emotions in the *parent-o-meters* and the *Dos and Don'ts*, a type of interactive quiz. Gradually the Internet Parent Training was shaped into its final version, which is illustrated in this chapter.

Access to the Internet Parent Training is secure: parents receive an email with their username. They choose their password and activate their account. Parents are not required to have expensive technical applications, but need: (1) an updated version of the Internet browser (Mozilla Firefox 11+, Google Chrome 20+, Internet Explorer 9+, Safari 5+), which can be downloaded free of charge; (2) two plugins: the latest version of Adobe Flash Player, which can be downloaded free of charge from <http://get.adobe.com/flashplayer/> and Adobe PDF Reader, which also can be downloaded free of charge from <http://get.adobe.com/reader/>; (3) a memory amount in the computer of at least 512MB so that the videos will play smoothly and (4) a minimum of a 256kbps broadband connection to the Internet and a minimum bandwidth limit of 5GB.

The researcher is program administrator, which includes managing user access, such as changing user status (active/inactive), and static text, that is, the text displayed on the pages and in the emails. Dynamic text, for example in the questionnaires, is accessible

by the IT company only.

The Internet Parent Training follows the clinic-based Lidcombe Program as much as possible, with some components adapted (see Chapter 5). Parents first go through an Introduction and continue with four training modules. The four training modules teach parents: (1) identifying stuttering, (2) scoring stuttering severity, (3) using appropriate activities and conversation strategies, and (4) providing verbal contingencies for stutter-free speech during treatment conversations. The page-to-page content of the actual Internet Parent Training site is displayed in Figure 9.1.

Figure 9.1

Page-to-page Content of the Internet Parent Training

INTRODUCTION	
Welcome	✓
Set-Up of the Program	✓
About the Lidcombe Program	✓
Aim of the Program	✓
FAQ	✓
Some Basic Advice	✓
Deciding When to Start	✓
Information You Need	✓
Print Package	✓
Action Plan	✓
Introduction Completed	✓

MODULE 1 - RECOGNISING STUTTERING	
Aim of Module 1	✓
Repetitions	✓
Prolongations	✓
Blocks	✓
Additional Stuttering Behaviours	✓
Stuttering or Not?	✓
Your Turn: Recognising Stuttering	✓
Make a Video	✓
Parent-O-Meter	✓
Action Plan	✓
Print Package	✓
Module 1 Completed	✓

MODULE 2 - SCORING STUTTERING SEVERITY	
Aim of Module 2	✓
How to Score Stuttering Severity	✓
Stuttering Severity Scores	✓
Your Turn: Scoring of Stuttering Severity	✓
Your Turn: More Scoring of Stuttering Severity	✓
Stuttering Chart	✓
Parent-O-Meter	✓
Action Plan	✓
Print Package	✓
Module 2 Completed	✓

MODULE 3 - SMOOTH TALKING TIMES (ACTIVITIES AND CONVERSATIONS)	
Aim of Module 3	✓
What is Smooth Talking Time?	✓
Activities for Smooth Talking Times	✓
More Activities for Smooth Talking Times	✓
And More Activities for Smooth Talking Times	✓
Activities you Have at Home	✓
Natural Conversations	✓
Conversation with the Child - Short Answers	✓
Conversations with the Child - Longer Answers	✓
Your Turn: Practise the Questions	✓
Your Turn: Identifying of Adjustments	✓
Your Turn: More Identifying of Adjustments	✓
Your Turn: And More Identifying of Adjustments	✓
Your Turn: Final Identifying of Adjustments	✓
Parent-O-Meter	✓
Action Plan	✓
Print Package	✓
Module 3 Completed	✓

MODULE 4 - SMOOTH TALKING TIMES 2 (VERBAL FEEDBACK)	
Aim of Module 4	✓
Verbal Feedback for Fluent Speech	✓
Your Turn: Labelling Verbal Feedback for Fluent Speech	✓
Your Turn: Thinking about Verbal Feedback	✓
Your Turn: More Thinking about Verbal Feedback	✓
Your Turn: And More Thinking about Verbal Feedback	✓
Your Turn: Final Thinking about Verbal Feedback	✓
Extra Tips to Organise Smooth Talking Time	✓
Your Turn: Dos and Don'ts for Smooth Talking Times	✓
Your Turn: More Dos and Don'ts for Smooth Talking Times	✓
Smooth Talking Time: Putting Module 3 and 4 Together	✓
Parent-O-Meter	✓
Action Plan	✓
Print Package	✓
Module 4 Completed	✓

This chapter illustrates how the construction of the Internet Parent Training was guided by the findings of the problem-solving study (reported in Chapters 7 and 8), the literature related to Internet-based interventions (Chapter 3), and the literature on adult education (Chapter 4).

9.2 IMPLEMENTATION OF THE PROBLEM-SOLVING STUDY FINDINGS

9.2.1 Introduction

The treatment problems that were detected in Part I of the empirical study will be used as a guide to develop the detailed questions in the Internet Treatment. The potential solutions, developed in Part II of the problem-solving study, will be used to develop the treatment advice generated after parents provide treatment information. Hence, problem-solving (detecting and solving treatment problems) in the Internet Lidcombe Program will be based on the experience of seven highly experienced speech pathologists and can compete with the problem-solving skills of speech pathologists in the clinic-based Lidcombe Program. The construction of Internet Treatment is not, however, within the scope of this thesis and is therefore not discussed in further detail.

Examples of how findings of the problem-solving study were incorporated in the Internet Parent Training are given below. The findings of the problem-solving study were not only implemented to simulate the speech pathologist's problem-solving task in the program, but also to simulate the other speech pathologist tasks of informing, training and evaluating. These four speech pathologist tasks were identified when discussing in Chapter 5 the difference at macro-level between the Lidcombe Program and the Internet Lidcombe Program. Illustrations link information from the Internet Parent Training website to problem-solving study findings. *Italic text was used for the extracts from the qualitative report.*

9.2.2 Informing

In the Introduction, parents receive information in the Frequently Asked Questions. An example of these questions is: Can parents do the Lidcombe Program with their child if they stutter themselves? The reply is based on findings of the problem-solving study: Parents who stutter can do the Lidcombe Program with their child successfully, often without changing anything.

In training module 1, parents can watch a video in which Suzy (fictitious name) has a subtle stutter and says uhm at some point in the video. The virtual speech pathologist explains that hesitations in the speech of children of that age are common. This particular video frame was chosen and included in the training because findings of the problem-solving study implied that this is an important occurrence: *The three main types of stuttering (repetitions, prolongations and blocks) do not cover all stuttering behaviour. Some children repeat specific words, e.g. uhm or you know, as part of their stuttering or use the same phrase, e.g. you know what I mean, you know what I mean, to start or restart the sentence they intended to say. Parents are often worried about these types of stutters.*

9.2.3 Training

Videos in training module 2 train parents how to score stuttering. The stuttering scale is explained in great detail because the findings of the problem-solving study suggested that... *Even though the SR system in the Lidcombe Program is a concept rather than a descriptive tool, parents seem to give more accurate SRs when provided with more descriptors than the three available (SR1 for no stuttering, SR2 for extremely mild stuttering and SR10 for extremely severe stuttering).*

In training module 3, the virtual speech pathologist suggests starting with simple, familiar, turn-taking activities e.g. books because ... *At the early stages of the program, parents and child sit down and do familiar activities (such as looking at pictures in a book)*

while they have a conversation that helps the child to become more stutter-free. [...] Most parents can focus better and shape their conversation more easily [that is, asking strategic questions that have short/longer answers] during a sit-down activity; they move on to treatment times in other environments when the child's stuttering severity has decreased and the child is becoming more stutter-free.

In the same training module, two videos demonstrate and train parents to adjust activities. One video demonstrates treatment with an exciting activity that triggers stuttering and a second video demonstrates treatment that the child does not enjoy. Findings of the problem-solving study suggested that... *Choosing appropriate activities is important. [...] Parents should avoid exciting activities or activities in which the child only labels pictures. They should vary activities sufficiently so that children do not get bored.*

Two other videos demonstrate conversation strategies that can be used in specific circumstances during treatment to promote stutter-free speech, including choice questions, modelling, automatic naming and sentence completion. Findings of the problem-solving study indicated that... *Using the appropriate types of questions enables parents to achieve stutter-free speech at different levels: (1) open-ended questions: questions that expect longer answers of the child such as when, why and how questions; (2) closed-ended questions: questions that expect shorter answers of the child such as what, where and who questions; (3) choice questions: parents give the child a choice with one of the two being the answer. They usually result in short responses and can easily be manipulated, e.g. Do you like chocolate milk or orange juice? versus Milk or juice? Another strategy that parents can use is sentence completion. Parents say the first (few) word(s) and wait for the child to complete the sentence or phrase. Parents can — to a certain degree — manipulate the length of the child's answer, e.g. What did you do yesterday? You ...? versus What did you do yesterday? You played at the ...?. Sentence completion helps children overcome the beginning of the sentence – often the place where they struggle. [...] Parents may need to use other strategies in addition to using different types of questions (open-ended, closed-*

ended and choice) and sentence completion to obtain stutter-free speech if their child stutters severely. Strategies include automatic naming: parents ask their child for days of the week, colours, counting, [...] and modelling back: parents can model a word back to the child after initial stuttering if it flows within the context, e.g. Ch: d-d-d-dog; P: Yes, dog. Could you try to say dog again without bumps?

A video in training module 4 shows a parent who praises his child in an exaggerated way. Speech pathologists in the problem-solving study reported that ... *Over-praise changes the dynamics in the parent-child relationship and in their communication.*

9.2.4 Evaluating

Direct evaluation is not possible in the Internet Lidcombe Program because there is no speech pathologist physically involved in the program. However, parents in the Internet Parent Training are given the opportunity to reflect about their own learning, which refers to the adult education concept of self-efficacy (Kaufman, 2003). At the end of each training module, parents are also asked to evaluate their feelings (parent-o-meters, see Appendix E). A reply appears when parents move the handle towards the feeling they share. Sometimes the program responds with advice that is based on findings of the problem-solving study, for example in training module 3. The pictures of the parent-o-meter in that training module are illustrated here:

"OK, this seems do-able to me."



"There are so many things I need to remember. It may take me a while to do it right."





The program response that is generated when parents click the first two pictures is: You will be multi-tasking during Smooth Talking Times. By doing it every day, it will become easier over time. The program reply that appears when parents click the last picture is: You can feel frustrated because there is so much to remember but once you start having Smooth Talking Times, it will become easier. The replies are based on findings of the problem-solving study that... *doing treatment conversations is complex at the beginning of the treatment process and parents learn many things.*

In training module 3, parents are asked to reflect about their games and toys at home (see Appendix F). Evaluating how parents can use them as activities for treatment conversations should facilitate the organisation of treatment conversations. The problem-solving study found that ... *Parents need to consider how to adjust treatment times every day based on the child's stuttering severity on that day, including the language demands of particular activities and the types of questions that will most likely lead to stutter-free speech. Speech pathologists often take away parents' thinking by preparing activities.*

Parents are asked to generate questions that elicit short and longer answers from a

child in training module 3 (see Appendix F). Reflecting about the types of question should increase parents' ability to use different types with their own child during treatment conversations. The underlying principle of this exercise, reported in the problem-solving study, is that ... *Using the appropriate types of question enables parents to achieve stutter-free speech at different levels: (1) open-ended questions: questions that expect longer answers from the child such as when, why and how questions; (2) closed-ended questions: questions that expect shorter answers from the child such as what, where and who questions.*

Dos and Don'ts at the end of the last training module is a type of interactive quiz (Appendix F) that requires parents to reflect about the content of the Internet Parent Training, and are statements related to the implementation of the Lidcombe Program components. Parents are asked to click a green or a red light when they agree or disagree. Responses to the statements appear, regardless of what parents clicked. Some of the responses are based on findings of the problem-solving study. An example is: Smooth Talking Time should last for at least 20 minutes. The traffic light is red and the program reply is: Smooth Talking Times should take about 15 minutes. They could last 20 minutes or longer if a parent and child are enjoying them. Findings of the problem-solving study were: *Treatment times longer than 10 to 15 minutes are acceptable if parents and children enjoy them and stay focused during the entire time.*

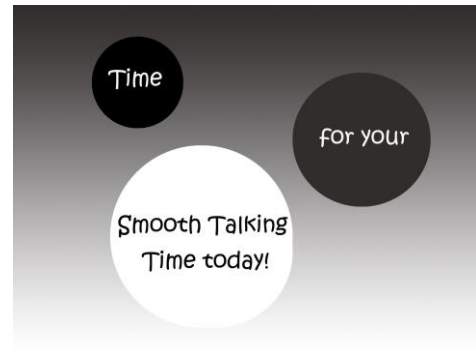
Another example of a do or don't is: Smooth Talking Time is only done during the week. The traffic light is red and the program reply is: A child will benefit from daily Smooth Talking Time especially at the beginning of the program. Parents should aim to do Smooth Talking Time every day of the week. On busy weekend or week days, it may help to have a Smooth Talking Time in the morning, so then parents don't have to worry about it later in the day, when things get busy. Findings of the problem-solving study suggested that ... *most families find it harder [to do treatment times during the weekend]. Weekends are often without routine due to late evenings, sport training or unplanned events. Parents could plan*

treatment times in the morning before they go out.

9.2.5 Problem-solving

Semi-tailored problem-solving advice about organising treatment times is provided in training module 4. Three situations are described and parents can find treatment advice if they click the situations. One of them is: I don't think it will be easy to fit Smooth Talking Time into my day because other young children in the household might interrupt us. Potential solutions for this situation are based on the findings of the problem-solving study: *Parents should not include siblings in the early stages of the program so they can focus on listening for stutters and thinking about what they are doing during treatment times instead of managing siblings' behaviour. Even though individual time with a parent is a magnet to all children, parents should try to exclude siblings from treatment times. They should explain siblings why they cannot join. Options for parents are: (1) to also give siblings a special time during treatment times, e.g. playing on the iPad or computer; (2) to ask the other parent or grandparents to entertain siblings and (3) to do treatment times while (young) siblings are asleep during the day. [...]*

At the end of each training module, a print package summarises the main information of that training module in PDF documents (see Appendix G). The print package in training module 3 includes reminder notes for parents to conduct their daily treatment conversations. Findings of the problem-solving study showed that organising treatment times each day can be problematic due to busy lifestyles, preschool/day-care attendance or the presence of siblings. A visual reminder can be helpful for those families.



A finding of the problem-solving study, mentioned previously, was that ... *choosing appropriate activities involves therapeutic thinking and clinical problem-solving [...]*. To help parents choose activities, a list of activities is provided in training module 3 (included in the print packages, see Appendix G). The list includes types of books, activities based on picture description and other activities and games. It also gives advice on where parents can borrow toys, books or games.

9.3 LESSONS LEARNED FROM INTERNET-BASED HEALTH INTERVENTIONS



9.3.1 The virtual speech pathologist

In the early stages of development of the program, it was decided to include a virtual speech pathologist, for example in videos and audios (see Chapter 5). Who the virtual speech pathologist would be was only decided at later stages. Based on Anderson's reports (2009) that characteristics, particularly the level of expertise, matter in an Internet-based health program (see Chapter 3), it was decided that the researcher would be the virtual speech pathologist. In psychotherapy, certain relationship factors seem to correlate with client outcome, even more than treatment type (Lambert & Barley, 2001). Characteristics that are likely to contribute to positive client-clinician relationships in psychotherapy include experience, honesty, respect, interest, alertness, friendliness, warmth and openness. Affective techniques include exploration, depth, reflection, support, facilitation of affect expressions, understanding and attending to client experiences (Ackerman & Hilsenroth, 2003). The researcher tried to incorporate these characteristics and techniques in her role as virtual speech pathologist.

The virtual speech pathologist assists parents throughout the Internet Lidcombe Program in acquiring specific therapy techniques. This is referred to as *guidance contact* (see Talbot, 2012, Chapter 3). The physical presence of a clinician is not required for teaching parents behavioural principles (see Giudice, as cited in Matson et al., 2009; Heifetz, as cited in Matson et al., 2009, Chapter 4); the virtual speech pathologist is represented in pictures, videos and audio recordings throughout the Internet Parent Training. The frequent appearance of the virtual speech pathologist aims to make the program more personal and welcoming, for example in:

- a picture on every page, briefly instructing what parents need to do.

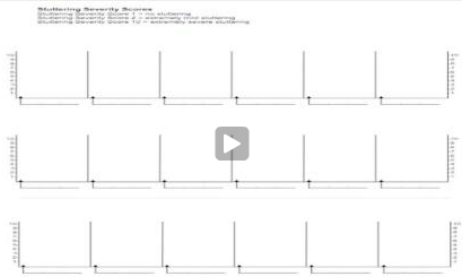
PRINT | PROGRAM MAP | LOGOUT




 Click on the button in the middle of the video screen. You will learn how to use the stuttering chart.

MODULE 2 - SCORING STUTTERING SEVERITY

- Aim of Module 2
- How to Score Stuttering Severity
- Stuttering Severity Scores
- Your Turn: Scoring of Stuttering Severity
- Your Turn: More Scoring of Stuttering Severity
- Stuttering Chart
- Parent-O-Meter
- Action Plan
- Print Package

The Stuttering Chart



 1:28

[Click here for a severity chart or find it later in the Print Package.](#)

[Back](#) | [VIEW PROGRESS](#) | [Continue](#)

- in audio recordings that accompany text-based pages that can be downloaded for later use. A bar at the right bottom allows parents to pause the audio recording.

DOWNLOAD AUDIO | PRINT | PROGRAM MAP | LOGOUT

THE UNIVERSITY OF SYDNEY

Listen or read the text.

MODULE 3 - SMOOTH TALKING TIMES (ACTIVITIES AND CONVERSATIONS)

Aim of Module 3 ✓

What is Smooth Talking Time? ✓

Activities for Smooth Talking Times ✓

More Activities for Smooth Talking Times ✓

And More Activities for Smooth Talking Times ✓

Activities you Have at Home ✓

Natural Conversations ✓

Conversation with the Child - Short Answers ✓

Welcome to Module 3. The aim of this module is to:
 train you to do activities and have conversations with your child that are necessary for Smooth Talking Times

This module will:

- explain what Smooth Talking Times are
- demonstrate activities and ways to have conversations as for Smooth Talking Times
- help you think about appropriate activities you have at home (as for Smooth Talking Times)
- help you think about ways to have a conversation as for Smooth Talking Times
- help you identify why activities and/or conversations may need to be adjusted during Smooth Talking Times
- ask you to do an activity and have a conversation with your child as for Smooth Talking Times

VIEW PROGRESS

▶

- in videos to explain and demonstrate.

The screenshot shows a web application interface for 'MODULE 1 - RECOGNISING STUTTERING'. At the top, there are links for 'PRINT', 'PROGRAM MAP', and 'LOGOUT'. Below this is the University of Sydney logo and a user profile picture. A callout box above the video player says 'Click on the button in the middle of the video screen to watch a demonstration of prolongations.' The main content area is titled 'Prolongations' and features a video player with a play button and a progress bar. The video player has a 'Back' button on the left and a 'Continue' button on the right. Below the video player is a 'VIEW PROGRESS' button. The left sidebar contains a list of module items, each with a green checkmark indicating completion: 'Aim of Module 1', 'Repetitions', 'Prolongations', 'Blocks', 'Additional Stuttering Behaviours', 'Stuttering or Not?', 'Your Turn: Recognising Stuttering', 'Make a Video', 'Parent-O-Meter', and 'Action Plan'.

9.3.2 Automated email messages

Reminder emails are essential in Internet-based programs (see Chapter 3). An automated email system therefore operates once parents start the Internet Parent Training. This email system includes two types of emails: compliance (reminder) emails and monitoring emails. Figure 9.2 illustrates these two email systems. The emails are colour-coded to simplify the systems: orange and red emails are compliance emails, blue and purple are monitoring emails.

9.3.2.1 The compliance email system

Orange emails are sent 4, 7 and 14 days after the most recent parent log-in. The

emails have a link to the program. If parents log back in to the Internet Parent Training, the compliance email system restarts and sends an orange email 4, 7 and 14 days after the last log-in. If parents fail to log back in to the training upon receiving the orange emails, a red email is sent 28 days after their last log-in. Parents can respond in three ways to the red email:

- they may not respond to the email. Their password will expire 48 hours after the red email was sent.
- they can click the link back to the Internet Parent Training. The compliance email system restarts and sends an orange email 4, 7 and 14 days after the last log-in.
- they can click the link to explain why they decided not to continue with the Internet Parent Training. It would not be realistic to expect all parents to finish the Internet Parent Training. Pursuing the reasons for discontinuation is useful for evaluating the program and to predict real expectations for its use. The World Health Organization identifies five dimensions that may be related to program discontinuation: health system factors, socio-economic factors, therapy-related factors, condition-related factors and patient/client-related factors (Adherence Full Report, retrieved from http://www.who.int/chp/knowledge/publications/adherence_full_report.pdf). The Internet program questions are based on these factors. Such data could give insight in why parents did not complete the Parent Training. Parents can permanently leave the Internet Parent Training or discontinue for a short while. If they leave the training, their password becomes inactive. If they temporarily discontinue, red emails are sent every 4 weeks. The third red email announces that there is no further access but parents are invited to restart the Internet Parent Training at a more convenient time.

Parents who discontinue can re-register to the Parent Training at a later point in time, but they will have to start the training from the beginning again. More details are provided in

Figure 9.2.

9.3.2.2 The monitoring email system

Another email system operates upon completion of training module 2 for parents who choose to monitor their child's stuttering for some time. Blue emails are sent every 4 weeks and have a link that brings parents to a questionnaire. Parents are asked about their child's stuttering and receive personal recommendations, similar to the questionnaire in the Introduction of the Internet Parent Training. Parents are then asked to take the decision to:

- continue with the Internet Parent Training. A link brings parents to training module 3 to complete the remainder of the Internet Parent Training.
- leave the Internet Parent Training. Parents are asked the reasons for their decision and their password becomes inactive.
- monitor the child's stuttering a little longer. Parents receive blue emails every 4 weeks. The compliance email system operates in addition to the monitoring email system for these parents. If parents do not respond to a blue email, compliance emails (orange and red) are sent. Parents can decide to monitor their child's stuttering up to nine blue emails. The timeframe of nine blue emails corresponds with at least 36 weeks and is considered an appropriate time (after stuttering onset) to start treatment. This is based on the knowledge that a proportion of children recover from stuttering without treatment (Yairi & Ambrose, 1999; Reilly et al., 2013) and on the finding that waiting for up to a year after onset is unlikely to affect treatment outcome (Kingston et al., 2003) Then a purple email is sent with only two options: continue or leave the Internet Parent Training.

Figure 9.2

Automated Emails of the Internet Parent Training

During Introduction, training modules 1 and 2

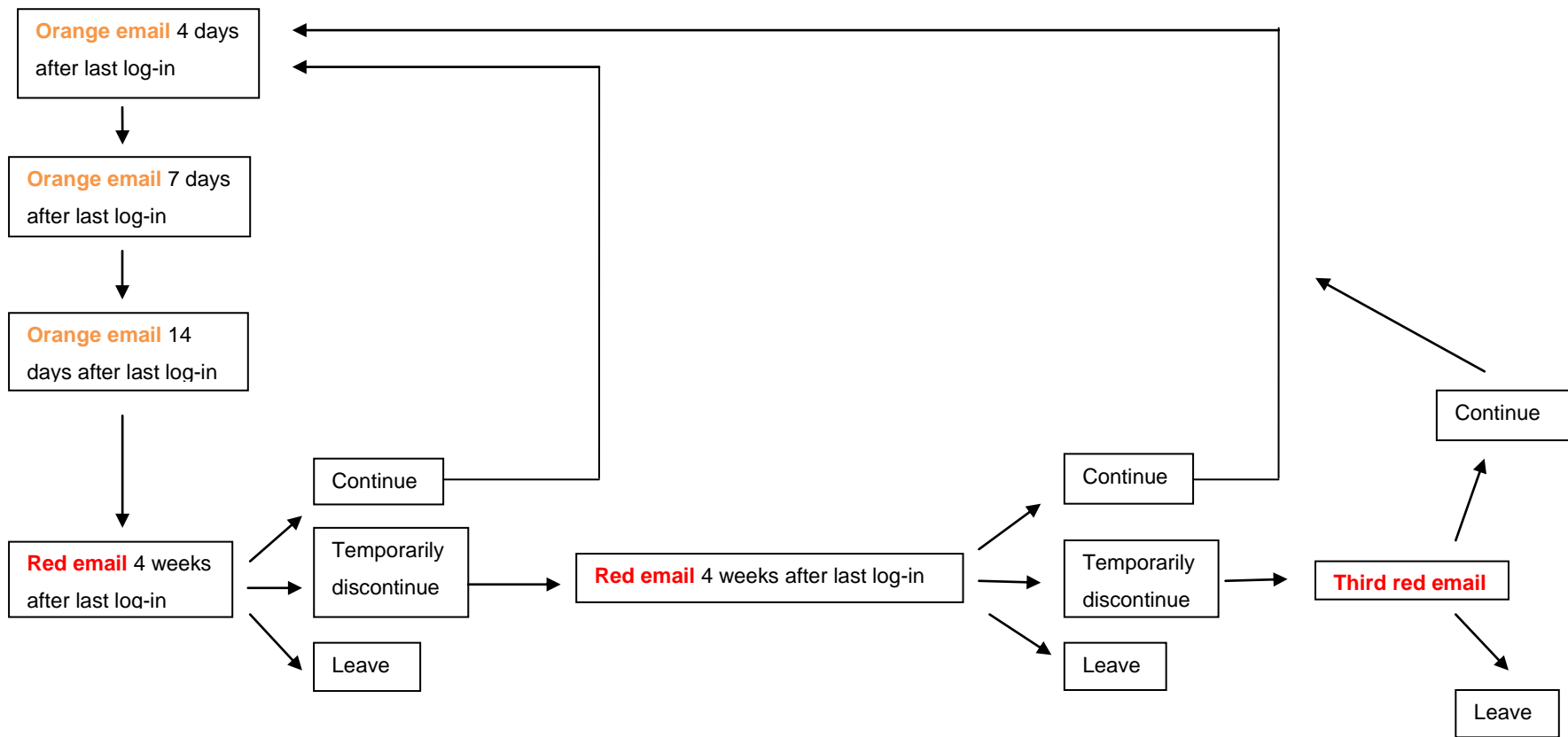


Figure 9.2 cont'd

Automated Emails of the Internet Parent Training

For option to start treatment, during training modules 3 and 4

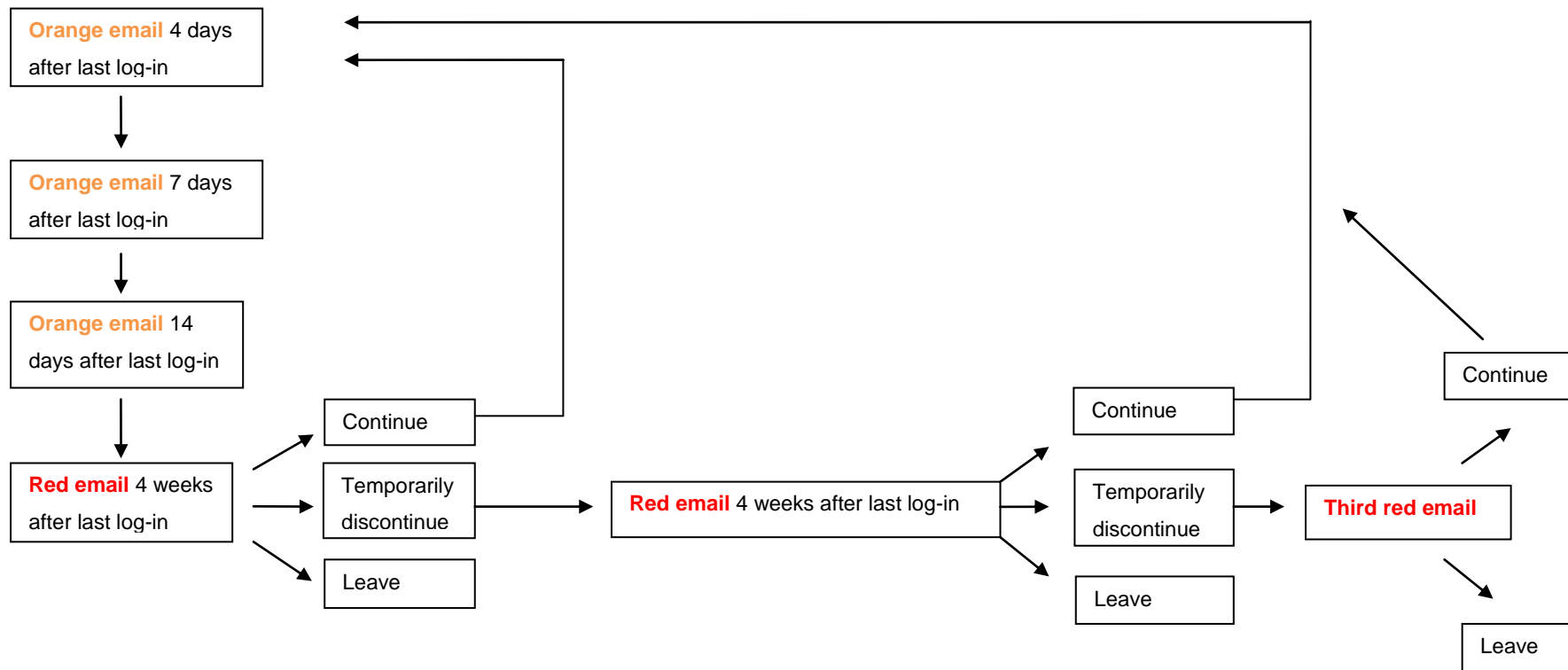
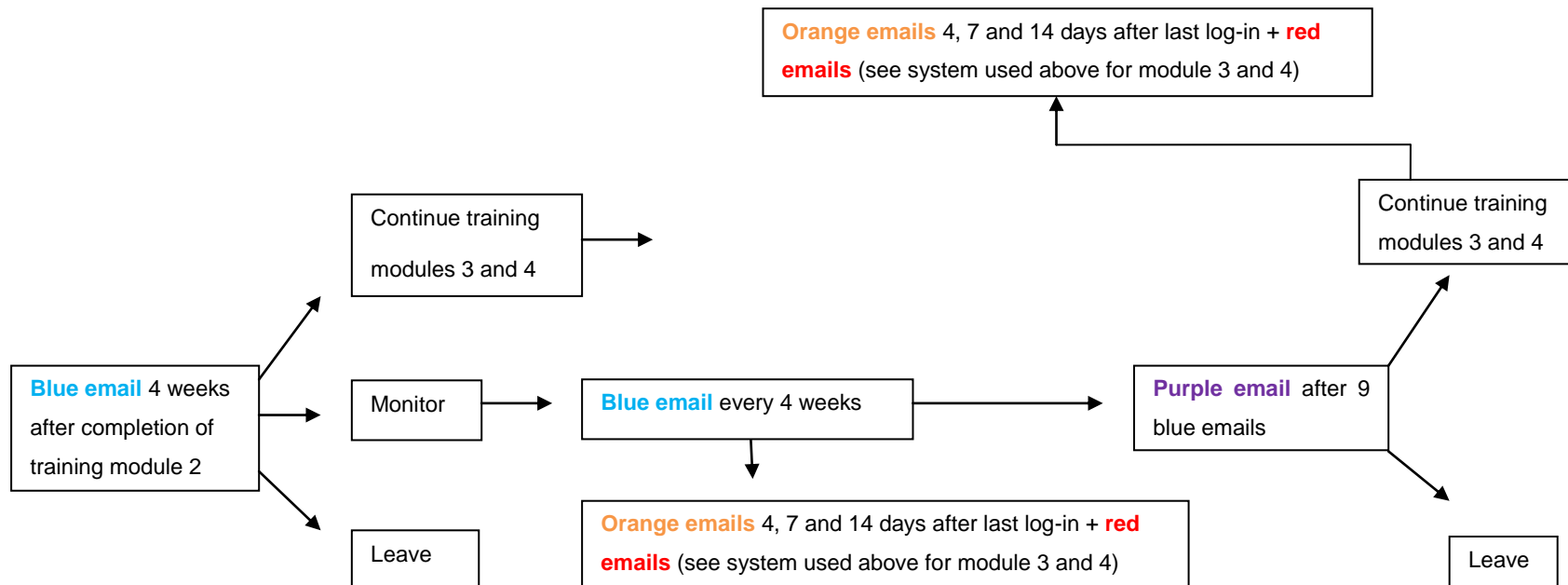


Figure 9.2 cont'd

Automated Emails of the Internet Parent Training

For option to monitor



9.3.3 Content-related factors

The review of Internet-based health interventions (Chapter 3) revealed that defining expectations, tailoring information and offering a wide variety of behaviour change techniques are likely to increase effect size and adherence (Christensen et al., 2009; Evers et al., 2003; Webb et al., 2010). These aspects were taken into account when developing the Internet Parent Trainings and are illustrated in subsequent paragraphs.

9.3.3.1 Defining expectations

Users need to be given realistic expectations regarding treatment outcome (see Chapter 3) and about the time it is likely to take them to complete the program (Christensen et al., 2009). In the Introduction, parents receive information about the Internet Parent Training (Part 1 in the picture) and the Internet Treatment (Part 2 in the picture):

Welcome	✓
Set-Up of the Program	✓
About the Lidcombe Program	✓
Aim of the Program	✓
FAQ	✓
Some Basic Advice	⊙
Deciding When to Start	✓
Information You Need	✓
Print Package	✓
Action Plan	✓
Introduction Completed	✓

Some Basic Advice about Doing the Internet Lidcombe Program

PART 1

- Take your time to go through this introduction and the training modules in Part 1 of the program.
- Expect the training to take at least a couple of hours. However, you can take breaks during this time.
- Make sure the gaps between your log-ons to the program are not longer than a few days. Emails will be sent to remind you if you are away from the program for longer than this.
- Practise at home what is listed in the Action Plans at the end of each training module but remember that this is not the program itself yet.

PART 2

- Expect Stage 1 of the program to take at least 3 months and probably longer; Stage 2 may last up to a year.
- The program may take longer for children whose stutter is more severe.
- You will need to invest time to do this program, especially in Stage 1. You will be asked to sit down with your child for about 15 minutes and to record scores every day. The program also requires you to log on every week once you started Part 2.

Back Continue

VIEW PROGRESS

A large amount of background theory seemed to have a positive impact on the effect size (Webb et al., 2010). Parents who do the Internet Parent Training therefore receive information about the Lidcombe Program:

INTRODUCTION

- Welcome ✓
- Set-Up of the Program ✓
- About the Lidcombe Program ✓
- Aim of the Program ✓
- FAQ ✓
- Some Basic Advice ✓
- Deciding When to Start ✓
- Information You Need ✓
- Print Package ✓
- Action Plan ✓
- Introduction Completed ✓

About the Lidcombe Program

Research has shown that the Lidcombe Program works better for children younger than 6 years of age.

The Lidcombe Program is a program developed for **young children (under 6 years of age) who stutter**. Parents learn to do the program with their child in everyday situations. Only parents who have completed the 4 training modules go on to work directly with their child.

In the Lidcombe Program, parents learn how to:

- recognise and score their child's stuttering.
- give their child the opportunity to talk more fluently during 'Smooth Talking Times'.
- plan daily Smooth Talking Times **in the child's everyday environment**.
- use certain **Lidcombe Program procedures** during these Smooth Talking Times.

This is **Stage 1** of the Lidcombe Program. Parents are **supported** throughout Stage 1. When children are at a very low level of stuttering, they progress into **Stage 2**. By then parents know how to evaluate their child's stuttering and they know what to do if their child's **stuttering reappears**.

About the Research

The Lidcombe Program has been developed and researched at the [Australian Stuttering Research Centre](#), at the University of Sydney. A lot of research has been conducted into the Lidcombe Program when a parent works with a speech pathologist. In research studies it has been shown to be a **safe** program that reduces stuttering in preschool aged children. Results from the earliest research and more background information about the Lidcombe Program are published in the handbook 'The Lidcombe Program of Early Stuttering Intervention: A Clinician's Guide' (written by Mark Onslow, Ann Packman and Elisabeth Harrison in 2003). It assists speech pathologists in conducting the Lidcombe Program in the clinic. In this Internet Lidcombe Program, the computer takes the place of the speech pathologist. Some modifications have therefore been made, for example a different terminology is used.

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and about stuttering and the Lidcombe Program in 16 Frequently Asked Questions:

The screenshot shows a web interface for 'Frequently Asked Questions about Stuttering in Young Children and the Lidcombe Program' from The University of Sydney. The page has a blue header with the university logo and a small photo of a woman. A text box in the header explains that clicking on a question reveals the answer, and clicking again hides it. The main content is organized into a table with a navigation column on the left and a content column on the right. The navigation column lists various sections, most of which are marked with a green checkmark, indicating they are completed. The 'FAQ' section is marked with a blue checkmark. The content column displays a list of questions, each with a right-pointing arrow indicating it can be expanded. The first question, 'What is stuttering?', is expanded, showing a detailed answer. The answer states that stuttering is not unusual in children under 5 years old in Australia, with up to 11% starting to stutter. Most (about 75%) will recover without professional help, though it may take years. It notes that it's not possible to predict if a child will recover, but girls are more likely to recover naturally than boys. The page ends with a 'VIEW PROGRESS' button.

The most essential information is provided as fixed text and audio recordings in the Internet Parent Training. Extra information is available in hypertext behind bold words, links, clicks or PDF documents in the print packages.

9.3.3.2 Tailoring information

Tailored information is generally accepted as an important factor of Internet-based health interventions (see Kelders et al., 2012, Chapter 3). A distinction was made between

tailored information and corrective feedback in the construction of the Internet Parent Training. Tailored information is the personalised advice given to parents in certain situations, whereas corrective feedback is personalised feedback based on parent input, such as in exercises. Tailored information is provided in the Internet Parent Training on two occasions: when parents are asked to decide whether their child should start the Lidcombe Program (Introduction) and when parents are instructed to organise daily treatment conversations with their child (training module 4).

The decision that parents need to make in the Introduction about whether to start treatment, monitor the child's stuttering or leave the Internet Lidcombe Program is based on the informed choice model, explained in Chapter 5 (5.5.3.2). Parents who do the Internet Parent Training are asked to answer 17 questions. They receive tailored information on 15 questions (six are related to the parent/family and nine to the child's stuttering). Two questions are purely informative questions for the researcher and her team about the use of the program. The tailored information on the 15 questions is presented on the pages *General Information* and *Program Advice*. *General Information* explains several topics, such as possible cultural differences for managing stuttering and conducting the Lidcombe Program, the relationship between gender differences and stuttering, and what parents could do if they or the children are concerned about the stuttering.

An example of *Program Advice*, tailored to a (hypothetical) young boy of between 6 and 8 years who started to stutter between 6 and 12 months ago, is given here:

INTRODUCTION	
Welcome	✓
Set-Up of the Program	✓
About the Lidcombe Program	✓
Aim of the Program	✓
FAQ	✓
Some Basic Advice	✓
Deciding When to Start	✓
Information You Need	✓
Print Package	✓
Action Plan	✓
Introduction Completed	✓

Information You Need to Help You Decide When to Start

Some tips and advice for you are listed here, based on your answers to the previous questions. Please read them carefully. You will need this information to help decide whether to continue with the program. You may be advised to start the program with your child now, to start monitoring your child's stuttering for a few more weeks or to leave this program and contact a speech pathologist. In the action plan at the end of this introduction, the program will ask you what you have decided based on this information.

General Information

This program has been developed for children under the age of 6 years. Some children who are older, however, have responded well to clinic-based Lidcombe Program. Keep this information in mind if you start the program with your child. Watch closely how your child progresses. Stop the program immediately and contact a speech pathologist if you have any concerns.

No difference has been found in the way boys and girls respond to the Lidcombe Program.

Children often are distressed by their stuttering and this is understandable. Reactions can vary from feelings of frustration, to covering their mouth or changing the way they talk. The best thing you can do at this time is to listen to what your child has to say. Ignoring stuttering is not helpful; talk to your child about the stuttering in a sympathetic way e.g. discuss what has happened, how s/he felt, that feeling this way is normal, that s/he still can say what s/he needs to say and that you will be doing something to help very soon.

Many parents are distressed by their child's stuttering and/or worry about the child's future. This program will help you feel better because you learn how to help your child talk more fluently.

It is possible that the program has advised you to contact a speech pathologist for more advice or to leave the program. If you received such advice, you should do so now. If you did not receive such advice, you can proceed to the 'Program Advice'.

Program Advice

Your child has been stuttering for a while now. As you may know, about 75% of children who start to stutter recover without treatment within a few years. Research indicates that waiting up to a year before starting treatment does not affect how well a child responds to the program.

- If your child is 2 or 3 years old, it would be better to wait and watch the stuttering a little longer. It is not known if the Lidcombe Program is effective for children who are 2 years old or younger. It is also important to know that children who are (nearly) 4 or older usually respond better than younger children. In training modules 1 and 2 of the program, you will learn how to monitor your child's stuttering. The program will support you further in this process.
- If your child is (nearly) 4 or older, it is recommended to start this program now. You will learn how to have 'Smooth Talking Times' with your child in training modules 1 to 4.

For some children it can take several months before stuttering goes away or reduces to a very low level of stuttering in all situations. As is the case in every long-term process, there will be difficult moments from time to time. Research has shown that many parents experience a range of feelings when doing the program (they may feel proud, responsible, rewarded, uncertain, lost, anxious, desperate). This is often directly related to how well their child is progressing. This program will help you through these moments.

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Training module 4 anticipates two common obstacles of organising daily treatment in structured conversations: having siblings around and having a hectic family life. Information in response to these two topics is only semi-tailored, as parents will receive more individually tailored information when followed up on this topic in the Internet Treatment.

The semi-tailored information at the end of training module 4 is given here:

Aim of Module 4	✓
Verbal Feedback for Fluent Speech	✓
Your Turn: Labelling Verbal Feedback for Fluent Speech	✓
Your Turn: Thinking about Verbal Feedback	✓
Your Turn: More Thinking about Verbal Feedback	✓
Your Turn: And More Thinking about Verbal Feedback	✓
Your Turn: Final Thinking about Verbal Feedback	✓
Extra Tips to Organise Smooth Talking Time	✓
Your Turn: Dos and Don'ts for Smooth Talking Times	✓
Your Turn: More Dos and Don'ts for Smooth Talking Times	✓
Smooth Talking Time: Putting Module 3 and 4 Together	✓
Parent-O-Meter	✓
Action Plan	✓
Print Package	✓
Module 4 Completed	✓

Extra Tips to Organise Smooth Talking Time

You now know a lot of what is involved in Smooth Talking Times. You will soon start to have Smooth Talking Times with your child for about 15 minutes once a day. Even though you may already play games or look at picture books with your child regularly, fitting the Smooth Talking Times into the daily routine of your household may be challenging. You may be busy with work, family commitments and/or other things. Here are some tips to help you organise your day to fit in Smooth Talking Time.

Some general tips:

To start with, it may help to do a Smooth Talking Time at a specific time during the day, for example immediately after breakfast. It is important for your child to realise that Smooth Talking Time is now part of the daily routine. Times will need to vary later on in the program, but for now it is OK to have them at times that are convenient for you and your child.

Distractions such as TV, radio, computer or phones should be avoided or minimised during Smooth Talking Time. Smooth Talking Times should not be done during an exciting activity or within a noisy environment (for example when friends are coming over) because your child will most likely be distracted. Your child needs to be alert and interested during Smooth Talking Times.

Some more individualised tips:

▶ I think it will be easy to fit Smooth Talking Time into my day.

▶ I don't think it will be easy to fit Smooth Talking Time into my day because of work, preschool, day care or other commitments.

▶ I don't think it will be easy to fit Smooth Talking Time into my day because other young children in the household may interrupt us.

It may be hard for you to organise Smooth Talking Time when siblings are around. They can distract your child during Smooth Talking Time. Try not to involve other children in Smooth Talking Time, especially at first, so that you and your child can focus on the activities and on smooth talking. It can be challenging to keep siblings quiet during your child's Smooth Talking Time. Some siblings do not understand that they should not be included and may interrupt. You could:

- Set up another activity for them while you are doing Smooth Talking Time with your child
- Plan a Smooth Talking Time when they are having their nap
- Ask other adults (e.g. grandma, partner) or an older sibling to take care of the younger ones while you do Smooth Talking Time with your child

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9.3.3.3 Offering a variety of behaviour change techniques

Webb et al. (2010) found better outcomes for Internet-based health programs that included a great variety of behaviour change techniques, such as facilitation of problem-solving, relapse prevention and action plans (see Chapter 3). Some of these techniques are presented in the Internet Parent Training, for example action plans, but techniques are mainly included in the Internet Treatment.

9.4 LESSONS LEARNED FROM ADULT EDUCATION

9.4.1 Media-based training

As discussed in Chapter 4, media-based training, including computer-based training, was found to result in similar or better learning outcomes than other training formats (Kashima et al., as cited in Matson et al., 2009; MacKenzie & Hilgedick, 2008), and modelling and role-playing in addition to verbal instructions were the most powerful techniques (Hudson, 1982). Hence, the technique most frequently used in the videos of the Internet Parent Training is modelling. Videos show parents and children who model correct and incorrect scenarios.

The preschool age children who stuttered were recruited through the ASRC. Suzy (fictitious name) was recorded for nearly all demonstrations because her stuttering characteristics were extremely well suited to the program content. Jason (fictitious name) was included in training module 2. The faces of both children were pixelated to de-identify them.



The parents who model Lidcombe Program components with their children in the last two training modules were associated with the ASRC and were colleagues, partner or friends of the researcher.



9.4.2 Accommodating learning differences

The learning process can be seen as a three-layer model representing instructional learning format, learning style and cognitive personality style (see Curry, 1983, Chapter 4). An attempt was made in the Internet Parent Training to accommodate as many different learning preferences at these three layers as possible. Four instructional learning formats, that is, visual, aural, reading/writing and kinaesthetic (Fleming, 1995; Fleming & Baume, 2006) were included in the Internet Parent Training. Examples for each instructional format are given in Table 9.1.

Table 9.1

Examples of Instructional Formats in the Internet Parent Training

Instructional format	Examples
Visual	Videos, picture and text box virtual speech pathologist, parent-ometers, stuttering severity scale, pictures of parent-child dyads.
Aural	Audio recordings of text displayed on the web pages.
Reading/ Writing	Print packages, text displayed on the pages, hypertext, writing tasks in exercises.
Kinaesthetic	Action plans at the end of each training module, dragging feedback labels in exercise, active involvement required in video exercises, reflection of own activities in exercises, reflection about types of questions that have short and longer answers, dos and don'ts.

Compromises needed to be made to accommodate different learning styles and cognitive personality styles. As mentioned previously, the Internet Parent Training was constructed in a linear, sequential way. Linearity was applied to the sequence of the training modules and to the content within each training module. The sequence of the training modules is straightforward: parents must complete training module 1 before they can start training module 2 and so on, because the content builds up progressively. A page is not accessible if the previous page is not completed, such as when parents have not completed the exercises. The linearity within each training module can be found in the teaching sequence. In each training module, a new treatment component is (1) introduced and demonstrated, (2) practised under program guidance and (3) transferred to the parent's own situation. To accommodate other learning styles and cognitive personality styles, certain tools were added, including an overview of the content, extra links and a progress bar.

9.4.3 Internet-based teaching techniques

Typical Internet-based teaching techniques (case-based learning, problem-based learning, just-in-time learning, self-assessment and reflection, and self-directed learning) were implemented in the Internet Parent Training. Chapter 5 generally introduced how these teaching techniques would be included in the Internet Parent Training. Concrete illustrations are provided in this chapter.

9.4.3.1 Case-based learning

Case-based learning is an important teaching technique in the Internet Parent Training because it provides demonstrations from the *real* world. In the first two training modules, cases were based on preschool age children who stutter. The last two training modules include parent-child cases and focus on parent actions. The children in the videos of the last two training modules did not stutter.

In training module 1, parents see a demonstration of Suzy, whose stuttering consists of repetitions, prolongations and blocks. In training module 2, the videos of stuttering severity are case-based (Suzy and Jason). Also case-based are the video demonstrations of the parent-child pairs that show how activities can be used in Smooth Talking Times (training module 3) and how verbal contingencies for stutter-free speech are provided (training module 4).

9.4.3.2 Problem-based learning

In contrast, problem-based learning uses a problem to explain a topic (see Chapter 4). In training module 1, parents learn about ambiguous stuttering through a problem-based video. Problem-based videos can require active involvement of the learner, and this is the case in training modules 3 and 4. Eleven problem-based videos in training module 3 help parents learn how to adjust treatment conversations to the needs of their child, and parents are asked to identify the adjustments. Four videos in training module 4 teach parents about

giving verbal contingencies for stutter-free speech during treatment conversations, by using videos with intentionally incorrect parent actions. Parents are asked to detect the reasons for these incorrect parent actions. The scripts of the case-based and problem-based videos of training modules 3 and 4 are displayed in Appendix H.

9.4.3.3 Just-in-time learning

The action plans at the end of each training module are examples of just-in-time learning because they give just enough advice to practise the learned skills. The skills that parents are expected to practise build on previously learned skills. They accumulate progressively as parents proceed further through the Internet Parent Training.

In training module 4, only verbal contingencies for stutter-free speech during treatment in structured conversations are introduced because the researcher and her team considered this to be the safer option. The other verbal contingencies will be introduced just-in-time later in the Internet Treatment, when certain conditions are fulfilled.

9.4.3.4 Self-assessment and reflection

Self-assessment and reflection are necessary techniques to improve learning outcomes (see Chapter 4). These techniques are embedded in many places in the Internet Parent Training. For example, to conclude the video demonstrations of repetitions, prolongations and blocks in training module 1, the virtual speech pathologist asks parents to listen to their own child to know if the stuttering behaviour shown in the video is part of their child's stuttering.

In a video in training module 1, parents are asked to identify types of stuttering behaviour. Similarly, in a video in training module 2, parents are asked to rate stuttering severity. Both requests allow parents to reflect.

Several exercises require reflection, including the exercise in which parents are asked to write down toys and games they have at home and could use for treatment, the

exercise in which parents practise questions that have short and longer answers (training module 3) and in the exercise in which they need to label verbal contingencies (training module 4).

The parent-o-meters encourage self-assessment of parents' emotional status and the final page of each training module includes self-assessment of their skills.

9.4.3.5 Self-directed learning

The concept of self-directed learning (see Chapter 4) is incorporated in the Internet Parent Training. In general, the Internet Parent Training does not have a fixed attendance obligation. Parents can choose (within limits) when they log in to continue with the training. In that sense, parents are free to direct their learning, or at least its pace.

The general approach taken in the Internet Parent Training often leaves parents the freedom of choosing how thoroughly they want to explore a topic. The essential content is clearly presented on the page, but extra information is often available, such as in hypertext.

More concrete examples of self-directed learning opportunities are given to parents throughout the Internet Parent Training. In training module 1, parents are invited to make a video of their child to improve their skill of identifying stuttering. Videos in training modules 1 and 2, in which parents are asked to identify stuttering and score stuttering severity, require self-directed learning. Videos in training module 3, in which parents show how treatment conversations can be adjusted, are based on self-directed learning: parents are invited to recognise the changes before the virtual speech pathologist explains them. Similarly, in training module 4, videos in which parents give verbal contingencies invite parents to identify why parent actions were incorrect before the virtual speech pathologist explains it. An interactive, non-competitive quiz at the end of training module 4 (Dos and Don'ts for Smooth Talking Times) is also based on this concept (Appendix F), as well as action plans and print packages at the end of each training module (Appendix G).

9.4.4 Internet-based instructional applications

In addition to using Internet-based teaching techniques, Cook et al (2010) found that certain instructional applications increased learning outcome (see Chapter 4). He found that a high degree of interactivity, the quantity of exercises and the level of feedback impacted positively on learning outcome. These were generally introduced for the design of the Internet Lidcombe Program in Chapter 5 and are illustrated here.

9.4.4.1 Degree of interactivity

The level of interactivity is high throughout the Internet Parent Training. Hypertext and links are embedded frequently in the content throughout the training modules and parents are asked to interact with the program in various ways, such as by watching videos, listening to audios, dragging and dropping, and writing. Cook et al. (2010) found three ways to enhance the degree of interactivity: using self-assessment questions, requiring active responses to (case-based) questions and using example cases with intentional errors. These methods are all used in the Internet Parent Training:

- Self-assessment questions are used in the parent-o-meters and on the final page of each training module.
- Active responses are required in exercises, e.g. *Practise the questions* in training module 3 or *Labelling the feedback* in training module 4. The exercises are shown in Appendix F.
- Example cases with intentional errors are used in *Your turn – Thinking about Verbal Feedback* in training module 4 (scripts of these videos are displayed in Appendix H).

9.4.4.2 The quantity of exercises

Giving parents the opportunity to practise is the main activity of the teaching sequence within each training module (introduction/demonstration – practice – transfer). For example, 11 videos are provided in which parents practise how to adjust treatment

conversations to their child's stuttering severity.

9.4.4.3 The level of feedback

More intensive feedback seems to result in better learning outcome (Cook et al., 2010, see Chapter 4). Corrective feedback is essential in a process where new information is introduced, to reinforce learning or to encourage reflecting about new information. Learners need corrective feedback to move to the next step in the learning process, but also to strengthen their feelings of self-confidence. Even though corrective feedback is important in Internet-based interventions, many programs do not seem to provide it (Helgadottir, Menzies, Onslow, Packman & O'Brian, 2009). In the Internet Parent Training, corrective feedback is given when parents are required to interact with the program when they practise their skills. This corrective feedback appears as written messages, such as in the exercise of thinking about which questions have short and longer answers and in the Dos and Don'ts, or as spoken messages, as in the videos where parents are required to identify stuttering behaviour, to rate stuttering severity, to identify why treatment conversations are adjusted or why parents do not provide verbal contingencies correctly.

9.5 CONCLUSION

The construction of the Internet Parent Training site has drawn extensively on the findings of the problem-solving study to achieve high-quality simulations of speech pathology tasks of informing, training, evaluating and problem-solving in the Internet Parent Training. The Internet Parent Training has also incorporated many factors that are reported to increase adherence to and efficacy of Internet-based interventions, as well as Internet-based teaching techniques and applications to maximise learning outcomes.

SECTION V

FEASIBILITY STUDY OF THE INTERNET PARENT TRAINING

CHAPTER 10 FEASIBILITY STUDY OF THE INTERNET PARENT TRAINING

10.1 INTRODUCTION

This chapter reports on the feasibility study that was conducted to find out whether the Internet Parent Training prepares parents to deliver the Lidcombe Program, by helping them acquire the knowledge and skills necessary to treat their stuttering child. In addition to this, the study investigated how parents used and experienced the Parent Training. The aim of the study, then, was to identify whether changes to Part 1 of the Internet Lidcombe Program were needed. The study evaluated, 1) the extent to which participants understood stuttering and the basic principles of the Lidcombe Program after completing the Parent Training, 2) the extent to which participants could identify and rate their child's stuttering after completing the Parent Training, 3) how participants experienced the Internet Parent Training, 4) the extent to which participants completed the Internet Parent Training, and 5) how participants and treating speech pathologists experienced the subsequent commencing of the Lidcombe Program at the clinic.

10.2 METHOD

10.2.1 Study design

It was necessary to assess the Internet Parent Training for its feasibility and whether it had weak points. Mixed methods, that is, quantitative and qualitative data collection and analysis methods, were considered to be the most appropriate way to conduct this study. Using mixed methods allowed use of the most appropriate methods to assess various aspects of participants' learning, attitude and experiences. More details of the data collection and analysis methods are given in relevant sections later in this chapter.

A protocol and related documents were developed and ethics approvals were

obtained from the University of Sydney and from the South Western Sydney Local Health District on December 21, 2012 to conduct the study with eight participants (see Appendix B).

10.2.2 Recruitment

Participants were recruited from three sites: the ASRC, the Stuttering Unit in Bankstown and the private practice of Dr Isabelle Rousseau. One participant was recruited at the ASRC, six at The Bankstown Stuttering Unit which is part of the South Western Sydney Local Health District, and one at the private practice of Dr Isabelle Rousseau, who specialises in preschool stuttering and has worked for more than 15 years with the Lidcombe Program.

10.2.3 Participants

Inclusion criteria for the eight participants of the study were: (1) parent of a preschool age child who stutters and is about to begin treatment with the Lidcombe Program; (2) aged 18 - 45 years; (3) fluent in English; (4) no significant visual or auditory impairment; and (5) easy access to a computer with Internet. Exclusion criteria were that the child who stutters has (1) had stuttering treatment prior to this trial; and (2) a concomitant disorder that has an impact on the child's speech and/or language, including but not limited to intellectual disability, hearing loss, language disorder, other speech disorder or behavioural disorder.

The characteristics of the eight participants are displayed in Table 10.1. All participants were married and lived with their spouse; this information was therefore not included in the table. Seven participants were mothers; one was a father. Four of the children were girls; four were boys. All but one participant was employed. Level of education attained by the participants varied from no tertiary degree to a masters degree.

Table 10.1

Participant Characteristics

Participant	Gender	Age (y/m)	Highest level of education achieved	Employment status	Child's gender	Child's age (y/m)
1	F	34y 5m	College diploma, certificate	Full time	M	5y 0m
2	F	36y 5m	Bachelor's degree	Part time	F	3y 9m
3	M	35y 11m	College diploma, certificate	Full time	F	4y 7m
4	F	32y 1m	Completed some university/college but not graduated	Part time	F	4y 2m
5	F	38y 9m	Master's degree	Part time	M	3y 10m
6	F	28y 7m	Completed some university/college but not graduated	Unemployed	M	3y 3m
7	F	30y 5m	Bachelor's degree	Full time	F	4y 6m
8	F	37y 7m	College diploma, certificate	Full time	M	4y 8m

10.2.4 Procedure

10.2.4.1 Pre-trial procedure

Participants were recruited by speech pathologists at one of the three sites when the participant's child was assessed for stuttering. Participants gave their consent to participate in this project, which included being video recorded with their child during evaluation (Appendix B). They provided the speech pathologists with their telephone number and email address. The speech pathologists contacted the researcher and passed on the participants' details. The researcher emailed or phoned the participants to explain the study in more detail if necessary, and gave instructions and access to the Internet Parent Training.

Participants were given 1 month to complete the trial, which they could do at their own pace, that is, they were not obliged to log in once a week. Reminder emails were sent to encourage participants to log in regularly to the Internet Parent Training. Participants were asked to contact the researcher when they had completed the Internet Parent Training.

10.2.4.2 Post-trial procedure

Once participants had completed the Internet Parent Training, they were invited to travel with their child to the ASRC. The researcher contacted the referring speech pathologists at the sites to confirm the initiation of the Lidcombe Program with each participant's family immediately after the evaluation visit at the ASRC. Continuing the Lidcombe Program with a speech pathologist was believed to be essential for the participants and the children.

A research assistant organised the evaluation visit at the ASRC. The evaluation of the Internet Parent Training occurred through four tasks that participants had to perform. Three tasks were performed during the evaluation visit at the ASRC. A PowerPoint presentation guided the participants through these three tasks and the research assistant supported them when they needed more assistance. The research assistant asked

participants to enter a room in which a small table, some chairs and a shelf with books and toys were installed. While the child played a little, participants were asked to complete three tasks. The fourth task was executed a few weeks after they had initiated the Lidcombe Program at the clinic where they were recruited.

The outcome measures of this study were obtained using mixed methods. The quantitative data included the numeric outcome measures, for example counts of correct responses or stuttering occurrences, and duration of log-ins. They were analysed using descriptive statistics. The qualitative data were the participants' reports and conversations about how they experienced the Internet Parent Training. They were grouped and reported.

10.2.4.2.1 Knowledge of stuttering and Lidcombe Program components

Participants were asked 10 knowledge-based multiple choice questions, to ascertain what they remembered from the program. They were also asked to watch seven videos and to answer a number of questions about what they saw in the videos. Those videos were similar to the videos in the Internet Parent Training and showed parents adjusting treatment conversations appropriately (three videos) and providing verbal contingencies correctly and incorrectly (four videos). Thus there were 17 questions in total (Appendix I). Eleven of the 17 questions had only one correct answer (item) among the choices. Six of the 17 questions had several correct items among the choices. The instructions of these six questions clearly stated that more than one item could apply. The numbers of correct items in the 17 multiple choice questions are represented in Figure 10.1. The total number of correct items was 27.

Figure 10.1

Correct Items (n) in the Questions

<u>Knowledge questions</u>		<u>Video questions</u>	
Questions (n/N)	N of correct items	Questions (n/N)	N of correct items
7/10	1	4/7	1
2/10	3	3/7	2
1/10	4		
	Total correct items		Total correct items
	17		10

The numbers of items correctly answered by the participants were compared to the total number of correct items (27) in the 17 questions.

10.2.4.2.2 Identifying stuttering and scoring stuttering severity

Participants were asked to have a conversation with their child while talking about pictures in a book or while playing. This conversation was video recorded. While having the conversation, participants were instructed to press a light when they thought their child stuttered. After about 10 minutes or 300 syllables, participants scored their child’s stuttering severity using the Lidcombe Program 10-point scale. Two specialist speech pathologists (the researcher included) watched the videos afterwards and assigned %SS and SRs for these conversations.

The stuttering occurrences identified by the participants were compared with the stuttering occurrences identified by the specialist speech pathologists (%SS measures). One stuttering specialist identified the types of stutters that appeared in the child’s speech during the 10-minute conversation in the video. The participants’ SRs were compared with the SRs of the two specialist speech pathologists. Identical SRs and SRs that differed by one scale score were considered to be reliable (Onslow et al., 2003; Packman et al., 2014).

10.2.4.2.3 Participant experiences of doing the Internet Parent Training

Participants answered 15 questions about technical aspects (four questions), the content of the program (seven questions) and their feelings about the Internet Parent Training (four questions). Examples include: *Did you experience any difficulty watching the videos? Were the instructions for each task clear? Was Part 1 of the program helpful in understanding your child's stutter better?* The questions were yes/no questions with space for more information if needed, or open-ended questions. The questions for this task were presented in a booklet (Appendix I).

The experiences of the participants immediately after completion of the Internet Parent Training were grouped and reported.

10.2.4.2.4 Usage data

Usage data, including frequency and duration of participants' log-ins, were automatically recorded when participants logged in to the Internet Parent Training. The obtained usage data were analysed using descriptive statistics.

10.2.4.2.5 Participant and speech pathologist experiences of commencing the Lidcombe Program at the clinic

After completing the Internet Parent Training, participants started the Lidcombe Program with their child at a clinic with a speech pathologist. The researcher contacted the participants and the speech pathologists by telephone after 2 to 3 weeks to assess how they experienced commencing the Lidcombe Program at the clinic. She asked the participants five and the speech pathologists eight questions designed to detect potential weak points in the Internet Parent Training, for example, *Did you misinterpret things from the training but the speech pathologist told you how to do it? What are the weak points, that is, where did parents need more support?* (Appendix J). The researcher asked the participants and speech pathologists if she could record the telephone conversation digitally. She used the

recordings to transcribe the conversations and then deleted them. The experiences were grouped and reported.

10.3 RESULTS

10.3.1 Participants

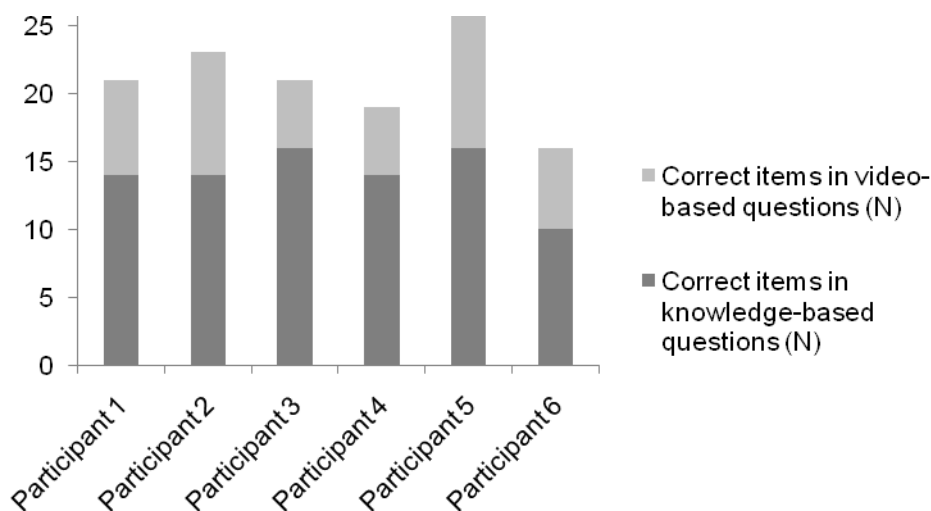
Two participants did not complete the trial (participants 7 and 8) because of time constraints. One of them specified that the accumulation of events including changing to full-time employment status, having a parent hospitalised and managing three children under the age of five prevented her from continuing with the program.

10.3.2 Knowledge of stuttering and Lidcombe Program components

The participants' numbers of correct items answered in the questions compared with the total of 27 correct items are displayed in Figure 10.2.

Figure 10.2

Correct Items (N) per Participant



More than 82% of the items (14/17 items correct or more) were answered correctly in the 10 knowledge-based questions by all but one participant. This participant (participant 6)

had a score of 58.8% (10/17 items correct). This participant was bilingual, with English as her second language.

Only two of the 10 knowledge-based questions were answered correctly by all participants. These questions were (1) how often SRs should be given and (2) how often treatment should be organised. The question about what SR participants would assign if their child did not stutter during the entire day was answered incorrectly by four participants. Also four participants incorrectly included the general verbal contingency *Good boy/girl* as a possible verbal contingency for stutter-free speech.

There was greater variation among the answers for the video-based questions. In these videos, parents and children demonstrated adjustments of treatment conversations and correct and incorrect ways to provide verbal contingencies. The number of correct items answered in the questions varied from 50% to 100% (percentages based on a total of 10 correct items). Interestingly, the two participants with the highest total scores on the video-based questions had the highest levels of education. These two participants were also slightly older than the other participants. However, the difference between the total scores of these two participants and the total scores of the other participants was small (Figure 10.2). All but one participant ticked incorrect items in addition to correct items for four questions.

In conclusion, participants demonstrated knowledge about stuttering and the Lidcombe Program, based on the number of correctly answered items.

10.3.3 Identifying stuttering and scoring stuttering severity

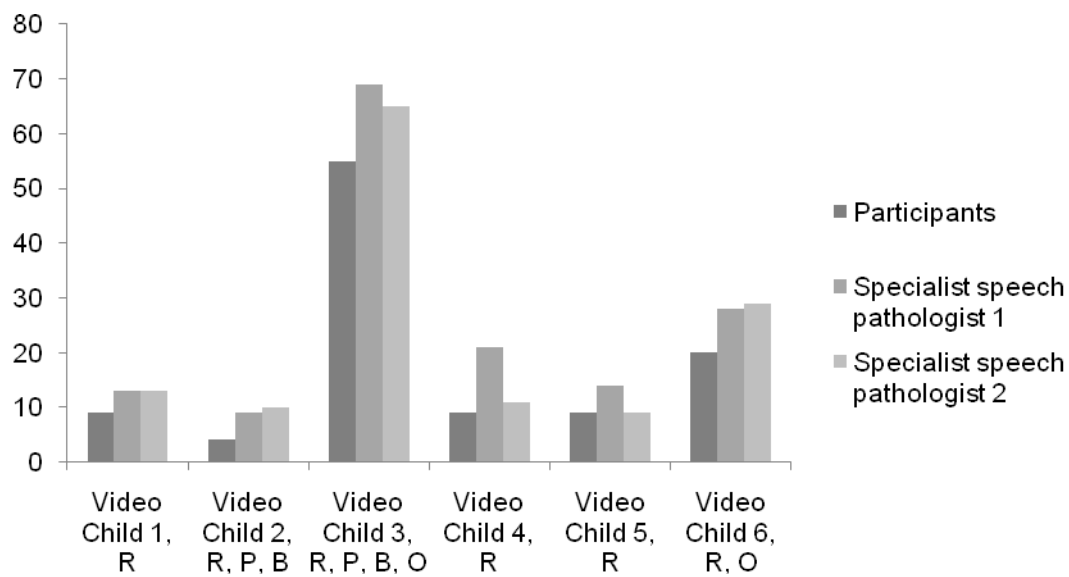
10.3.3.1 Identifying stuttering

The number of stuttering occurrences identified by participants and specialist speech pathologists is displayed in Figure 10.3. This figure also displays the types of stuttering behaviour that were observed by the stuttering specialist in the conversations recorded on video. The number of stuttering occurrences identified by the participants was compared

with the average number of stuttering occurrences identified by the two specialist speech pathologists. The percentages based on these numbers are displayed in Figure 10.4.

Figure 10.3

Stuttering Behaviour (N) Identified by Participants and Specialist Speech Pathologists



R = Repetitions

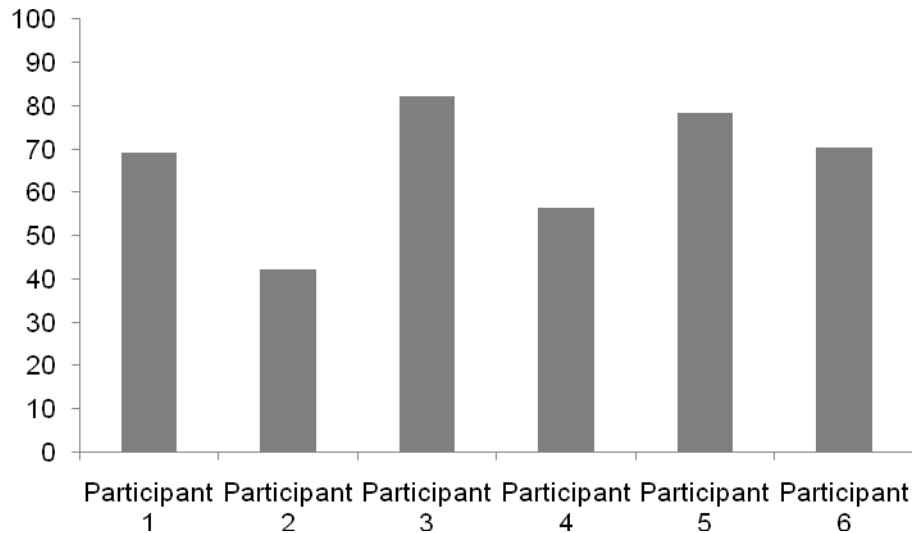
P = Prolongations

B = Blocks

O = Other stuttering behaviour

Figure 10.4

Stuttering Behaviour (%) Identified by Participants



The percentage of stutters identified by participants 1, 3, 5 and 6 was high, with around 70% or more of the stutters recognised. It must be noted that the light in the video of participant 6 was obstructed for the viewer for a few seconds. During this short time, the researcher counted five stuttering occurrences. The real percentage for this participant was therefore probably higher than 70.2%.

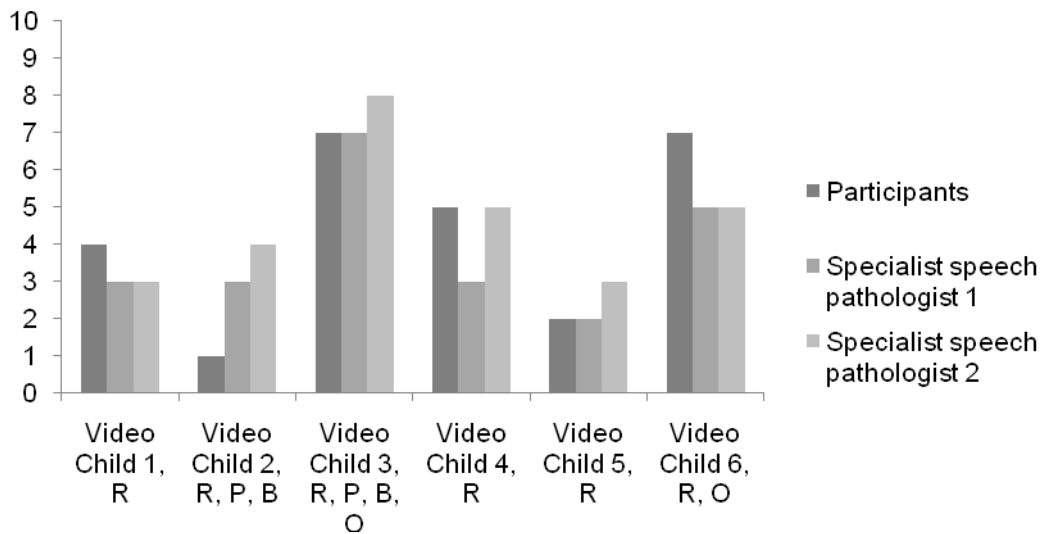
Participant 2 identified only around half of her child's stutters. This child presented with stuttering behaviour that was difficult to recognise because it was subtle. Participant 4 recognised just over half of her child's stuttering. This score was affected by disagreement of the specialist speech pathologists in identifying stuttering occurrences (Figure 10.3). According to the specialist speech pathologists, this child used behaviour to disguise her stuttering including singing, syllabic talking and special voices, which may have complicated the identification. Disagreement between identification of stuttering occurrences by using the %SS measure is known to be common, for up to one quarter of measurements (Bothe, 2008). In general, stuttering severity did not seem to affect the ability of participants to identify stuttering, nor did the type of stuttering behaviour.

10.3.3.2 Scoring stuttering severity

The SRs of participants and specialist speech pathologists are presented in Figure 10.5.

Figure 10.5

Participant and Specialist Speech Pathologist SRs



R = Repetitions

P = Prolongations

B = Blocks

O = Other stuttering behaviour

The SRs of participants 1, 3 and 5 corresponded with the SRs of the two specialist speech pathologists. The specialist speech pathologists did not agree on the SR of participant 4 and assigned a score that differed by two scale scores. However, participant 4 agreed with one of these SRs. As mentioned before, the disguising behaviour of the child may have contributed to the disagreement between the specialist speech pathologists. Surprisingly, participant 2 assigned SR1 (no stuttering), even though she was able to identify several stuttering occurrences. This participant thought that no stuttering corresponded to

SR0, as was noticed in her answers to the knowledge-based questions. Participant 6 assigned SR7 to the stuttering of her child whereas the two specialist speech pathologists gave it SR5.

Identifying and scoring stuttering seemed unrelated to participants' level of education. Even though the participant with the highest level of education recognised most of her child's stuttering, the participant with the second highest level of education did not recognise half of her child's stuttering.

In conclusion, four participants recognised most stuttering during a conversation with their children, and four gave reliable SRs for their child's stuttering. Subtle stuttering seemed difficult to recognise and one child's disguising behaviour probably affected its identification.

10.3.4 Participant experiences of doing the Internet Parent Training

The questions related to the technological aspects of the Internet Parent Training revealed that all participants found the Internet Parent Training user-friendly. Three participants reported having experienced difficulty streaming the videos. Two participants solved this problem by watching the videos at times other than in the evening, because it was then that they experienced the difficulty. One participant was unable to solve the problem despite intensive problem-solving with the researcher. Finally, the researcher sent the participant the videos on DVD. This participant reported that she was frustrated because she had set aside time to do the Internet Parent Training and the videos did not work. This participant also mentioned a problem in an exercise in training module 3, which the researcher helped her solve.

Other participants reported that going back to previous modules to review videos was easy and that reminder emails were useful. One participant reported wanting more videos.

Participant reports about the content of the Internet Parent Training were similar. They all found the instructions, the aims and the virtual speech pathologist's explanations of

the Internet Parent Training clear. One participant did not know what to expect from the Internet Treatment and expected to continue with that part of the program. One participant complained that the voices in the videos were not 100% clear. The print packages were found useful and no suggestions for improvement were given.

All participants reported that they enjoyed the Internet Parent Training and that they understood the stuttering of their child better as a result. In relation to the latter, participants reported that they were now more aware of different types of stuttering behaviour and of various treatment techniques, and reported that they understood the mechanics of stuttering better. None of the participants found it difficult to make the decision at the end of the Introduction and training module 2 about whether they would continue the program or monitor their child's speech for some time. No suggestions for improvement were given.

10.3.5 Usage data

The usage data obtained from the Internet Parent Training are presented in the following figures. Figure 10.6 represents the total amount of time participants logged in during the study, including participants 7 and 8 who dropped out of the trial. Figure 10.7 represents how often and on how many days participants logged in to the Internet Parent Training. Finally, Figure 10.8 represents the time between first and last log-ins and between last log-in and the evaluation visit at the ASRC.

Figure 10.6

Total Time (hours)

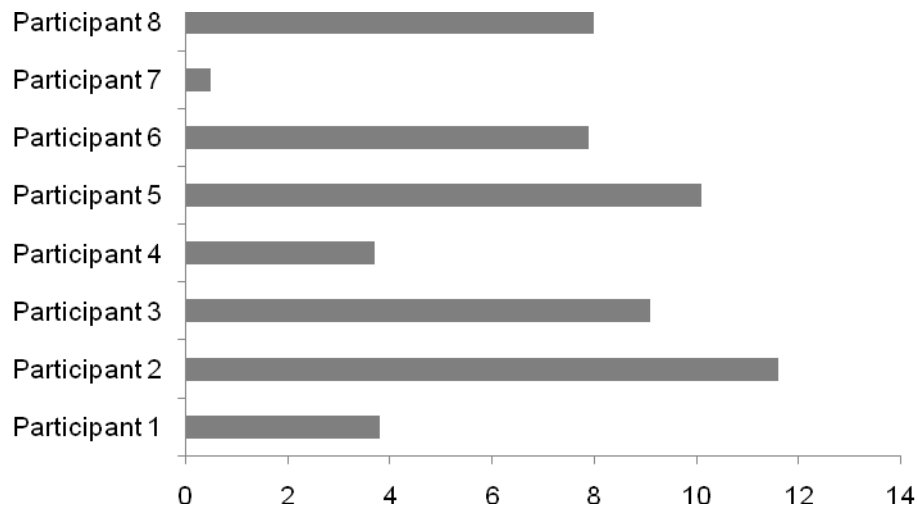


Figure 10.7

Frequency of Log-ins

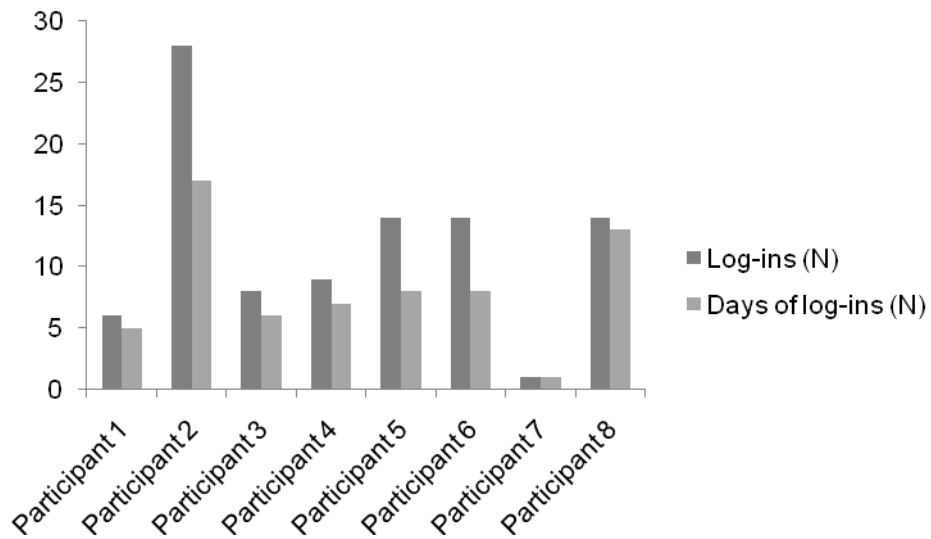
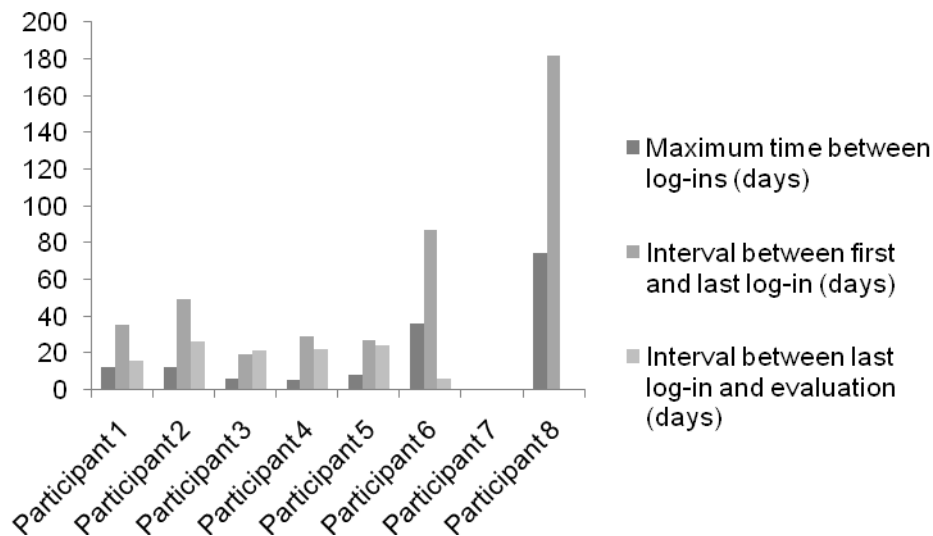


Figure 10.8

Interval Between Log-ins and the Evaluation Visit



Participants 7 and 8 did not complete the training. Participant 7 logged in once, only for half an hour. Participant 8 asked after 2 weeks to restart the Internet Parent Training at a later more convenient time. She restarted the program 10 weeks later, which resulted in a large time interval between her first and last log-in. When the researcher contacted her to announce the end of the trial, she had spent more than 8 hours in the Internet Parent Training. The usage data of these two participants are included in the analysis but are not further discussed in detail as the participants did not complete the training.

Participant 2 experienced difficulty streaming the videos. She made many attempts to log in, which may have affected the total time and number of days to complete the program. As mentioned previously, the researcher provided the videos on a DVD. Even though the participant watched the videos from the DVD, she continued to log in, to complete the exercises and to proceed through the program. Hence, her usage data were still obtained.

The total duration of completing the Internet Parent Training was nearly 4 hours for two participants and varied from nearly 8 to more than 11 hours for four participants. However, the significantly shorter duration in which participants 1 and 4 completed the

program was not reflected in their knowledge or skill outcomes compared with the other participants.

All participants, except participant 2, logged in between 6 and 14 times and completed the Internet Parent Training on 5 to 8 different days. The maximum time interval between log-ins was 36 days. Participant 6 had indicated in the program that she wanted to monitor her child's speech and therefore did not log in for some time. Once she continued the program, time intervals were more regular again. The other time intervals ranged between 5 and 12 days between log-ins.

Reminder emails were not sent by default in the beginning of the trial. When the researcher found out that they were not sent, the problem was solved, but this could have affected the time interval between log-ins at the beginning of the trial.

The participants completed the Internet Parent Training in 19 to 87 days. Participant 6, who had indicated that she would monitor her child for some time, spent 87 days to complete the program. Participant 3, who completed the program in 19 days, had individual log-in times that were longer than the log-in times of the other participants.

The time between last log-in and evaluation visit at the ASRC did not vary greatly and the small differences did not seem to affect participants' achievement in the evaluation.

10.3.6 Participant and speech pathologist experiences of commencing the Lidcombe Program at the clinic

The questions were designed to detect how participants and treating speech pathologists experienced implementing the Lidcombe Program with the knowledge and skills acquired in the Internet Parent Training, and to identify potential weaknesses of the Internet Parent Training.

The telephone conversations revealed that participants agreed that consulting a speech pathologist after they had completed the Internet Parent Training was useful to affirm

their abilities of recognising stuttering behaviour and scoring the severity of their children's stuttering. Three participants specifically reported the desire to consult a speech pathologist. Their reported reasons were (1) high SRs, (2) not feeling confident about identifying stuttering and (3) the need to know more about how to implement treatment conversations. Three participants thought it was useful to see a speech pathologist but would have been happy to continue the program on the Internet if they had not had the option to consult a speech pathologist.

The treating speech pathologists reported that two participants benefited from receiving additional information about subtle stuttering behaviour, and two about secondary stuttering behaviour. Two participants were confused about requests for self-evaluation. They provided this verbal contingency after stuttering, even though it should be provided exclusively after stutter-free speech. This is a surprising result given that the contingency was demonstrated correctly in the Internet Parent Training videos. In general, the participants who identified most of their child's stuttering provided the verbal contingencies correctly.

Four participants benefited from expanding on the topic of treatment conversation strategies. This is not surprising as treatment conversation strategies were introduced only generally in the program. How treatment conversations are implemented and adjusted will be followed up carefully in the Internet Treatment.

All participants seemed confident about knowing how to implement most of the Lidcombe Program components. They were able to ask their speech pathologist specific questions because they had the necessary background of stuttering and the Lidcombe Program. The treating speech pathologists reported that they needed only to fill in the gaps during the first clinic visit.

10.4 DISCUSSION

10.4.1 General

The Internet Parent Training is the first part of the Internet Lidcombe Program and aims to prepare parents for delivery of the Lidcombe Program to their child at home. It is vital that the Internet Parent Training is an effective, high-quality parent training package, because parents in the Internet Lidcombe Program will not be able to consult a speech pathologist to help them when doing the program. Evaluation of participant knowledge, skills and experiences after completion of the Internet Parent Training was necessary in order to know the power of the Internet Parent Training and potentially to optimise it.

Doing the Internet Parent Training seemed to be a positive experience for the participants. All participants enjoyed it and reported being better educated about stuttering and the Lidcombe Program. They experienced the Internet Parent Training as user-friendly and easy to navigate. Training outcome was evaluated through knowledge, skills, usage data and experiences and revealed gains of knowledge and skills. Participants also reported feeling more confident about implementing the program components. Participants spend from nearly 4 to more than 11 hours to complete the Internet Parent Training.

Evaluation data from the questions in the booklet revealed three potentially weak points of the Internet Parent Training. Firstly, four participants thought that the appropriate SR for no stuttering was SR0 despite the emphasis put on this topic in the Internet Parent Training. It could be queried whether this is a problem specifically related to the Internet Parent Training or related to the Lidcombe Program in general. It is logical to use a zero score to indicate the absence of a behaviour. It may be worthwhile investigating this in further detail. The two other weak points were related to providing verbal contingencies. Four participants regarded *Good boy/girl* as a correct verbal contingency and two participants seemed confused about providing requests for self-evaluation of stutter-free speech. The Internet Parent Training may need to be modified to clarify these three potentially confusing

points.

One of the inclusion criteria was that participants needed to be fluent in English. Participant 6 was bilingual, but the speech pathologist who recruited this participant judged her English to be fluent. It may be questioned if this participant's outcome could have been affected by her bilingualism, because she had the lowest outcome score on the questions and had decided to monitor her child's stuttering for some time instead of continuing with the program.

Evaluation of experiences after having initiated the Lidcombe Program at the clinic revealed that participants needed more information about subtle and secondary stuttering behaviour. The need for extra information about subtle stuttering behaviour is rather surprising because the video demonstrations of Suzy in the Internet Parent Training (all video demonstrations in training module 1 and nearly all in training module 2) show subtle behaviour. Adding videos will not guarantee better outcome, as videos do not replace good teaching; it only contributes to learners' satisfaction (Cook & Dupras, 2004). Stuttering appears in different shapes and adding videos won't guarantee that parents can recognise the stuttering behaviour of their child in the videos. More videos of children who demonstrate secondary stuttering behaviour won't be included in the Internet Parent Training as it is not considered correct to expose children who stutter with secondary behaviour on the Internet. Further research will need to show whether more focus is necessary in order to achieve better understanding of these two types of stuttering behaviour. If adding videos of children displaying subtle stuttering is indicated, the Internet Parent Training will be adjusted accordingly. At this point in time, it was considered sufficient to simply present a suggestion to consult an experienced speech pathologist to confirm one's skills in identifying stuttering behaviour at the completion of final training module 4, to ensure satisfactory skill prior to commencing the Internet Treatment.

It is not surprising to find that the participants' level of education might have affected

how well they understood the content of the Internet Parent Training. However, the impact was not pronounced because the difference between participants' total knowledge scores was small. Levels of education did not seem to affect participant skills of identifying stuttering behaviour or scoring stuttering severity, because the participant with the second highest level of education did not identify half of her child's stutters, whereas the participant with the lowest level of education identified 70.2% of her child's stutters. It must be noted however, that the participant group was too small to draw definite conclusions about the relationship between level of education and knowledge of stuttering and the Lidcombe Program after completion of the Internet Parent Training. Other factors, such as distractions caused by the child while participants answered the questions, could have influenced participants' performance and were not included in the analysis of the results.

Four participants identified 70% or more of their child's stuttering. This finding is considered to be sufficient to start the Internet Treatment. Firstly, it should not be expected that participants be able to achieve similar accuracy levels to those of specialist speech pathologists. Secondly, participants are expected to optimise this skill during the first few weeks of doing the Lidcombe Program, which was also reported in the problem-solving study (see Chapter 7 and 8). Finally, the Lidcombe Program clearly instructs to provide verbal contingencies only for unambiguous stutter-free speech and unambiguous stuttering, and the 70% or more of stuttering behaviour identified accurately by participants is considered sufficient for delivering the Lidcombe Program.

It is well known that reminder emails have a large impact on adherence to Internet-based interventions (Christensen et al., 2009; Kelders et al., 2012; Webb et al., 2010, see Chapter 3). At the start of the program, most participants progressed slowly and the researcher detected that the automated reminder emails were not being sent to participants due to a technical problem. Once this defect was rectified, participants logged in more regularly. This experience, as well as the comments of two participants on the usefulness of reminder emails, are evidence of the power of reminder emails.

It is generally accepted that dropout rates are higher in stand-alone parent training (Hudson et al., 2003; Matson et al., 2009, see Chapter 4) and Internet-based interventions (Rosser et al., 2009, see Chapter 3). In this study, two participants were unable to complete the Internet Parent Training. The reported reason was time constraints, which is a common reason for dropout (Christensen et al., 2009). Specifically to stuttering, natural recovery could also be a predicted reason for dropout. It is known that children can recover soon after stuttering onset (Reilly et al., 2013; Yairi & Ambrose, 1999). Therefore, it can be expected that not all parents who start the Internet Lidcombe Program will feel the need to complete it.

A similar study of a stand-alone, Internet-based parent training for parents of preschool age children was that of Wainer and Ingersoll (2013, see Chapter 3) for children with autism spectrum disorders. They conducted a feasibility study, based on three participants, with promising results. One participant in their study needed extra coaching upon completion of the training to achieve fidelity of implementation. In our study, one participant needed extra coaching in identifying her child's stuttering in order to correctly rate stuttering severity and provide verbal contingencies. Other participants benefited from being reinforced by a speech pathologist for scoring their child's stuttering severity and for providing verbal contingencies after completion of the Internet Parent Training, but they did not require it in order to correctly implement these treatment components. The findings of this study are similar to those of Wainer and Ingersoll.

10.4.2 Strengths

The main strength of this study is that the Internet Parent Training seemed to result in increased understanding of stuttering and of the Lidcombe Program, at least for the participants of this study. Most participants could recognise 70% or more of their child's stuttering and could reliably score their child's stuttering severity. The participants who completed this Internet Parent Training showed that they had acquired adequate background information about stuttering and the Lidcombe Program components. The

participants and their treating speech pathologists indicated that being reinforced for skills and receiving extra information on certain topics was beneficial. Most of these topics, however, are planned to be followed up more carefully in the Internet Treatment.

Another strength is how the Internet Parent Training was evaluated: the assessment of participants' learning was comprehensive. Collecting quantitative and qualitative data maximised the potential to find weaknesses in the Internet Parent Training. Not only did the use of mixed data collection methods increase the explorative power of the study, it also allowed the researcher to specifically choose the data collection method that was best suited to the type of data. For example, experiences were reported in open-ended questions and during telephone conversations, whereas demonstration of skills was captured on video recording and identified in video-based questions.

10.4.3 Limitations

One limitation of this study is that participants were not evaluated for their technological skills prior to starting the Internet Parent Training. Even though the training was developed to be user-friendly and straightforward, assessing potential participants' technological skills could have avoided the technological issues experienced by one of the participants.

Another limitation is related to the design of the study. The Internet Parent Training is the first part of the complete program. Hence, expectations of a set of knowledge or skills could not clearly be defined in this study because immediate and thorough follow-up and further training are provided in the second part of the program. Comparing the knowledge and skills of participants after completion of the Internet Parent Training with the knowledge and skills of parents after an initial Lidcombe Program visit at the clinic would not be feasible. This is because, firstly, some Lidcombe Program components that were introduced in the Internet Parent Training were restricted for safety reasons, and secondly, the amount of background information on stuttering and the Lidcombe Program and the choice of treatment

components that are introduced during an initial Lidcombe Program visit at the clinic vary between families, based on their characteristics. Designing this feasibility study was therefore challenging, as was drawing clear conclusions as to what were positive outcomes for the participants who completed this Internet Parent Training and whether the Internet Parent Training succeeded in its aim. The low number of participants, due to the nature of the trial, also had an effect on this challenge.

The stuttering of the participants' children was assessed by a speech pathologist at the clinic where they planned to start the Lidcombe Program with a speech pathologist after participating in this trial. So the participants did not need to independently make the decision about whether they would monitor or start the program. How parents make this decision and whether the information provided in the Introduction of the Parent Training is sufficient to make this decision are aspects that need further investigation when a study is conducted to evaluate the entire program.

A final limitation is related to the usage data obtained from the Internet Parent Training. The researcher could not entirely trust the data. The program has a built-in feature that automatically logs out a user when he/she does not interact with the program for 30 minutes. Log-in times could therefore have been registered while a participant did not continue with the program. For example, log-in durations of participant 8, who did not complete the Internet Parent Training, systematically took about 30 minutes for 12 of the 14 log-ins.

10.5 CONCLUSION

Six participants completed the Internet Parent Training. The feasibility study revealed that all participants felt better informed about stuttering and the Lidcombe Program components. Four participants recognised most of their child's stuttering during a 10-minute conversation and four gave a reliable SR. The usage data revealed that participants varied in the amount of time they needed to complete the Internet Parent Training, with some

needing less than 4 hours, whereas others needed from nearly 8 to more than 11 hours. This, however, did not seem to affect participant knowledge or skills in recognising stuttering and scoring stuttering severity. Participants reported that the Internet Parent Training was user-friendly and that they gained much understanding of stuttering and the Lidcombe Program components.

This trial was intended to evaluate the Internet Parent Training and identified a few areas that could be improved:

- Include extra information about secondary stuttering behaviour;
- Draw more attention to SR1 = *no stuttering* and the non-existence of SR0;
- Increase focus on the need to make verbal contingencies specific to stutter-free speech;
- Explain requests for self-evaluation for stutter-free speech more clearly and/or more often;
- Add a suggestion to physically consult a speech pathologist (preferably a stuttering specialist) at the end of training module 4 if parents do not feel confident in recognising or scoring their child's stuttering, before they continue with the Internet Treatment.

The content of the Internet Parent Training will be updated according to these findings to optimise the program.

SECTION VI
FUTURE DIRECTIONS

CHAPTER 11 FUTURE DIRECTIONS OF THE INTERNET

LIDCOMBE PROGRAM

11.1 OVERVIEW OF THE THESIS

This thesis has reported on the development, construction and trialling of the Internet Parent Training, which is the first part of the Internet Lidcombe Program, and the investigation of problem-solving and construction of this component in the Internet Lidcombe Program. When the Internet Lidcombe Program is constructed and evaluated with clinical trials, the entire Internet Lidcombe Program will be available as the first ever stand-alone treatment for young children who stutter. It will follow as closely as possible the Lidcombe Program as it is currently delivered in the clinic.

In the Internet Parent Training, as reported in this thesis, parents receive information about the program and are trained to identify and score stuttering, organise treatment conversations and provide verbal contingencies. Before designing and building the website for the Internet Parent Training, the researcher reviewed the literature on existing health-based Internet programs and on adult learning. This provided the theoretical background for the design and structure of the program. Incorporating literature findings in the Internet Parent Training resulted in using reminder emails, defining treatment expectations, providing sufficient background information about stuttering and the Lidcombe Program, generating tailored and corrective feedback, offering problem-based videos, case-based videos and a high level of interactivity, and including frequent practice opportunities.

An empirical study was also carried out prior to building the website in order to identify from a variety of speech pathologists, including stuttering experts, (1) treatment problems that parents may face when doing the Lidcombe Program at the clinic, and (2) a wide range of potential solutions for the treatment problems. The findings of the problem-solving study are incorporated throughout the Internet Parent Training, hence ensuring that

treatment advice offered to parents is empirically based. Importantly, after the construction of the Internet Parent Training, a feasibility study was conducted to evaluate it. This feasibility study involved having six parents complete the Internet Parent Training and evaluating the knowledge, skills and experiences that resulted from doing the Internet Parent Training. The implications of the results of the problem-solving study and the feasibility study, conducted in this thesis on the development of the Internet Lidcombe Program, are now discussed in greater detail.

11.2 PROBLEM-SOLVING STUDY

11.2.1 Implications for the development of the Internet Lidcombe Program

The problem-solving study identified treatment problems that parents can encounter when they implement the Lidcombe Program with their child (Part I) and developed potential solutions for them (Part II). The findings of both parts of this study had immediate implications for the development of the Internet Lidcombe Program.

Firstly, parents regularly seem to encounter difficulty in the accurate identification of their child's stuttering and in applying activities and conversational strategies during treatment in structured conversations. This finding supported the construction of separate training modules in the Internet Parent Training in which these treatment components are explained.

Secondly, the researcher could specifically focus on potential treatment problems that parents can encounter during the Lidcombe Program. In the four training modules, emphasis was placed on topics that parents seem to experience difficulty with, including the identification of stuttering behaviour, the stuttering severity scale and organising treatment every day.

The findings of the study formed the clinical foundation in the development of the Internet Lidcombe Program and made possible the construction of a problem-solving tool for

parents in the Internet Lidcombe Program. It is known that parents regularly experience difficulty when implementing the Lidcombe Program components at home (Hayhow, 2009; Goodhue et al., 2010), and most of them need additional support. It may be expected that parents who do the Internet Lidcombe Program may also experience treatment problems beyond their regular interactions with the program. A problem-solving tool that parents can access at any time could provide treatment advice in addition to the personalised advice that they receive during their regular interaction with the program.

On a smaller scale, the terminology used in the Lidcombe Program Treatment Guides (Onslow et al., 2003; Packman et al., 2014) seems to differ from the language that speech pathologists use when explaining the Lidcombe Program to parents in the clinic. One of these terms is *structured treatment* or *treatment during structured conversations*. *Structure* can refer to the type of activity, the conversation strategies, conversation topic, how and how often verbal contingencies are given, treatment location, additional elements to treatment such as including siblings in treatment, and so on. Not surprisingly, the seven speech pathologists in the problem-solving study often replaced the term *structure* with *adjusting*, *shaping* or *controlling* to specify the structure. They talked about *treatment sessions*, *smooth talking times* or *sessional practice* when they referred to *treatment during structured conversations*. They also substituted *treatment during unstructured conversations* with *praise and correction*, and *(online) feedback*. Thus, in explaining the Lidcombe Program to parents in the Internet Lidcombe Program, terminology was made simpler and more transparent.

It was also suggested that the 10-point stuttering severity scale with the three descriptors seems to be too concise for parents. In the Internet Parent Training, then, the researcher chose to work with ranges. Four ranges were explained: (1) no stuttering for SR1, (2) mild stuttering for SR2 and SR3, (3) moderate stuttering for SR4, SR5 and SR6 and (4) severe stuttering for SR7, SR8, SR9 and SR10. Specifications about the frequency and types of stutter, about how other people perceive the stuttering and about how children get their

message across were added to the explanation in the video as well as in the print package (see Appendix G). However, descriptors and specifications were cautiously applied to avoid making the severity scale prescriptive.

Finally, the study highlighted the need to spend time explaining to parents the clinical thinking underpinning the choice of activities for treatment conversations. In some circumstances, parents also need more information about implementing conversational strategies. Because the Lidcombe Program Treatment Guides (Onslow et al., 2003; Packman et al., 2014) only conceptually outline the components of the Lidcombe Program and clinical competence is required to individualise components to each family, it is possible that speech pathologists do not realise the importance of individualising those treatment components. Findings of the study resulted in allocating a training module exclusively to explaining the types of activities and conversational strategies for treatment conversations.

11.2.2 Implications beyond the Internet Lidcombe Program

The most important implication of this study is the potential to change how generalist speech pathologists, that is, speech pathologists who treat many speech pathology disorders including early stuttering, conduct the Lidcombe Program in their everyday speech pathology practice. It is known that many speech pathologists find it challenging to treat stuttering (Eggers & Leahy, 2011). Generalist speech pathologists may not have the opportunity to build expertise in treating children with the Lidcombe Program due to mixed caseloads or workplace restrictions. Knowing about potential treatment problems may change the way generalist speech pathologists introduce Lidcombe Program components to parents in the clinic. For example, generalist speech pathologists may not realise the need to focus on helping parents how to choose treatment activities, or on helping parents to correctly identify stuttering. More indirect components may also require more attention, such as finding ways to incorporate treatment into busy everyday lives or finding a natural way to have conversations with the child while stutter-free speech is maintained.

Despite an evident need, there is a lack of evidence-based problem-solving support for speech pathologists and parents in the Lidcombe Program. Parents need support implementing the Lidcombe Program components, especially when the treatment process is not straightforward (Hayhow, 2009). Speech pathologists who deliver the Lidcombe Program need to problem-solve during the entire treatment process. Hence, a problem-solving tool would be beneficial for both parents and speech pathologists. It could support speech pathologists who are using the clinic-based Lidcombe Program, to assist them at times when they are in doubt or to update their knowledge about Lidcombe Program components. In particular, generalist speech pathologists who have limited experience with early stuttering may find access to the findings of this problem-solving study useful. Also, speech pathologists who deliver the Lidcombe Program in their practice do not always adhere to the researched, clinic-based Lidcombe Program (O'Brian et al., 2013; Rousseau et al., 2002, see Chapter 2). For example, they fail to ask parents to demonstrate. Many of the potential solutions state that *parents should demonstrate [...]*. Reading this may increase speech pathologists' awareness of the need to ask parents to demonstrate. The findings of the problem-solving study could also be made available to parents who experience difficulties in implementing Lidcombe Program components beyond their visits at the clinic. Offering parents this problem-solving support could prevent them from "experimenting" between clinical visits (Hayhow, 2009, p. 22).

The findings of the problem-solving study could be disseminated to speech pathologists in a workshop format. It is known that speech pathologists sometimes need additional support from Lidcombe Program specialists to solve treatment problems of their clients (Harrison et al., 2003). The findings of this study provide the evidence-based content necessary to organise a follow-up Lidcombe Program 1-day workshop in which treatment problems and potential solutions are discussed. Attendees at this workshop should first have completed the initial 2-day Lidcombe Program workshop. Other dissemination formats could be directed to both speech pathologists and parents. The findings could be made available

as reading material, such as a PDF document. The nature of the template in which the findings are presented easily allows transformation into an Internet-based application, similar to the planned problem-solving tool for the Internet Lidcombe Program, and could be linked to the ASRC website.

11.2.3 Future research

Once a problem-solving tool is developed and parents' use of the problem-solving tool in the Internet Lidcombe Program could be tracked and analysed for frequency of use. Those data could give researchers an indication of the most frequently consulted items. That information could increase awareness of problematic areas and supplementary information could be disseminated to speech pathologists during the 2-day Lidcombe Program workshop organised by the Lidcombe Program Trainers Consortium.

After the findings of the problem-solving study have been made available to speech pathologists and parents in the Internet Lidcombe Program and in clinical practice, research could be undertaken to find out whether, how and how often speech pathologists and parents use this problem-solving support. Furthermore, the impact of the problem-solving support on treatment outcome and parent satisfaction levels during the course of the Lidcombe Program and Internet Lidcombe Program could be investigated.

11.3 FEASIBILITY STUDY OF THE INTERNET PARENT TRAINING

11.3.1 Implications for the development of the Internet Lidcombe Program

The feasibility study in which the Internet Parent Training was evaluated has shown that the Internet Parent Training is a viable way to prepare parents for the Internet Treatment (the second part of the Internet Lidcombe Program). As a consequence, the Internet Treatment can be further developed, constructed and trialled.

The researcher assumes that the design and the large number of videos in the last

two training modules, demonstrating Lidcombe Program components related to treatment in structured conversations, may have contributed to the positive outcome of the trial. The design of the videos was case-based and problem-based; parent-child pairs demonstrate treatment components. These demonstrations are realistic representations of parent actions and therefore imperfect at times, leading to opportunities to introduce treatment problems or to discuss potential improvements to the demonstrated parent actions. The large number of videos allows demonstration of several potential treatment problems that were found in the problem-solving study. Similarly in the Internet Treatment, videos will be provided to introduce parents to additional treatment components.

A few points related to the Internet Parent Training are still unclear at this time and may need to be evaluated when the Internet Treatment is constructed. Firstly, the assessment in the Introduction to decide whether to start the program or to monitor the stuttering is not based on direct observation. Even though the process of assessment in the Internet Lidcombe Program is believed to be well thought through, parents must make their own (informed) decision whether to start the program or not, based on the general information and program advice that is tailored to their characteristics and history; this may be a limitation of the stand-alone Internet Lidcombe Program.

Secondly, the impact of only having two children demonstrating stuttering behaviour and severity in the first two training modules of the program needs to be questioned. This limitation was not planned; many children were screened for capture on video to demonstrate stuttering or different stuttering severities, but not many were suitable. Stuttering appears in many forms and severities, and it could be assumed that the limited number of children included in those two first training modules is a weakness of the Internet Parent Training. On the other hand, because stuttering is always different, a child's stuttering will never completely resemble another child's stuttering. Videos of the two children could therefore be sufficient for parents to understand the different types and severities of stuttering and to transfer that knowledge to their own child's stuttering. It is necessary to

follow this up in the Internet Treatment, in order to detect any problems related to the identification of stuttering.

Thirdly, parents who have difficulty rating the stuttering severity of their child due to fluctuations during the day are asked to rate only the period of most severe stuttering. This is a deviation from the Lidcombe Program Treatment Guides (Onslow et al., 2003; Packman et al., 2014). The decision to do this in the Internet Parent Training was made because asking parents to collect and enter multiple SRs is likely to complicate the program extensively. It could be seen as a limitation because the SR of one period of severe stuttering does not reflect a child's stuttering of an entire day. Stuttering fluctuations, however, often decrease over the course of a few weeks of treatment, after which rating stuttering severity for the entire day usually becomes more straightforward. The Internet Treatment will need to guide parents further as to when and how to transition to assigning a SR for stuttering of an entire day.

It may be worthwhile to investigate whether it would be beneficial to ask parents active participation in formulating verbal contingencies. This is not required in the current version of the Parent Training. Including such an activity may result in better conducting treatment conversations.

Finally, it will be necessary to carefully monitor and evaluate the extent and accuracy of parents' learning upon completion of the Parent Training to protect clients from harm. More research is necessary to decide about how this evaluation should be conducted. Furthermore, careful monitoring and evaluation will also need to investigate whether the Internet Treatment can detect and deal sufficiently with the individual differences, needs and expectations of parents and children.

11.3.2 Implications beyond the Internet Lidcombe Program

Given the promising results of the Internet Parent Training, there are some clinical

implications beyond the Internet Lidcombe Program.

If parents of preschool age children who stutter complete this Internet Parent Training prior to commencing the Lidcombe Program with a speech pathologist at a clinic, their confidence is likely to increase and they will be better informed about what to expect from the Lidcombe Program. It can be assured that these parents received high-quality, standardised training. The stand-alone Internet Parent Training does not require the physical involvement of a speech pathologist and the technology that drives it is neither expensive nor complex to use. It is therefore accessible to many families.

It is known that speech pathologists often schedule 30 minute appointments rather than the 45- to 60-minute appointments suggested in the researched format (O'Brian et al., 2013; Rousseau et al., 2002, see Chapter 2). It can be expected that visits take longer at the beginning of the Lidcombe Program process, because more training and explaining are needed during the initial visits. Offering the Internet Parent Training prior to commencing treatment with a family at the clinic could decrease the need for 45 to 60 minute visits at the beginning of the program. This is merely hypothesised at this time; research will be needed to establish it.

The Internet Parent Training is based on adult education and Internet-based learning principles. Even though the Lidcombe Program is a treatment for preschool age children who stutter, speech pathologists work with both parents and children. However, adult education principles are not discussed in the Lidcombe Program Treatment Guides (Onslow et al., 2003; Packman et al., 2014) or in the 2-day workshops organised by the Lidcombe Program Trainers Consortium, unlike other programs for early intervention (see Chapter 4), including the Hanen Program (Girolametto et al., 1994), Enhanced Milieu Teaching (Kaiser et al., 2003) or Pivotal Response Treatments used in autism spectrum disorder programs (Burrell & Borrego, 2012). The lack of attention to dealing with adult learners could explain the known failure of some speech pathologists to ask parents to demonstrate treatment in the

clinic (O'Brian et al., 2013; Rousseau et al., 2002, see Chapter 2). It would be interesting to find out if adding an increased focus on adult education principles during the Lidcombe Program workshop would result in better adherence to the researched format of the Lidcombe Program in everyday speech pathology practice.

Some speech pathologists may be concerned that an Internet-based intervention may replace them. Even though this concern may seem real, speech pathologists should not fear stand-alone, Internet-based interventions but should rather embrace them. The Internet Lidcombe Program has specific advantages compared with the clinic-based Lidcombe Program. One such advantage is that the Internet Parent Training demonstrates many ways that Lidcombe Program components can be implemented, whereas in the clinic, demonstrations are focused on the parent and child only. As a result, parents in the clinic-based Lidcombe Program may not as well be prepared for other situations as those who have done the Internet Parent Training, and they may experience more difficulty implementing the Lidcombe Program components at home. This, again, is only a hypothesised scenario and needs to be supported by research.

11.3.3 Future research

The Internet Treatment is being developed at the time of writing. Once it is complete, the efficacy and safety of the Internet Lidcombe Program will need to be established before it is made available to the public.

Although the Internet Parent Training has been trialled, it should be trialled on a larger scale, such as in a randomised controlled trial, to investigate its impact on treatment outcome in the clinic-based Lidcombe Program. It may also be worthwhile to investigate how the Internet Parent Training impacts on parents' problem-solving skills, parents' level of confidence and parents' satisfaction related to implementation of Lidcombe Program components with their child.

11.4 THE INTERNET LIDCOMBE PROGRAM, FUTURE DIRECTIONS

As part of the entire Internet Lidcombe Program, the Internet Parent Training will be accessible for families who otherwise may be unable to access the Lidcombe Program. It is known that rural families cannot always access the necessary treatment for their children (Ruggero et al., 2012; Wilson et al., 2002, see Chapter 3). Families who cannot afford or are unable to travel to a clinic will also be able to access the necessary treatment. The Internet Lidcombe Program will not require expensive or complex technology for parents of preschool age children or for speech pathologists, and thus will increase the access to the program. Even though some parents might need additional support from a speech pathologist upon completion of the Internet Parent Training, a few visits to a clinic might suffice to give them the necessary support.

Treatment adherence or fidelity is an essential component in evidence-based practice (Kaderavek & Justice, 2010) but often does not seem to be respected in the delivery of the Lidcombe Program (O'Brian et al., 2013; Rousseau et al., 2002, see Chapter 2). Furthermore, treatment outcome was found to be better for children who were treated by a Lidcombe Program Consortium trained speech pathologist. The power of the stand-alone Internet Parent Training suggests standardisation of Lidcombe Program training. Providing such standardised Internet Parent Training would ensure the quality of the training parents receive prior to commencing the Internet Treatment or the clinic-based Lidcombe Program.

Once the Internet Lidcombe Program is developed, trialled and shown to be efficacious, it may be offered as first step intervention with stepped care. Stepped care refers to the provision of a clinical intervention at different intensities, which is often measured as the degree of clinician involvement (Bower & Gilbody, 2005). Usually, interventions with the lowest intensity are offered first, and intensity increases if the outcome is not satisfactory. The system of stepped care aims to increase access to necessary interventions by decreasing the consumption of clinical resources.

Interventions offered in stepped care should be evidence-based. An intervention without or with little clinician involvement may be a stand-alone, Internet-based intervention. The Internet Lidcombe Program will not require speech pathologist involvement; however, it can be expected that limited speech pathologist involvement might be necessary, for example, to assist parents with extra training or for follow-up at certain time intervals via email or telephone. The amount of speech pathologist involvement in the Internet Lidcombe Program will vary depending on factors including family needs and accessibility to the speech pathologist. Speech pathologists will need to step up treatment for the family to a more intensive treatment format in a timely manner if inadequate progress is achieved. Other formats of the Lidcombe Program with more speech pathologist involvement are group-based delivery, telephone-based delivery, webcam delivery and clinic-based individual intervention. The decision to step up to a more intense intervention needs to be taken carefully, based on the situation of the family and speech pathologist.

A last important implication directly related to the Internet Lidcombe Program within a stepped care approach is that speech pathologists may need to receive some training in how the stand-alone Internet Lidcombe Program works and how and when they should step up in order to supervise a client's treatment process optimally. It is known that a reason for non-use of telehealth speech pathology interventions is lack of training in how to use them (Hill & Miller, 2012, see Chapter 3). Hence it can be assumed that appropriate training will also be necessary to use the Internet Lidcombe Program in a stepped care approach. It is known, for example, that mental health care providers are not sufficiently trained to take regular outcome measures to monitor progress (Richards, 2012) but this is essential for deciding when to step up to a more intense intervention. Speech pathologists will need to be instructed in important procedures within a stepped care approach and will need to know which other intense, evidence-based interventions they can step up in treating the client's condition.

11.5 FINAL COMMENTS

Stuttering incidence is greater than previously thought, and no predictions about which children will recover can be made. From an early age, children can experience negative responses because of their stuttering and can be bullied throughout their school years. Adults who stutter are known to have an increased risk of concurrent anxiety-related disorders due to their stuttering. It is not only vital, therefore, to treat stuttering during the preschool years, treatment is also most successful at that age. The treatment of choice for early stuttering in Australia is the Lidcombe Program. However, not all families can access the Lidcombe Program. An Internet-based, stand-alone version of the Lidcombe Program has the potential to increase access for these families because the program requires neither expensive technology nor involvement of a speech pathologist.

The Internet Parent Training developed in thesis is definitely not an end point, but rather it has opened many new lines of exciting and hopefully fruitful research!

REFERENCES

- Ackerman, S.J. & Hilsenroth, M.J. (2003). A review of therapist characteristics and techniques positively impacting the therapeutic alliance. *Clinical Psychology Review*, 23, 1-33.
- Adams, M.R. (1990). The Demands and Capacities Model I: Theoretical elaborations. *Journal of Fluency Disorders*, 15, 135-141.
- Alm, P. A. (2004). Stuttering and the basal ganglia circuits: A critical view of possible relations. *Journal of Communication Disorders*, 37, 325-369.
- Ambrose, N.G., Cox, N.J. & Yairi, E. (1997). The genetic basis of persistence and recovery in stuttering. *Journal of Speech, Language & Hearing Research*, 40 (3), 567-580.
- Andersson, G. (2009). Using the Internet to provide cognitive behaviour therapy. *Behaviour Research and Therapy*, 47, 175-180.
- Andersson, G., Ljotsson, B. & Weise, C. (2011). Internet-delivered treatment to promote health. *Current Opinion in Psychiatry*, 24, 168-172.
- Andrews, G., Cuijpers, P., Craske, M.G., McEvoy, P. & Titov, N. (2010). Computer therapy for the anxiety and depressive disorders is effective, acceptable and practical health care: A meta-analysis. *Plos One*, 5 (10). Retrieved from DOI: 10.1371/journal.pone.0013196.
- Arnott, S. (2011). *The Lidcombe Program of early stuttering intervention: A randomised controlled trial of group delivery*. Unpublished doctoral thesis, University of Sydney, Australia.
- Baggett, K.M., Davis, B., Feil, E.G., Sheeber, L.L., Landry, S.H., Carta, J.C. & Leve, C. (2009). Technologies for expanding the reach of evidence-based interventions: Preliminary results for promoting social-emotional development in early childhood.

Topics in Early Childhood Special Education, 29 (4), 226-238.

Bernstein Ratner, N. (1992). Measurable outcomes of instructions to modify normal parent-child verbal interactions. *Journal of Speech and Hearing Research, 35*, 14-20.

Bernstein Ratner, N. & Silverman, S. (2000). Parental perceptions of children's communicative development at stuttering onset. *Journal of Speech, Language, and Hearing Research, 43*, 1252-1263.

Blood, G.W. & Blood, I.M. (2004). Bullying in adolescents who stutter: Communicative competence and self-esteem. *Contemporary Issues in Communication Science and Disorders, 31*, 69-79.

Blood, G.W. & Blood, I.M. (2007). Preliminary study of self-reported experience of physical aggression and bullying of boys who stutter: Relation to increased anxiety. *Perceptual and Motor Skills, 104*, 1060-1066.

Blood, G.W., Blood, I.M., Tramontana, M., Sylvia, A.J., Boyle, M.P. & Motzko, G.R. (2012). Self-reported experience of bullying of students who stutter: Relations with life satisfaction, life orientation, and self-esteem. *Perceptual and Motor Skills, 118 (2)*, 353-364.

Blood, G.W., Boyle, M.P., Blood, I.M. & Nalesnik, G.R. (2010). Bullying in children who stutter: Speech-language pathologists' perceptions and intervention strategies. *Journal of Fluency Disorders, 35 (2)*, 92-109.

Bloodstein, O. & Bernstein Ratner, N. (2008). *A handbook on stuttering*. New York: Delmar.

Boeije, H.R. (2009). *Analysis in qualitative research*. London: Sage.

Boey, R.A., Van de Heyning, P.H., Wuyts, F.L., Heylen, L., Stoop, R. & De Bodt, M.S. (2009). Awareness and reactions of young stuttering children aged 2-7 years old towards their speech disfluency. *Journal of Communication Disorders, 42*, 334-346.

- Bonelli, P., Dixon, M., Ratner, N.B. & Onslow, M. (2000). Child and parent speech and language following the Lidcombe Programme of early stuttering intervention. *Clinical Linguistics and Phonetics*, 14 (6), 427-446.
- Bothe, A., Davidow, J.H., Bramlett, R.E. & Ingham, R.J. (2006). Stuttering treatment research 1970–2005: I. Systematic review incorporating trial quality assessment of behavioral, cognitive, and related approaches. *American Journal of Speech-Language Pathology*, 15, 321-341.
- Bothe, A.K. (2008). Identification of children's stuttered and nonstuttered speech by highly experienced judges: Binary judgements and comparisons with disfluency-type definitions. *Journal of Speech, Language and Hearing Research*, 51, 867-878.
- Botterill, W. & Kelman, E. (2010). Palin Parent-Child Interaction. In B.Guitar & R. McCauley (Eds). *Treatment of stuttering* (pp. 63-90). Baltimore: Lippincott Williams & Wilkins.
- Bowen, C. (2012). Webwords 44. *Journal of Clinical Practice in Speech-Language Pathology*, 14 (3), 149-152.
- Bower, P. & Gilbody, S. (2005). Stepped care in psychological therapies: Access, effectiveness and efficiency. *British Journal of Psychiatry*, 186, 11-17.
- Brady, J.P. The pharmacology of stuttering: A critical review. *American Journal of Psychiatry*, 148 (10), 1309-1316.
- Bridgeman, K., Onslow, M., O'Brian, S. & Block, S. (2011). Changes to stuttering measurement during the Internet Treatment process. *Asia Pacific Journal of Speech, Language, and Hearing*, 14 (3), 147-152.
- Bridgeman, K., Onslow, M., O'Brian, S., Block, S., & Jones. M. (2013). Lidcombe Program via Skype: Could you use it in your clinic? Paper presented at Speech Pathology Australia National Conference, Queensland, June 2013.

- Burrell, T. L. & Borrego, J. (2012). Parents' involvement in ASD treatments: What is their role? *Cognitive and Behavioral Practice, 19*, 423-432.
- Carey, B., O'Brian, S., Onslow, M., Block, S., Jones, M. & Packman, A. (2010). Randomised controlled non-inferiority trial of telehealth treatment for chronic stuttering: The Camperdown Program. *International Journal of Language and Communication Disorders, 45*, 108-120.
- Carey, B., O'Brian, S., Onslow, M., Packman, A. & Menzies, R. (2012). Program for adolescents who stutter: A phase I trial. *Language, Speech, and Hearing Services in Schools, 43*, 370-380.
- Cassidy, S. (2004). Learning styles: An overview of theories, models, and measures. *Educational Psychology, 24* (4), 419-444.
- Chen, S.Y. & Macredie, R. (2010). Web-based interaction: A review of three important human factors. *International Journal of Information Management, 30*, 379-387.
- Cheng, S.K. & Dizon, J. (2012). Computerised cognitive behavioural therapy for insomnia: A systematic review and meta-analysis. *Psychotherapy and Psychosomatics, 81* (4), 206-216.
- Chilosi, A.M., Cipriani, P., Pecini, C., Brizzolara, D., Biagi, L., Montanaro, D., Tosetti, M. & Cioni, G. (2008). Acquired focal brain lesions in childhood: Effects on development and reorganisation of language. *Brain & Language, 106*, 211-225.
- Christensen, H., Griffiths, K. & Farrer, L. (2009). Adherence in internet interventions for anxiety and depression: Systematic review. *Journal of Medical Internet Research, 11* (2), e13. Retrieved from DOI: 10.2196/jmir.1194.
- Chueh, H. & Barnett, G.O. (1997). "Just-in-time" clinical information. *Academic Medicine, 72*, 512-517.

- Chumley-Jones, H.S., Dobbie, A. & Alford, C.L. (2002). Web-based learning: Sound educational method or hype? A review of the evaluation literature. *Academic Medicine, 77* (10), 86-93.
- Clarke, G., Eubanks, D., Reid, E., Kelleher, C., O'Connor, E., DeBar, L.L., Lynch, F., Nunley, S. & Gullion, C. (2005). Overcoming depression on the internet (ODIN) (2): A randomised trial of a self-help depression skills program with reminders. *Journal of Medical Research, 7* (2), e16.
- Conture, E.G. (1996). Treatment efficacy: Stuttering. *Journal of Speech & Hearing Research, 39* (5), 18-26.
- Cook D.A. (2005). Learning and cognitive styles in web-based learning: Theory, evidence, and application. *Academic Medicine, 80* (3), 266-278.
- Cook, D.A. & Dupras, D.M. (2004). A practical guide to developing effective web-based learning. *Journal of General Internal Medicine, 19*, 698-707.
- Cook, D.A., Levinson, A.J., Garside, S., Dupras, D.M., Erwin, P.J. & Montori, V.M. (2010). Instructional design variations in Internet-based learning for health professions education: A systematic review and meta-analysis. *Academic Medicine, 85* (5), 909-922.
- Crabtree, B. F. & Miller, W. L. (1999). *Doing qualitative research. Research methods for primary care Volume 3*. B. F. Crabtree & W. L. Miller (Eds.). California, London, New Dehli: Sage.
- Craig, A., Blumgart, E. & Tran, Y. (2009). The impact of stuttering on the quality of life in adults who stutter. *Journal of Fluency Disorders 34*, 61-71.
- Cuijpers, P., van Straten, A. & Andersson, G. (2008). Internet-administered cognitive behaviour therapy for health problems: A systematic review. *Journal of Behavioural*

Medicine, 31, 169-177.

Curry, L. (1983). An organisation of learning styles theory and constructs. Paper presented at the 67th Annual Meeting of the American Educational Research Association, Montreal, Quebec.

Cykowski, M.D., Fox, P.T., Ingham, R.J., Ingham, J.C. & Robin, D.A. (2010). A study of the reproducibility and etiology of diffusion anisotropy differences in developmental stuttering: A potential role for impaired myelination. *Neuro Image, 52, 1495–1504.*

Davidow, J.H., Crowe, B.T. & Bothe, A.K. (2004). “Gradual increase in length and complexity of utterance” and “Extended length of utterance” treatment programs for stuttering: Assessing the implications of strong but limited evidence. In A.K. Bothe (Ed.). *Evidence-based treatment of stuttering: Empirical bases and clinical applications.* New Jersey: Lawrence Erlbaum Associates.

Davis, S., Howell, P. & Cooke, F. (2002). Sociodynamic relationships between children who stutter and their non-stuttering classmates. *Journal of Child Psychology and Psychiatry, 43 (7), 939-947.*

Dellifraire, J.L. & Dansky, K.H. (2008). Home-based telehealth: A review and meta-analysis. *Journal of Telemedicine and Telecare, 14, 62-66.*

Denzin, N.K. (1978). *The Research Act* (2nd ed.). New York: McGraw-HI.

Denzin N.K. & Lincoln Y.S. (1998). *The landscape of qualitative research: Theories and issues.* Denzin N.K. and Lincoln Y.S. (Eds). California, London, New Delhi: Sage.

Donaghy, M., O'Brian, S., Harrison, E., Onslow, M., Packman, A., Menzies, R. (2013). Unravelling the Lidcombe Program: Investigating the need to ask children to correct their stuttering. Paper presented at the 9th Asia Pacific Conference on Speech, Language, and Hearing, Taiwan.

- Dryana, D. & Kang, C. (2011). Genetic approaches to understanding the causes of stuttering. *Journal of Neurodevelopment Disorders*, 3, 374-380.
- Dufresne, A. & Turcotte, S. (1997). Cognitive style and its implications for navigation strategies. In B. du Boulay & R. Mizoguchi (Eds.), *Proceedings of AI-ED'97, 8th World Conference on Artificial Intelligence in Education*, 287-293.
- Dunkley, C., Pattie, L., Wilson, L. & McAllister, L. (2010). A comparison of rural speech-language pathologists' and residents' access to and attitudes towards the use of technology for speech-language pathology service delivery. *International Journal of Speech-Language Pathology*, 12 (4), 333-343.
- Dworzynski, K., Remington, A., Rijdsdijk, F., Howell, P. & Plomin, R. (2007). Genetic etiology in cases of recovered and persistent stuttering in an unselected, longitudinal sample of young twins. *American Journal of Speech and Language Pathology*, 16 (2), 169-178.
- D'Zurilla T.J. & Goldfried M.R. (1971). Problem-solving and behavior modification. *Journal of Abnormal Psychology*, 78 (1), 107-126.
- Eggers, K., De Nil, L.F. & Van den Bergh, B.R.H. (2010). Temperament dimensions in stuttering and typically developing children. *Journal of Fluency Disorders*, 35 (4), 355-372.
- Eggers, K., De Nil, L.F & Van den Bergh, B.R.H. (2012). The efficiency of attentional networks in children who stutter. *Journal of Speech, Language, and Hearing Research*, 55, 946-959.
- Eggers, K. & Laehy, M. (2011). The European clinical specialization on fluency disorders (ECSF). *Journal of Fluency Disorders*, 36, 296-301.
- Ekeland, A.G., Bowes, A. & Flottorp, S. (2011). Effectiveness of telemedicine: A systematic

- review of reviews. *International Journal of Medical Informatics*, 79, 736-771.
- Einarsdottir, J. & Ingham, R. (2009). Accuracy of parent identification of stuttering occurrence. *International Journal of Communication Disorders*, 44 (6), 847-863.
- Elstein A.S. & Schwartz A. (2002). Evidence base of clinical diagnosis. Clinical problem-solving and diagnostic decision making: Selective review of the cognitive literature. *British Medical Journal*, 324, 729-732.
- Enebrink, P., Hogstrom, J., Forster, M. & Ghaderi, A. (2012). Internet-based parent management training: A randomised controlled study. *Behaviour Research and Therapy*, 50, 240-249.
- Eve, C.L., Onslow, M., Andrews, C. & Adams, R. (1995). Clinical measurement of early stuttering severity: The reliability of a 10-point scale. *Australian Journal of Human Communication Disorders*, 23, 26-39.
- Evers, K.E., Prochaska, J.M., Prochaska, J.O., Driskell, M., Cummins, C.O. & Velicer, W.F. (2003). Strengths and weaknesses of health behavior change programs on the Internet. *Journal of Health Psychology*, 8 (1), 63-70.
- Ewing-Cobbs, L., Barnes, M.A. & Fletcher, J.M. (2003). Early brain injury in children development and reorganisation of cognitive function. *Developmental Neuropsychology*, 24 (2 & 3), 669-704.
- Fagnani, C., Fibiger, S., Skyrre, A. & Hjelmberg, J.V.B. (2011). Heritability and environmental effects for self-reported periods with stuttering: A twin study from Denmark. *Logopedics Phoniatrics Vocology*, 36 (3), 114-120.
- Femrell, L., Avall, M. & Lindstrom, E. (2012). Two-year follow-up of the Lidcombe Program in ten Swedish-speaking children. *Folia Phoniatrica et Logopaedica*, 64, 248-253.
- Fleming, N.D. (1995). I'm different; not dumb. Modes of presentation (VARK) in the tertiary

- classroom. In A. Zelmer (Ed.). *Proceedings of the 1995 Annual Conference of the Higher Education and Research Development Society of Australasia (HERDSA)*. 18, 308-313.
- Fleming, N. & Baume, D. (2006). Learning Styles Again: VARKing up the right tree! *Educational Developments, SEDA Ltd*, 7 (4), 4-7.
- Foroushani, P.S., Schneider, J. & Assareh, N. (2011). Meta-review of the effectiveness of computerised CBT in treating depression. *BMC Psychiatry*, 11, 131-136.
- Franken, M.-C.J., Kielstra-Van der Schalk, J. & Boelens, H. (2005). Experimental treatment of early stuttering: A preliminary study. *Journal of Fluency Disorders*, 30, 189-199.
- Gibbs, G.R. (2008). *Analyzing qualitative data*. London: Sage.
- Girolametto, L., Verbey, M. & Tannock, R. (1994). Improving joint engagement in parent-child interaction: An intervention study. *Journal of Early Intervention*, 18 (2), 155-167.
- List of countries by number of Internet users. Wikipedia, 2013. Available from http://en.wikipedia.org/wiki/List_of_countries_by_number_of_Internet_users.
- Goodhue, R., Onslow, M., Quine, S., O'Brian, S. & Hearne, A. (2010). The Lidcombe Program of early stuttering intervention: Mothers' experiences. *Journal of Fluency Disorders*, 35, 70-84.
- Green, J. & Thorogood N. (2009). *Qualitative Methods for Health Research*. J. Green & N. Thorogood (Eds). London, California, New Dehli, Singapore: Sage.
- Griffiths, K.M., Farrer, L. & Christensen, H. (2010). The efficacy of Internet interventions for depression and anxiety disorders: A review of randomised controlled trials. *Medical Journal of Australia*, 192 (11), 4-11.
- Guitar, B. (2006). *Stuttering: An integrated approach to its nature and treatment* (3rd Ed). Baltimore, MD: Lippincott, Williams & Wilkins.

- Guitar, B. & McCauley, R.J. (2010). *Treatment of stuttering: Established and emerging interventions*. Baltimore, MD: Lippincott, Williams & Wilkins.
- Harrison, E., Onslow, M. & Menzies, R. (2004). Dismantling the Lidcombe Program of early stuttering intervention: verbal contingencies for stuttering and clinical measurement. *International Journal of Language & Communication Disorders, 39* (2), 257-267.
- Harrison, E., Ttofari, K., Rousseau, I. & Andrews, C. (2003). Troubleshooting. In M. Onslow, A. Packman & E. Harrison (Eds.), *The Lidcombe Program of early stuttering intervention. A clinician's guide* (pp. 91–102). Austin TX: Pro-Ed.
- Harrison, E., Wilson, L. & Onslow, M. (1999). Distance intervention for early stuttering with the Lidcombe Programme. *Advances in Speech and Language Pathology, 1*, (1), 31-36.
- Hayhow, R. (2009). Parents' experiences of the Lidcombe Program of early stuttering intervention. *International Journal of Speech-Language Pathology, 11* (1), 20-25.
- Hayhow, R. (2011). Does it work? Why does it work? Reconciling difficult questions. *International Journal of Language & Communication Disorders, 46* (2), 155-168.
- Hayhow, R., Enderby, P. & Kingston, M. (2000). Parental satisfaction with stammering therapy: the development of a questionnaire. In H.-G. Bosshardt, J.S. Yaruss, & H.F.M. Peters (Eds.), *Proceedings of the Third World Congress on Fluency Disorders in Nyborg, Denmark*. Nijmegen: Nijmegen University Press, 322-325.
- Hearne, A., Packman, A., Onslow, M. & O'Brian, S. (2008). Developing treatment for adolescents who stutter: A Phase I trial of the Camperdown Program. *Language, Speech, and Hearing Services in Schools, 39* (4), 487-497.
- Helgadottir, F.D., Menzies, R.G., Onslow, M., Packman, A. & O'Brian, S. (2009a). Online CBT II: A phase I trial of a stand-alone, online CBT treatment program for social

- anxiety in stuttering. *Behaviour Change*, 26 (4), 254-270.
- Helgadottir, F.D., Menzies, R.G., Onslow, M., Packman, A. & O'Brian, S. (2009b). Online CBT I: Bridging the gap between Eliza and modern online CBT treatment packages. *Behaviour Change*, 26 (4), 245-253.
- Heppner, P.P. (1978). A review of the problem-solving literature and its relationship to the counselling process. *Journal of Counselling Psychology*, 25 (5), 366-375.
- Hewat, S., Harris, V. & Harrison E. (2003). Special case studies. In M. Onslow, A. Packman & E. Harrison (Eds.), *The Lidcombe Program of early stuttering intervention. A clinician's guide*. Austin TX: Pro-Ed.
- Hill, A.J. & Miller, L.E. (2012). A survey of the clinical use of telehealth in speech-language pathology across Australia. *Journal of Clinical Practice in Speech-Language Pathology*, 14 (3), 110-117.
- Hudson, A.M. (1982). Training parents of developmentally handicapped children: A component analysis. *Behaviour Therapy*, 13, 325-333.
- Hudson, A.M., Matthews, J.M., Gavidia-Payne, S.T., Cameron, C.A., Mildon, R.L., Radler, G.A. & Nenkervis, K.L. (2003). Evaluation of an intervention system for parents of children with intellectual disability and challenging behaviour. *Journal of Intellectual Disability Research*, 47 (4/5), 238-249.
- Ilic, D. (2010). The role of the Internet on patient knowledge management, education, and decision-making. *Telemedicine and e-Health*, 16 (6), 664-668.
- Ingham, J.C. (1999). Behavioral treatment of young children who stutter: An extended length of utterance method. In R.F. Curlee (Ed.). *Stuttering and related disorders of fluency* (pp. 80-109). Second Edition. New York: Thieme.
- Iverach, L., Jones, M., O'Brian, S., Block, S., Lincoln, M., Harrison, E., Hewat, S., Cream, A.,

- Menzies, R.G., Packman, A. & Onslow, M. (2009). The relationship between mental health disorders and treatment outcomes among adults who stutter. *Journal of Fluency Disorders* 34, 29-43.
- Iverach, L., O'Brian, S., Jones, M., Block, S., Lincoln, M., Harrison, E., Hewat, S., Menzies, R.G., Packman, A. & Onslow, M. (2009). Prevalence of anxiety disorders among adults seeking speech therapy for stuttering. *Journal of Anxiety Disorders* 23, 928-934.
- Jones, M., Onslow, M., Harrison, E. & Packman, A. (2000). Treating stuttering in young children: Predicting treatment in the Lidcombe Program. *Journal of Speech, Language, and Hearing Research*, 43, 1440-1450.
- Jones, M., Onslow, M., Packman, A., O'Brian, S., Hearne, A., Williams, Sh., Ormond, T., & Schwarz, I. (2008). Extended follow-up of a randomized controlled trial of the Lidcombe Program of early stuttering intervention. *International Journal of Language and Communication Disorders*, 43 (6), 649-661.
- Jones, M., Onslow, M., Packman, A., Williams, Sh., Ormond, T., Schwarz, I. & Gebiski, V. (2005). Randomised controlled trial of the Lidcombe Programme of early stuttering intervention. *British Medical Journal*, 331, 659-661.
- Kaderavek J.N. & Justice L.M. (2010). Fidelity: An essential component of evidence-based practice in speech-language pathology. *American Journal of Speech-Language Pathology*, 19, 369-379.
- Kaiser, A.P. & Hancock, T.B. (2003). Teaching parents new skills to support their young children's development. *Infants and Young Children*, 16 (1), 9-21.
- Kaufman, D.M. (2003). ABC of learning and teaching in medicine: Applying educational theory in practice. *British Medical Journal*, 326, 213-216.

- Kefalianos, E., Onslow, M., Block, S., Menzies, R. & Reilly, S. (2012). Early stuttering, temperament and anxiety: Two hypotheses. *Journal of Fluency Disorders*, 37 (3), 151-163.
- Kelders, S.M., Kok, R. N., Ossebaard, H.C. & Van Gemert-Pijnen, J.E.W.C. (2012). Persuasive system design does matter: A systematic review of adherence to web-based interventions. *Journal of Medical Internet Research*, 14 (6), 2-25. Retrieved from DOI: 10.2196/jmir.2104.
- King, N. (2007). *Template Analysis*. Retrieved October, 04, 2012 from http://hhs.hud.ac.uk/w2/research/template_analysis/index.htm.
- King, N. (2012). Doing template analysis. In G. Symon and C. Cassell (eds.) *Qualitative Organizational Research: Core Methods and Current Challenges*. London: Sage.
- Kingston, M., Hubert, A., Onslow, M., Jones, M. & Packman, A. (2003). Predicting treatment times with the Lidcombe Program: Replication and meta-analysis. *International Journal of Language and Communication Disorders*, 38 (2), 165-177.
- Klein, J.F. & Hood, S.B. (2004). The impact of stuttering on employment opportunities and job performance. *Journal of Fluency Disorders*, 29, 255-273.
- Kling, A., Forster, M., Sundell, K. & Melin, L. (2010). A randomised controlled effectiveness trial of parent management training with varying degrees of therapist support. *Behaviour Therapy*, 41, 530-542.
- Kolb, B. & Gibb, R. (2011). Brain plasticity and behaviour in the developing brain. *Canadian Academy of Child and Adolescent Psychiatry*, 20 (4), 265-276.
- Koushik, S., Hewat, S., Shenker, R.C., Jones, M & Onslow, M. (2011). North-American Lidcombe Program file audit: Replication and meta-analysis. *International Journal of Speech-Language Pathology*, 13 (4), 301-307.

- Kreuter, M.W., Strecher, V.J. & Glassman, B. (1999). One size does not fit all: The case for tailoring print materials. *The Society of Behavioral Medicine*, 21 (4), 276-283.
- Lambert, M.J. & Barley, D.E. (2001). Research summary on the therapeutic relationship and psychotherapy outcome. *Psychotherapy*, 38 (4), 357-361.
- Langevin, M. (2009). The peer attitudes toward children who stutter scale: Reliability, known groups validity, and negativity of elementary school age children's attitudes. *Journal of Fluency Disorders*, 34, 72-86.
- Langevin, M., Packman, A. & Onslow, M. (2009). Peer responses to stuttering in the preschool setting. *American Journal of Speech-Language Pathology*, 18, 264-276.
- Langevin, M., Kleitman, S., Packman, A. & Onslow, M. (2009). The peer attitudes toward children who stutter (PATCS) scale: An evaluation of validity, reliability and the negativity of attitudes. *International Journal of Language & Communication Disorders*, 44 (3), 352-368.
- Langevin, M., Packman, A. & Onslow, M. (2010). Parent perceptions of the impact of stuttering on their preschoolers and themselves. *Journal of Communication Disorders*, 43, 407-423.
- Lattermann, C., Shenker, R.C. & Thordardottir, E. (2005). Progression of language complexity during treatment with the Lidcombe Program for early stuttering intervention. *American Journal of Speech-Language Pathology*, 14, 242-253.
- Lattermann, C., Euler, H.A. & Neumann, K. (2008). A randomised control trial to investigate the impact of the Lidcombe Program on early stuttering in German-speaking preschoolers. *Journal of Fluency Disorders*, 33, 52-65.
- Leong, S.L., Baldwin, C.D. & Adelman, A.M. (2003). Integrating web-based computer cases into a required clerkship: Development and evaluation. *Academic Medicine*, 78 (3),

295-301.

Lewis, C., Packman, A., Onslow M., Simpson, J.M. & Jones, M. (2008). A Phase II trial of telehealth delivery of the Lidcombe Program of early stuttering intervention. *American Journal of Speech-Language Pathology*, 17, 139-149.

Lincoln, M., Onslow, M. & Reed, V. (1997). Social validity in the treatment outcomes of an early intervention for stuttering: The Lidcombe Program. *American Journal of Speech-Language Pathology*, 6, 77-84.

MacKenzie, E.P. & Hilgedick, J.M. (2008). The computer-assisted parenting program (CAPP): The use of a computerised behavioural parent training program as an educational tool. *Child & Family Behavior Therapy*, 21 (4), 23-43.

Mallard, A.R. & Westbrook, J.B. (1988). Variables affecting stuttering therapy in school settings. *Language, Speech and Hearing Services in Schools*, 19, 362-370.

Mashima, P.A. & Doarn, C.R. (2008). Overview of telehealth activities in speech language pathology. *Telemedicine and e-Health*, 14 (10), 1101-1117.

Matson, J.L., Mahan, S. & LoVullo, S.V. (2009). Parent training: A review of methods for children with developmental disabilities. *Research in Developmental Disabilities*, 30, 961-968.

Matson, M.L., Mahan, S. & Matson, J.L. (2009). Parent training: A review of methods for children with autism spectrum disorders. *Research in Autism Spectrum Disorders*, 3, 868-875.

Matthews, S., Williams, R. & Pring, T. (1997). Parent-child interaction therapy and dysfluency: A single case study. *European Journal of Disorders of Communication*, 32, 346-357.

McAllister, J., Collier, J. & Shepstone, L. (2012). The impact of adolescent stuttering on

- educational and employment outcomes: Evidence from a birth cohort study. *Journal of Fluency Disorders*, 37, 106-121.
- Menzies, R.G., Onslow, M., Packman, A. & O'Brian, S. (2009). Cognitive behaviour therapy for adults who stutter: A tutorial for speech-language pathologists. *Journal of Fluency Disorders* 34, 187-200.
- Merriam, S.B. (2001). Andragogy and self-directed learning: Pillars of adult learning theory. *New Directions For Adults and Continuing Education*, 89, 3-13.
- Messenger, M., Onslow, M., Packman, A. & Menzies, R. (2004). Social anxiety in stuttering: Measuring negative social expectancies. *Journal of Fluency Disorders* 29, 201-212.
- Miles S. & Ratner Bernstein, N. (2001). Parental language input to children at stuttering onset. *Journal of Speech, Language, and Hearing Research*, 44, 1116-1130.
- Millard, S.K., Nicholas, A. & Cook, F.M. (2008). Is Parent-child interaction therapy effective in reducing stuttering? *Journal of Speech, Language, and Hearing Research*, 51, 636-650.
- Millard, S.K., Edwards, S. & Cook, F.M. (2009). Parent-child interaction therapy: Adding to the evidence. *International Journal of Speech-Language Pathology*, 11 (1), 61-76.
- Miller, B. & Guitar, B. (2009). Long-term outcome of the Lidcombe Program for early stuttering intervention. *American Journal of Speech-Language Pathology*, 18, 42-49.
- Mindell, J.A., Du Mond, C.E., Sadeh, A., Telofski, L.S., Kulkarni, N. & Gunn, E. (2011a). Efficacy of an Internet-based intervention for infant and toddler sleep disturbances. *Sleep*, 34 (4), 451-458.
- Mindell, J.A., Du Mond, C.E., Sadeh, A., Telofski, L.S., Kulkarni, N. & Gunn, E. (2011b). Long-term efficacy of an Internet-based intervention for infant and toddler sleep disturbances: One year follow-up. *Sleep*, 7 (5), 507-511.

- Nefdt, N., Koegel, R., Singer, G. & Gerber, M. (2010). The use of a self-directed learning program to provide introductory training in pivotal response treatment to parents of children with autism. *Journal of Positive Behavior Interventions*, 12 (1), 23-32.
- Newman, M. G., Szkodny, L.E., Llera, S.J. & Przeworski, A. (2011). A review of technology-assisted self-help and minimal contact therapies for anxiety and depression: Is human contact necessary for therapeutic efficacy? *Clinical Psychology Review*, 31, 89-103.
- Nippold, M.A. (2011). Stuttering in school-age children: A call for treatment research. *Language, Speech, and Hearing Services in Schools*, 42, 99-101.
- Nippold, M.A. & Packman, A. (2012). Managing stuttering beyond the preschool years. *Language, Speech, and Hearing Services in Schools*, 43, 338-343.
- Nye, C. & Hahs-Vaughn, D. (2011). Assessing methodological quality of randomised and quasi-experimental trials: A summary of stuttering treatment research. *International Journal of Speech-Language Pathology*, 13 (1), 49-60.
- Nye, C., Vanryckeghem, M., Schwartz, J.B., Herder, c., Turner, H.M. & Howard, C. (2013). Behavioral stuttering interventions for children and adolescents: A systematic review and meta-analysis. *Journal of Speech, Language, and Hearing Research*, 56, 921-932.
- O'Brian, S. & Onslow, M. (2011). Clinical management of stuttering in children and adults. *British Medical Journal*, 432, d3742.
- O'Brian, S., Jones, M., Packman, A., Menzies, R. & Onslow, M. (2011). Stuttering severity and educational attainment. *Journal of Fluency Disorders*, 36, 86-92.
- O'Brian, S., Iverach, L., Jones, M., Onslow, M., Packman, A. & Menzies, R. (2013). Effectiveness of the Lidcombe Program for early stuttering in Australian community

- clinics. *International Journal of Speech-Language Pathology*, 15 (6), 593-603.
- O'Callaghan, A.M., McAllister, L. & Wilson, L. (2005). Barriers to accessing rural paediatric speech pathology services: Health care consumers' perspectives. *Australian Journal of Rural Health*, 13, 162-171.
- Onslow, M., Andrews, C. & Costa, L. (1990). Parental severity scaling of early stuttered speech: Four case studies. *Australian Journal of Human Communication Disorders*, 18, 47-61.
- Onslow, M., Attanasio, J. & Harrison E. (2003). Parents talk about the Lidcombe Program. In M. Onslow, A. Packman, & E. Harrison (Eds.), *The Lidcombe Program of early stuttering intervention. A clinician's guide* (pp. 199–206). Austin TX: Pro-Ed.
- Onslow, M., Harrison, E., Jones, M. & Packman, A. (2002). Beyond-clinic speech measures during the Lidcombe Program of early stuttering intervention. *Acquiring Knowledge in Speech, Language and Hearing*, 4, 82-85.
- Onslow, M., Jones, M., Menzies, R., O'Brian, S. & Packman, A. (2012). Stuttering. In P. Sturmey & M. Hersen (Ed.), *Handbook of evidence-based practice in clinical psychology*. (pp. 185-207). Hoboken: NJ: Wiley.
- Onslow, M., Packman, A. & Harrison, E. (2003), *The Lidcombe Program of early stuttering intervention. A clinician's guide*. Austin TX: Pro-Ed.
- Onslow, M., Stocker, S., Packman, A. & McLeod, S. (2002). Speech timing in children after the Lidcombe Program of early stuttering intervention. *Clinical Linguistics and Phonetics*, 16 (1), 21-33.
- Packman, A. (2012). Theory and therapy in stuttering: A complex relationship. *Journal of Fluency Disorders*, 37, 225-233.
- Packman, A., Code, & Onslow, M. (2007). On the cause of stuttering: Intergrating theory with

- brain and behavioural research. *Journal of Neurolinguistics*, 20, 353-362.
- Packman, A., Hansen, E.J. & Herland, M. (2007). Parents' experiences of the Lidcombe Program: The Norway-Australia connection. *Research, Treatment and Self-Help in Disfluency Disorders: New Horizons. Section 13. Therapy Outcome and Experience*, 418-422.
- Packman, A. & Meredith, G. (2011). Technology and the evolution of clinical methods for stuttering. *Journal of Fluency Disorders*, 36, 75-85.
- Packman, A., Onslow, M. & Attanasio, J. (2003). The timing of early intervention with the Lidcombe Program. In M. Onslow, A. Packman, & E. Harrison (Eds.), *The Lidcombe Program of early stuttering intervention. A clinician's guide* (pp. 41-55). Austin TX: Pro-Ed.
- Packman, A., Onslow, M. & Attanasio, J. (2004). The demands and capacities model: Implications for evidence-based practice in the treatment of early stuttering. In A.K. Bothe (Ed.). *Evidence-based treatment of stuttering. Empirical bases and clinical applications* (pp. 65-79). New Jersey: Lawrence Erlbaum Associates.
- Packman, A. Onslow, M., Richard, F. & Van Doorn, J. (1996). Syllabic stress and variability: A model of stuttering. *Clinical Linguistics & Phonetics*, 10 (3), 235-263.
- Packman, A., Onslow, M., Webber, M., Harrison, E., Arnott, S., Bridgeman, K., Carey, B., Sheedy, S., O'Brian, S., MacMillan, V. & Lloyd, W. (2014, January). The Lidcombe Program of early stuttering intervention treatment manual. Retrievable from http://sydney.edu.au/health-sciences/asrc/health_professionals/asrc_download.shtml.
- Penate, W. (2012). About the effectiveness of telehealth procedures in psychological treatments. *International Journal of Clinical and Health Psychology*, 12 (3), 475-487.

- Prasse, J.E. & Kikano, G.E. (2008). Stuttering: An overview. *American Family Physician*, 77 (9), 1271-1276.
- Ramig, P.R. & Bennett, E.M. (1995). Working with 7-to 12-year-old children who stutter: Ideas for intervention in the public schools. *Language, Speech and Hearing Services in Schools*, 26, 138-150.
- Rautakoski, P., Hannus, T., Simberg, S., Sandnabba, N.K. & Santtila, P. (2012). Genetic and environmental effects on stuttering: A twin study from Finland. *Journal of Fluency Disorders*, 37, 202-210.
- Raza, M.H., Amjad, R., Riazuddin, S. & Dryana, D. (2011). Studies in a consanguineous family reveal a novel locus for stuttering on chromosome 16q. *Human Genetics*, 131, 311-313.
- Reilly, S., Onslow, M., Packman, A., Cini, E., Conway, L., Ukoumunne, C., Bavin, E.L., Prior, M., Eadie, P., Block, S. & Wake, M. (2013). Natural history of stuttering to 4 years of age: A prospective community-based study. *Pediatrics*, 132 (3), 460-467.
- Reilly, S., Onslow, M., Packman, A., Wake, M., Bavin, E.L., Prior, M., Eadie, P., Cini, E., Bolzonello, C. & Ukoumunne, C. (2009). Predicting stuttering onset by the age of 3 years: A prospective, community cohort study. *Pediatrics*, 123 (1), 270-277.
- Reynolds, A.L., Vick, J.L. & Haak, N.J. (2009). Telehealth applications in speech-language pathology: A modified narrative review. *Journal of Telemedicine and Telecare*, 15, 310-316.
- Riaz, N., Steinberg, S., Ahmad, J., Pluzhnikov, A., Riazuddin, S., Cox, N.J. & Dryana, D. (2005). Genomewide significant linkage to stuttering on chromosome 12. *American Journal of Human Genetics*, 76, 647-651.
- Richards, D.A. (2012). Stepped care: A method to deliver increased access to psychological

- therapies. *Canadian Journal of Psychiatry*, 57 (4), 210-215.
- Ross, J.L. & Schulz, R.A. (1999). Using the world wide web to accommodate diverse learning styles. *College Teaching*, 47 (4), 123-129.
- Rosser, B.A., Vowles, K.E., Keogh, E., Eccleston, C. & Mountain, G.A. (2009). Technologically-assisted behaviour change: a systematic review of studies of novel technologies for the management of chronic illness. *Journal of Telemedicine and Telecare*, 15, 327-338.
- Rousseau, I., Packman, A., Onslow, M., Dredge, R. & Harrison, E. (2002). Australian clinicians' use of the Lidcombe Program of early stuttering intervention. *Acquiring Knowledge in Speech, Language and Hearing*, 4 (2), 67-71.
- Rousseau, I., Packman, A., Onslow, M., Harrison, E. & Jones, M. (2007). An investigation of language and phonological development and the responsiveness of preschool age children to the Lidcombe Program. *Journal of Communication Disorders*, 40, 382-397.
- Ruggero, L., McCabe, P., Ballard, K.J. & Munro, N. (2012). Paediatric speech-language pathology service delivery: An exploratory survey of Australian parents. *International Journal of Speech-Language Pathology*, 14 (4), 338-350.
- Ryan, B.P. (1974). *Programmed therapy for stuttering in children and adults*. Springfield: Thomas.
- Ryan, B.P. & Van Kirk Ryan, B. (1983). Programmed stuttering therapy for children: Comparison of four establishment programs. *Journal of Fluency Disorders*, 8, 291-321.
- Ryan, B.P. & Van Kirk Ryan, B. (1995). Programmed stuttering treatment for children: Comparison of two establishment programs through transfer, maintenance, and

- follow-up. *Journal of Speech and Hearing Research*, 38, 61-75.
- Ryan, B.P. (2001). *Programmed therapy for stuttering in children and adults: Second edition*. Springfield, IL: Charles C. Thomas.
- Sabry, K. & Baldwin, L. (2003). Web-based learning interaction and learning styles. *British Journal of Educational Technology*, 34 (4), 443-454.
- Sandelowski M. (2000). Focus on research methods. Whatever happened to qualitative description? *Research in Nursing & Health*, 23, 334-340.
- Spek, V., Cuijpers, P., Nyklicek, I., Riper, H., Keyzer, J. & Pop, V. (2007). Internet-based cognitive behaviour therapy for symptoms of depression and anxiety: A meta-analysis. *Psychological Medicine*, 37, 319-328.
- Spencer, E., Packman, A., Onslow, M. & Ferguson, A. (2009). The effect of stuttering on communication: A preliminary investigation. *Clinical Linguistics & Phonetics*, 23 (7), 473-488.
- Starkweather, G. W. & Gottwald, S. R. (1990). The demands and capacities model II: Clinical applications. *Journal of Fluency Disorders*, 15, 143-157.
- Sternberg, R.J. & Grigorenko, E.L. (1997). Are cognitive styles still in style? *American Psychologist*, 52 (7), 700-712.
- Swanepoel, D.W., Koekemoer, D. & Clark, J. (2010). Intercontinental hearing assessment – A study in tele-audiology. *Journal of Telemedicine and Telecare*, 16, 248-252.
- Talbot, F. (2012). Client contact in self-help therapy for anxiety and depression: Necessary but can take a variety of forms beside clinician contact. *Behaviour Change*, 29 (2), 63-76.
- Theodoros, D. (2012). A new era in speech-language pathology practice: Innovation and diversification. *International Journal of Speech-Language Pathology*, 14 (3), 189-199.

- Taylor, T.K., Webster-Stratton, C., Feil, E.G., Broadbent, B., Widdop, C.S. & Sevenson, H.H. (2008). Computer-based intervention with coaching: An example using the Incredible Years Program. *Cognitive Behaviour Therapy*, 37 (4), 233-246.
- Trajkovski, N., Andrews, C., O'Brian, S., Onslow, M. & Packman, A. (2006). Treating stuttering in a preschool child with syllable timed speech: A case report. *Behaviour Change*, 23 (4), 270-277.
- Trajkovski, N., Andrews, C., Onslow, M., O'Brian, S., Packman, A., & Menzies, R. (2011). A phase II trial of the Westmead Program: Syllable-timed speech treatment for preschool children who stutter. *International Journal of Speech-Language Pathology*, 13 (6), 500-509.
- Trajkovski, N., Andrews, C., Onslow, M., Packman, A., O'Brian, S. & Menzies, R. (2009). Using syllable-times speech to treat preschool children who stutter: A multiple baseline experiment. *Journal of Fluency Disorders*, 34, 1-10.
- Teesson, K., Packman, A. & Onslow, M. (2003). The Lidcombe behavioral data language of stuttering. *Journal of Speech, Language, and Hearing Research*, 46, 1009-1015.
- Van Borsel, J., Moeyaert, J., Mostaert, C., Rosseel, R., Van Loo, E. & Van Renterghem, T. (2006). Prevalence of stuttering in regular and special school populations in Belgium based on teacher perceptions. *Folia Phoniatica et Logopaedica*, 58, 289-302.
- Verdon, S., Wilson, L., Smith-Tamaray, M. & McAllister, L. (2011). An investigation of equity of rural speech-language pathology services for children: A geographic perspective. *International Journal of Speech-Language Pathology*, 13 (3), 239-250.
- Wade, S.L., Oberjohn, K., Conaway, K., Osinska, P. & Bangert, L. (2011). Live coaching of parenting skills using the Internet: Implications for clinical practice. *Professional Psychology: Research and Practice*, 42 (6), 487-493.

- Wainer, A.L. & Ingersoll, B.R. (2013). Disseminating ASD Interventions: A pilot study of a distance learning program for parents and professionals. *Journal of Autism Development Disorders*, 43, 11-24.
- Walingorska, A., Pisula, E., Waligorska, M. & Letachowicz, M. (2012). AutismPro system in supporting treatment of children with autism in Poland. *Pediatrics International*, 54, 693-700.
- Wang-Sik, L., Changsoo, K., Dryana, D. & Kornfeld, S. (2011). Analysis of mannose 6-phosphate uncovering enzyme mutations associated with persistent stuttering. *The Journal of Biological Chemistry*; 286 (46), 39786–39793.
- Webb, T.L., Joseph, J., Yardley, L. & Michie, S. (2010). Using the Internet to promote health behavior change: A systematic review and meta-analysis of the impact of theoretical basis, use of behavior change techniques, and mode of delivery on efficacy. *Journal of Medical Internet Research*, 12 (1), e24. Retrieved from DOI: 10.2196/jmir.1376.
- Webber, M. & Onslow, M. (2003). Maintenance of treatment effects. In M. Onslow, A. Packman, & E. Harrison (Eds.), *The Lidcombe Program of early stuttering intervention. A clinician's guide* (pp. 81-90). Austin TX: Pro-Ed.
- Willig, C. (2000). *Introducing qualitative research in psychology. Adventures in theory and method*. Open University Press. Buckingham, Philadelphia.
- Wilson, L., Lincoln, M. & Onslow, M. (2002). Availability, access, and quality of care: Inequities in rural speech pathology services for children and a model for redress. *Advances in Speech-Language Pathology*, 4 (1), 9-22.
- Wilson, L., Onslow, M. & Lincoln, M (2004). Telehealth adaptation of the Lidcombe Program of early stuttering intervention: Five case studies. *American Journal of Speech-Language Pathology*, 13, 81-93.

- Wood, D.F. (2003). ABC of learning and teaching in medicine: Problem based learning. *British Medical Journal*, 326, 328-330.
- Woods, S., Shearsby, J., Onslow, M. & Burnham, D. (2002). Psychological impact of the Lidcombe Program of early stuttering intervention. *International Journal of Language and Communication Disorders*, 37 (1), 31-40.
- World Health Organization. (1993). *The ICD-10 Classification of Mental and Behavioural Disorders: Clinical descriptions and diagnostic guidelines*. Geneva: WHO.
- Yairi, E. & Ambrose, N.G. (1992). Onset of stuttering in preschool children – selected factors. *Journal of Speech and Hearing Research*, 35 (4), 782-288.
- Yairi, E., Ambrose, N.G., Paden, E.P. & Throneburg, R.N. (1996). Predictive factors of persistence and recovery: pathways of childhood stuttering. *Journal of Communication Disorders*, 29, 51-77.
- Yairi, E. & Ambrose, N. (1999). Early childhood stuttering I: Persistency and recovery rates. *Journal of Speech, Language and Hearing Research*, 42, 1097-1112.
- Yaruss, J.S., Coleman, C & Hammer, D. (2006). Treating preschool children who stutter: Description and preliminary evaluation of a family-focused treatment approach. *Language, Speech, and Hearing Services in Schools*, 37, 118-136.
- Yeatman, J.D. & Feldman, H.M. (2013). Neural plasticity after pre-linguistic injury to the arcuate and superior longitudinal fascicule. *Cortex*, 49, 301-311.
- Zabiela, C., Leitao, S. & Williams, C. (2007). Service delivery in rural, remote and regional speech pathology. Part 2: The influence of context and philosophy. *Acquiring Knowledge in Speech, Language and Hearing*, 9 (2), 44-47.
- Zapalska, A.M. & Dabb, H. (2002). Learning styles. *Journal of Teaching in International Business*, 13 (3), 77-97.

Zmeyov, S.I. (1998). Andragogy: Origins, developments and trends. *International Review of Education*, 44 (1), 103-108.

APPENDICES

Appendix A *Treatment advice given in the Introduction of Parent Training*

a) You (the person being trained) are:

- female male

No answer to be given

b) Your age:

c) You are:

- the child's parent or guardian
 other, please specify.....

No answer to be given

d) You currently live in:

- Australia
 Another country, please specify.....

No answer to be given

The Lidcombe Program (clinic version) has been developed in Australia and is used in many other English speaking countries without additional modifications. It is also used in Germany, France, Denmark, Norway and other Western countries. Research has also been done using the program in non-Western countries, such as Iran and Kuwait. If you are in a country other than those mentioned, the program could be inappropriate for your culture e.g. it may not suit the way you interact with your child or what you think or feel about stuttering. If that is the case, you should contact a speech pathologist (speech-language pathologist, speech-language therapist) to ask advice about whether to continue with the Internet Lidcombe Program.

e) The main language spoken with your child at home is:

- English
 other, please specify.....

No answer to be given

The language used in this program is English and most research has been done with English speaking children. Experience has shown, however, that the Lidcombe Program can be delivered in other languages too. If you speak a language other than English with your child, you can do the program with your child in that language. It is important, however, that you have sufficient knowledge of English to understand the program instructions.

f) Your child is:

- younger than 2 years 11 months
- between 3 years and 3 years 11 months old
- between 4 years and 4 years 11 months old
- between 5 years and 5 years 11 months old
- between 6 years and 7 years 11 months old
- older than 8 years old

<i>No answer to be given</i>
<i>No answer to be given</i>
<i>No answer to be given</i>
<i>No answer to be given</i>
This program has been developed for children under the age of 6 year. Some children who are older, however, have responded well to clinic-based Lidcombe Program. Keep this information in mind if you start the program with your child. Watch closely how your child progresses. Stop the program immediately and contact a speech pathologist if you have any concerns.

g) Your child is:

- a boy
- a girl

No difference have been found n the way boys and girls respond to the Lidcombe Program.
No difference have been found n the way boys and girls respond to the Lidcombe Program.

h) Has anyone in the child's family ever stuttered?

not sure

no

yes What is the relationship(s) of that/these person(s) to your child:

No answer to be given
No answer to be given
No answer to be given

i) Your child started stuttering:

less than 3 months ago

between 3 and 6 months ago

between 6 and 12 months ago

more than 12 months ago, please specify

<p>Not every child who starts to stutter needs to do the program immediately. About 75% of children who start to stutter recover without treatment within a few years. In general then, it will probably be better at this stage to monitor (watch and listen to) your child's stuttering for a few months to see if recovery occurs. This will not affect how well your child responds to the program. In Modules 1 and 2 of the program, you will learn how to monitor your child's stuttering. The program will support you further in the monitoring process.</p>
<p>Not every child who starts to stutter needs to do the program immediately. About 75% of children who start to stutter recover without treatment within a few years. In general then, it will probably be better at this stage to monitor (watch and listen to) your child's stuttering for a few months to see if recovery occurs. This will not affect how well your child responds to the program. In Modules 1 and 2 of the program, you will learn how to monitor your child's stuttering. The program will support you further in the monitoring process.</p>
<p>Your child has been stuttering for a while now. As you may know, about 75% of children who start to stutter recover without treatment within a few years. Research indicates that waiting up to a year before starting treatment does not affect how well a child responds to the program.</p> <ul style="list-style-type: none"> • If your child is 2 or 3 years old, it would be better to wait and watch the stuttering a little longer. It is not known if the Lidcombe Program is effective for children who are 2 years old or younger. It is also important to know that children who are (nearly) 4 or older usually respond better than younger children. In Modules 1 and 2 of the program, you will learn how to monitor your child's stuttering. The program will support you further in the monitoring process. • If your child is (nearly) 4 or older, it is recommended to start this program now. You will learn how to have 'Smooth Talking Times' with your child in Modules 1 to 4.
<p>Your child has been stuttering for a while now. As you may know, about 75% of children who start to stutter recover without treatment within a few years. Research indicates that waiting up to a year before starting this program does not affect how well a child responds to it.</p> <ul style="list-style-type: none"> • If your child is 2 or 3 years old, it would be better to wait and watch the stuttering a little longer. It is not known if the Lidcombe Program is effective for children who are 2 years old or younger. It is also important to know that children who are (nearly) 4 or older usually respond better than younger children. In Modules 1 and 2 of the program, you will learn how to monitor your child's stuttering. The program will support you further in the monitoring process. • If your child is (nearly) 4 or older, it is recommended to start this program now. You will learn how to have 'Smooth Talking Times' with your child in Modules 1 to 4.

j) Your child's stuttering:

- comes and goes: your child has not been stuttering the last few days
- your child has been stuttering the last few days
- is always present

Your child's stuttering seems to come and go. This is not unusual, especially in young children soon after they start to stutter. This can also happen in older children. If your child is not stuttering right now, you should monitor your child's stuttering for a while to see if it reappears.
<i>No answer to be given</i>
<i>No answer to be given</i>

k) Has your child had stuttering treatment previously?

- No
- Yes Lidcombe Program
- other

<i>No answer to be given</i>
Because you have already had experience with the Lidcombe Program, this internet program may not be suitable. You should contact a speech pathologist and ask advice about whether to continue with the internet Lidcombe Program.
Try not to apply any procedures from the previous treatment when you start the Lidcombe Program, even if you think they may help your child. The Internet Lidcombe Program needs to be done as instructed.

l) Your child is:

- extremely distressed by his/her stuttering (for example your child feels frustrated, avoids talking, withdraws from talking or playing with other children, shows signs of tension or worry, makes comments about his/her stuttering, has changed the way s/he speaks or shows other signs of distress)
- sometimes distressed by his/her stuttering
- not distressed by his/her stuttering

Children often are distressed by their stuttering and this is understandable. Reactions can vary from feelings of frustration, to covering their mouth or changing the way they talk. The best thing you can do at this time is to listen to what your child has to say. Ignoring stuttering is not helpful; talk to your child about the stuttering in a sympathetic way e.g. discuss what has happened, how s/he felt, that feeling this way is normal, that s/he still can say what s/he needs to say and that you will be doing something to help very soon.
Children often are distressed by their stuttering and this is understandable. Reactions can vary from feelings of frustration, to covering their mouth or changing the way they talk. The best thing you can do at this time is to listen to what your child has to say. Ignoring stuttering is not helpful; talk to your child about the stuttering in a sympathetic way e.g. discuss what has happened, how s/he felt, that feeling this way is normal, that s/he still can say what s/he needs to say and that you will be doing something to help very soon.
<i>No answer to be given</i>

m) Your child has:

- difficulties talking or playing with other children because of his/her stuttering (for example your child is left out of play, doesn't like to talk in front of his/her peers, is teased or mocked or other things)
- no difficulties talking or playing with other children

Young children, even at preschool age (younger than 6 years old), can have trouble socialising because of their stuttering. In some cases they are teased or mocked, are not included in a game or activity by their peers or are not given the opportunity to speak by their peers or by preschool or day care staff. It is OK to ask your child if this is happening. If it is, try to talk to the staff about this to make them aware of this problem so they can help your child. On rare occasions, older children may say something upsetting, such as "Why can't you talk properly?" Children typically need comforting when things like this happen.

No answer to be given

n) You are:

- distressed by your child's stuttering (for example you have feelings of guilt, concern, uncertainty or frustration, you changed your behaviour such as taking time to listen to your child, you changed the way you talk to your child or other things)
- concerned about your child's stuttering
- not really distressed or concerned by your child's stuttering

Many parents are distressed by their child's stuttering and/or worry about the child's future. This program will help you feel better because you learn how to help your child talk more fluently.

Many parents are distressed by their child's stuttering and/or worry about the child's future. This program will help you feel better because you learn how to help your child talk more fluently.

No answer to be given

o) Your child takes medication regularly (other than the occasional medication, such as panadol).

- yes
- no

Stuttering can worsen after the intake of some medication. It is therefore important to watch your child's stuttering closely, especially when you introduce a new medication or change the dosage. If you think your child's stuttering is related to medication, you should stop this training and contact a speech pathologist for advice.

No answer to be given

p) How did you find out about this program?

- from friends
- from a speech pathologist
- from a health care professional, other than speech pathologist (doctor, nurse etc)
- from a child care worker, preschool teacher or other professional working with young children
- from an internet search engine, such as Google
- from the Australian Stuttering Research Centre website
- from an advertisement
- other, please specify.....

No answer to be given

q) What is your main reason for choosing the internet Lidcombe Program instead of doing the program with a speech pathologist?

- I live in a rural area
- I do not have access to a qualified speech pathologist
- I do not have the time to visit a speech pathologist
- I cannot travel to a speech clinic
- I like the idea of doing the program from the internet
- other reason, please specify.....

No answer to be given

Appendix B *Ethical Approvals for the Problem-solving Study and the Internet Parent Training Feasibility Study*



RESEARCH INTEGRITY
Human Research Ethics Committee
Web: <http://sydney.edu.au/ethics/>
Email: ro.humanethics@sydney.edu.au

Address for all correspondence:
Level 6, Jane Foss Russell Building - G02
The University of Sydney
NSW 2006 AUSTRALIA

Ref: [IMKFG]

16 May 2011

Associate Professor Ann Packman
Australian Stuttering Research Centre
Camperdown Campus – C42
The University of Sydney
Email: ann.packman@sydney.edu.au

Dear A/Prof Packman

Thank you for your correspondence received 9 May 2011 addressing comments made to you by the Human Research Ethics Committee (HREC). The Executive of the HREC, on 16 May 2011, considered this information and approved the protocol entitled "Internet Lidcombe Program for early stuttering".

Details of the approval are as follows:

Protocol No.: 05-2011 / 13627
Approval Period: May 2011 to May 2012
Authorised Personnel: Associate Professor Ann Packman
Dr Susan O'Brien
Professor Mark Onslow.
Ms Sabine Van Eerdenbrugh
Documents Approved: Parental Information Statement – non-stutter (version 02/05/2011)
Parental Information Statement – stutter (version 02/05/2011)
Participant Information Statement (version 17/03/2011)
Parental (or Guardian) Consent Form (version 17/03/2011)
Participant Consent Form (version 17/03/2011)
Participant Evaluation Form (version 17/03/2011)
Participant's Semi Structured Interview Topics (version 17/03/2011)

The HREC is a fully constituted Ethics Committee in accordance with the National Statement on Ethical Conduct in Research Involving Humans-March 2007 under Section 5.1.29.

The approval of this project is conditional upon your continuing compliance with the National Statement on Ethical Conduct in Research Involving Humans. A report on this research must be submitted every 12 months from the date of the approval or on completion of the project, whichever occurs first. Failure to submit reports will result in withdrawal of consent for the project to proceed. Your report is due by **31 May 2012**.

Chief Investigator / Supervisor's responsibilities to ensure that:

1. All serious and unexpected adverse events should be reported to the HREC within 72 hours for clinical trials/interventional research.
2. All unforeseen events that might affect continued ethical acceptability of the project should be reported to the HREC as soon as possible.

Manager Human Ethics
Dr Margaret Faedo
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E: margaret.faedo@sydney.edu.au

Human Ethics Secretariat:
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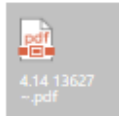
ABN 18 211 513 464
CRICOS 90028A

To: Ann Packman <ann.packman@sydney.edu.au>;

Cc: Sabine Helene Van Eerdenbrugh;

• You forwarded this message on 25/10/2012 11:50 AM.

📎 1 attachment



Dear Associate Professor Packman,

**Title: Internet Lidcombe Program for early stuttering
Protocol No: 13627**

Approved Documents:

Participant Information Statement – Version 19.09.2012

Participant Consent Form - Version 19.09.2012

Evaluation Form for the Internet Lidcombe Program-Training

Your request to modify the above application was considered by the Executive Committee of the Human Research Ethics Committee (HREC) at its meeting on **19 October 2012**. The modification has been approved as attached.

The Committee had no ethical objections to the modification/s and has approved the protocol to proceed.

Please do not hesitate to contact Research Integrity (Human Ethics) should you require further information or clarification.

Yours Sincerely

Human Research Ethics Committee
The University of Sydney



Health
South Western Sydney
Local Health District

Ethics and Research Governance Office
 Locked Bag 7272, LIVERPOOL DC, NSW, 1471
 Phone: 02 8738 8204
 Facsimile: 02 8738 8310
<http://www.sswlhd.nsw.gov.au/ethicsandresearchgovernance>

21st December 2012

Mrs Stacey Sheedy
 Stuttering Unit
 Bankstown Community Health Centre
 28-38 Raymond Street
 Bankstown NSW 2200

Dear Mrs Sheedy,

*******THIS LETTER CONSTITUTES ETHICAL APPROVAL ONLY. YOU MUST NOT COMMENCE THIS RESEARCH PROJECT UNTIL SEPARATE SITE SPECIFIC AUTHORISATION HAS BEEN GRANTED*******

Project Title: Testing of the Internet Lidcombe Program-training.
HREC Reference: HREC/12/LPOOL/396
SSA Reference: SSA/12/LPOOL/397
Local Project Number: 12/233

Thank you for your response dated 12th December 2012 to our request for further information dated 19th November 2012. This HREC is constituted and operates in accordance with the National Health and Medical Research Council's *National Statement on Ethical Conduct in Research Involving Humans* and the *CPMPACH Note for Guidance on Good Clinical Practice*.

I am pleased to advise that the Committee has granted ethical approval of the above project.

The following documentation has been reviewed and approved:

Document	Version	Date
National Ethics Application Form	AL/117D4F08	Nil
Participant Information Sheet and Consent Form	2.0	12/12/2012
Protocol	1.0	25/09/2012
University of Sydney Ethics Approval Letter	Nil	15/05/2011

Please ensure for all future documents submitted for review include a document version number, document date and page numbering.

Monitoring Requirements:
 (National Statement Chapters 2.1 and 5.5)

- The Committee has classified this project as:

Low Risk



Health
South Western Sydney
Local Health District

<http://www.southwesternsydney.nsw.gov.au/health/ethicsandresearch/>

Ethics & Research Governance Office

Locked Bag 7279, LIVERPOOL BC, NSW, 1871

Phone: 02 8733 8304

Fax/min: 02 8733 8313

21st December 2012

Mrs Nancy Sheedy
 Stuttering Unit
 Bankstown Community Health Centre
 3E 38 Raymond Street
 Bankstown NSW 2200

Dear Mrs Sheedy,

Project Title: Testing of the Internet Lidcombe Program-training.
HREC Reference: HREC/12/LPOOL/398
SSA Reference: SSA/12/LPOOL/397
Local Project Number: 12/233

*****SITE SPECIFIC AUTHORISATION*****

Thank you for your correspondence dated 19th December 2012 in our further information letter dated 11th December 2012.

I am pleased to inform you that the Chief Executive has granted authorisation for this study to take place at the following site(s):

- Stuttering Unit, Bankstown Lidcombe Hospital

The participant documents approved for use at this site are:

- o Participant Information Sheet and Consent Form, Version 2.0, dated 12th December 2012

Note: CV's for Mrs Sheedy and associated investigators are not required to be submitted for future 2013 projects as there is now one on file.

The following conditions apply to this research project. These are additional to those conditions imposed by the Human Research Ethics Committee that granted ethical approval:

- Participant Information Sheet and Consent Form should be separate documents.
- Insert Project No 12233 in the complaints paragraph.
 * Please forward a copy of the updated Participant Information Sheet and Consent Form to the office.
- 1. Proposed amendments to the research protocol or conduct of the research which may affect the ethical acceptability of the project, and which are submitted to the lead HREC for review, are copied to this office.
- 2. Proposed amendments to the research protocol or conduct of the research which may affect the ongoing site acceptability of the project, are to be submitted to this office.
- 3. Please note that you are responsible for making the necessary arrangements (e.g. identity pass and vaccine compliance as per NSW Health Policy Directives PD2011_005) for any researcher who is employed by the South Western Sydney Local Health District and is conducting the research on-site.

Yours sincerely

Merata Ghazal
 Acting Manager
 Ethics & Research Governance Office
 South Western Sydney Local Health District (SWSLHD)

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Appendix D *Questions of problem-solving study*

‘We asked several speech pathologists to write down questions about the Lidcombe Program that parents have asked them during their child's treatment. I will ask you questions related to these original questions, one by one. Could you tell me what you would say or do if parents asked you these questions during a clinical visit?’

GENERAL LP

My child is cognitive immature. Will s/he ‘get’ what the LP is? Does s/he need to get it?

My child is nearly 3 years of age. My child’s language skills are very advanced for her/his age. Can s/he start to be treated with the LP? Will treatment take longer, as some more complex grammar only emerges at 4 or 5 years of age?

Can my child be successfully treated with the LP when s/he has troubles taking instructions and sitting still?

Does my child need to be aware of his/her stuttering for successful treatment? If my child would become aware, what will have made my child aware?

Can the LP make stuttering worse?

Can the LP be ineffective? How often and why is a child not classic in his/her response to the LP treatment?

What makes a clinician decide to start the LP with my child?

Do most children who come to the clinic start with treatment?

How does the monitoring process happen?

Will the LP be started if my child was fluent at the time of assessment?

STUTTERING BEHAVIOUR

What to do if my child has subtle stutters?

How do I know if my child’s disfluencies are normal?

How do I know if my child has word finding problems?

My child is saying ‘um-um’ very often. That is not a repetition, prolongation or block. So is that then not a stutter?

Sometimes my child uses the voice of his/her favourite TV character when s/he talks. Is that related to his/her stuttering?

What are secondary behaviours and when do they appear?

Is there a general order in which SB appear? Does it apply to all children?

Is severity linked to SB?

What could be a reason for a change in SB (treatment effect, attempts to mask or control stuttering, learning effect listener, other)

SPEECH MEASURES

In general, what does SR need to reflect? More specifically for example, what could SR3 reflect?

How scoring my child's stuttering severity if my child only has occasional stutters?

How scoring my child's stuttering severity if my child has ambiguous stutters?

My child's speech fluctuates during the day. How can I score that?

My child was fluent for a few days and now stutters more again. I feel so frustrated. Can I do something about it?

I always forget to give SR. Are there ways to remind me?

Is it a problem that I do not have a lot of time together with my child to listen carefully?

The scores I give for my child's stuttering are not consistent. What can be done about that?

What can be a reason for a change in SR (treatment effect, learning effect listener, other scenarios)?

My child started the LP 6 weeks ago and I do not think s/he is making progress. How do I know s/he is making progress and what can I do?

What would be a reason to leave the LP?

ORGANISING TREATMENT SESSIONS (TS)

How do I need to do TS if my child goes to preschool/day care and is tired after?

How can I organise TS every day, given that my partner and I are very busy (e.g. work full time)?

Can my other child and/or children be included in TS at home?

Is it easier to organise TS on the weekends?

How can I organise a TS with my child on a really busy weekday e.g. with after school activities?

Do I need to do a TS at a time during the day that my child is quite fluent or is stuttering?

It is nearly holidays. Is there something I need to know or do before the holidays?

What will happen and/or what do I need to do during the holidays?

What will happen and/or what do I need to do after the holidays?

I am not able to do TS for 1 or a few days (e.g. marriage of close relative on the weekend).

Can I just skip TS for these few days?

It is very hard to continue the LP for a longer period of time (a few weeks or months). How can I be prepared and/or what should I do during that time?

Can my partner be involved in the treatment?

Can other people such as grandparents be involved in the treatment?

TREATMENT SESSIONS

Why are TS at the early stages of the program moments in which my child and I learn? What are the important things that I need to know?

Does a TS need to be 15 minutes? Can it be shorter or can it be split up? Can it be longer?

Can I do TS in the car with my child?

Can I do TS instead of my child's reading time, just before going to bed?

Where else than home can I do TS?

I can have difficulties managing my child's behaviour at times. Is that a problem?

Can I do 2 TS every day? When should I do them?

In which circumstances could I be advised to do 2 TS with my child each day?

TS feel uncomfortable to me and/or my child. Why is that? What can I do about it?

TS seem to be punitive for my child. Why is that? What can I do about it?

What will happen if I decided to stop the program because it feels punitive to my child?

My child and/or I are not enjoying TS. What can I do?

I find it hard to take the lead in TS. Why would that be and what can I do about it?

Which, if any, are procedures that are difficult for parents to implement in TS?

Why is it important to combine TS with FB given outside TS?

Why does my child prefer TS over FB given outside TS? What should I do about it?

What is important in the conversations with my child during TS and how do I shape them?

My child is fluent when answering with short answers but not with longer answers. What should I do?

My child is a severe stutterer. How should I shape our conversation?

What kind of language should I use with my child during TS?

Why do activities of TS need to be varied?

My child is stuttering when we are using books during TS. Why would that be and what should I do?

What types of activities would be suitable to do with my child during TS?

What types of books can be used in TS?

My child prefers me to read the story when I suggest talking about the pictures. Is that a problem? If yes, what can I do about it?

Is there a difference in the type of language used when doing different activities in TS?

My child is fluent in conversations during TS but not when we are using books. Why would that be and what can I do?

When should I start doing TS in other situations than doing an activity at home? How should I do that?

I prefer to do an activity at a table at home with my child. What could I do to make that situation more naturally?

My child is only fluent during TS. Why would that be and what can I do about it?

What can I do when my child is saying 'You know what I mean, you know what I mean' in the middle of his/her sentences during TS?

My child was having repetitions and now s/he is having prolongations. Why could that be and how should they be treated?

My child uses a baby voice during TS. S/he can be fluent then. Is that something I should encourage? If no, what should I do then?

My child is having secondary behaviours. How should I treat them?

My child sometimes avoids words because s/he knows s/he will stutter on it. What should I do about that?

FEEDBACK

Should I use all types of FB in TS with my child?

Is there an order in how FB is introduced to my child during TS or are the 5 types of FB introduced all at once?

What is the frequency and ratio for FB in TS?

Should I use non verbal FB in TS with my child?

Why is it important to combine FB in TS with FB outside TS?

When is it introduced outside TS and is there an order in how they are introduced?

What is the frequency and ratio for FB outside TS?

Is it a good idea to set up goals for fluency?

Does it happen that a parent asks too many requests for correction? Why could it happen and what can be done about it?

Does it happen that a parent asks too much praise? Why could it happen and what can be done about it?

I find it hard to ask my child to correct a stutter. What could I do about that?

My child ignores praise. Is that a problem? What can be done about it?

My child ignores all types of FB. Is that a problem? What can be done about it?

My child does not like requests for corrections. Why could that be? What should I do then?

My child does not like praise. Why could that be? What should I do then?

My child does not like the words 'smooth' and 'bumpy'.

How can I give FB when my child talks a lot and only has a stutter at the beginning of what s/he said?

How can I give FB when my child is stuttering when s/he gets excited?

How can I give FB to my child who is very talkative?

What types of secret signs could I use?

ADJUSTING TREATMENT

How do I adjust treatment to my child's stuttering severity?

My child is not improving. What can I do?

My child is stuttering severely. Should I adjust my FB in TS? Should I give FB outside TS?

Are there other things than shaping our conversation that I could do during TS?

My child's stuttering has increased. Why could that be? What can I change in treatment?

My child is not stuttering severely. How should I adjust treatment if my child is not fluent in TS?

My child does not generalise his/her fluent speech outside TS. What can I change in treatment?

How should I adjust treatment if my child's stuttering severity is low, e.g. SR2-SR3?

My child is very talkative. Will the treatment process take longer?

My child is talkative. What type of activities should I do during TS?

My child is talkative. How should I shape our conversation during TS?

My child is talkative. What type of FB should I use?

How should I adjust treatment if my child is stuttering very mildly for a long time?

My child always stutters more when s/he is at his/her grandfather's house. What can I do about that?

My child's stuttering still increases when s/he is excited, tired, fighting with his/her siblings or after the holidays. Will that ever be over? What can I do about it?

My child lost his/her motivation. What could I do? Is introducing a prize for getting down to SR1 or SR2 a good idea?

I am a bit demotivated since my child is having treatment for such a long time.

STAGE 2

How can I prevent my child from having a relapse?

How is Stage 2 managed? Is there a difference between the first 6 to 8 weeks and later?

How are TS withdrawn in Stage 2?

How is FB outside TS withdrawn in Stage 2?

CONDITIONS

My child is very sensitive. Are there things I should be careful for or do differently?

My child speaks more than 1 language. Are there things I should do differently? Do I need to adjust things?

My child has a concomitant speech and/or language disorder. Should I combine his/her treatments? Will treatment be successful for my child? Do I need to adjust things?

My child has an autism spectrum disorder. Will treatment be successful for my child? Do I need to adjust things?

My child has attention/behavioural issues. Will treatment be successful for my child? Do I need to adjust things?

I have twins who both need treatment. How should that be organised? What if one responds better than the other?

I have a younger child that also seems to need treatment. How could that be organised?

I am stuttering. Will I be able to do the LP with my child?

I have an intellectual disability/learning disorder. Will I be able to do the LP with my child?

I am depressed/ anxious. Will I be able to do the LP with my child?

My child and I do not get along very well. Will I be able to do the LP with him/her?

I am divorced. Will I be able to do the LP with my child?

I am feeling distressed about my child's stuttering. What could I do?

My child is feeling distressed about his/her stuttering. What could I do to help him/her?

My child is being bullied/teased at (pre)school. What should I do to help him/her?

I am feeling frustrated about the increase of my child's stuttering.

I doubt if I am able to treat my child.

I am anxious/ stressed because I have such a great responsibility in this program.

Can I talk about how I feel when I start this program with my child?

EXTRA QUESTIONS

What are the areas in the LP you encounter most problems with?

Appendix E Parent-o-meters in the Internet Parent Training

MODULE 1 - RECOGNISING STUTTERING	
Aim of Module 1	✓
Repetitions	✓
Prolongations	✓
Blocks	✓
Additional Stuttering Behaviours	✓
Stuttering or Not?	✓
Your Turn: Recognising Stuttering	✓
Make a Video	✓
Parent-O-Meter	✓
Action Plan	✓
Print Package	⊗
Module 1 Completed	⊗

Parent-O-Meter

You have nearly completed Module 1. What follows is how you can practise at home what you have learnt in this Module.

Hopefully you are enjoying Part 1 of the program so far. Some parents who have done the Lidcombe Program with their child have said that it is not always easy. See which of the feelings about recognising your child's stuttering you share with other parents. You can move the arrow by clicking on the picture that shows how you feel about recognising stuttering.

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MODULE 2 - SCORING STUTTERING SEVERITY	
Aim of Module 2	✓
How to Score Stuttering Severity	✓
Stuttering Severity Scores	✓
Your Turn: Scoring of Stuttering Severity	✓
Your Turn: More Scoring of Stuttering Severity	✓
Stuttering Chart	✓
Parent-O-Meter	✓
Action Plan	✓
Print Package	✓
Module 2 Completed	✓

Parent-O-Meter

You have nearly completed Module 2. You have learnt how to score stuttering severity. Some parents who have done the Lidcombe Program with their child have said that it is not always easy. Which of the feelings about scoring your child's stuttering severity do you share with them? You can move the arrow by clicking on the picture that shows how you feel right now.

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MODULE 3 - SMOOTH TALKING TIMES (ACTIVITIES AND CONVERSATIONS)

- Aim of Module 3 ✓
- What is Smooth Talking Time? ✓
- Activities for Smooth Talking Times ✓
- More Activities for Smooth Talking Times ✓
- And More Activities for Smooth Talking Times ✓
- Activities you Have at Home ✓
- Natural Conversations ✓
- Conversation with the Child - Short Answers ✓
- Conversations with the Child - Longer Answers ✓
- Your Turn: Practise the Questions ✓

Parent-O-Meter

You have nearly completed Module 3.

This module was long and intense, but hopefully also useful. Click on the picture that shows how you feel about choosing activities and having conversations during Smooth Talking Times.

'There are so many things I need to remember. It may take me a while to do it right.'

Great!

'OK, this seems do-able to me.'

'Ggrrr...'

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MODULE 4 - SMOOTH TALKING TIMES 2 (VERBAL FEEDBACK)

- Aim of Module 4 ✓
- Verbal Feedback for Fluent Speech ✓
- Your Turn: Labelling Verbal Feedback for Fluent Speech ✓
- Your Turn: Thinking about Verbal Feedback ✓
- Your Turn: More Thinking about Verbal Feedback ✓
- Your Turn: And More Thinking about Verbal Feedback ✓
- Your Turn: Final Thinking about Verbal Feedback ✓
- Extra Tips to Organise Smooth Talking Time ✓
- Your Turn: Dos and Donts for Smooth Talking Times ✓

Parent-O-Meter

You have nearly completed the last training module of Part 1 of the program.

How do you feel about giving verbal feedback for your child's fluent speech during Smooth Talking Time?

'I feel a bit uncomfortable saying these things to my child.'

I feel ready to go for it!

'Ggrrr...'

Start doing Smooth Talking Times and see how you feel about giving positive feedback to your child. If you are not convinced about it, you should contact a speech pathologist for advice.

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Appendix F Internet Parent Training Exercises

CONVERSATIONS

- Aim of Module 3 ✓
- What is Smooth Talking Time? ✓
- Activities for Smooth Talking Times ✓
- More Activities for Smooth Talking Times ✓
- And More Activities for Smooth Talking Times ✓
- Activities you Have at Home** ✓
- Natural Conversations ✓
- Conversation with the Child - Short Answers ✓
- Conversations with the Child - Longer Answers ✓
- Your Turn: Practise the Questions ✓
- Your Turn: Identifying of Adjustments ✓
- Your Turn: More Identifying of Adjustments ✓

Activities You Have at Home

Can you think of picture books, toys, games and activities that you have at home, which you could use with your child? Thinking about this now will help you later on to find activities for your Smooth Talking Times each day. Write them in the boxes below. Click on the "Done" button when you are finished.

Picture books:

Toys:

For example: *Spot, Maisy, Charlie and Lola* For example: *Plastic animal set*

Games:

Activities:

For example: *Memory, lotto* For example: *Play doh, cooking* **Done**

You can see many more activities that could be used if you click [here](#). You can also find this list in the Print Package, at the end of this module. You will notice that general toys such as blocks or cars are not included in the list as it can be too hard to lead the conversation during free play activities such as these at this point. However, general toys can be used if they are part of an activity.




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CONVERSATIONS)	
Aim of Module 3	✓
What is Smooth Talking Time?	✓
Activities for Smooth Talking Times	✓
More Activities for Smooth Talking Times	✓
And More Activities for Smooth Talking Times	✓
Activities you Have at Home	✓
Natural Conversations	✓
Conversation with the Child - Short Answers	✓
Conversations with the Child - Longer Answers	✓
Your Turn- Practise the Questions	✓
Your Turn- Identifying of Adjustments	✓
Your Turn- More Identifying of Adjustments	✓
Your Turn- And More Identifying of Adjustments	✓

Your Turn: Practise the Questions

Time now for you to practise this. In this picture a girl is patting a guinea pig. If you wanted a short answer, you could ask: 'What are you doing with the guinea pig?' The girl could answer: 'patting' or 'holding her.' You could also ask: 'What are you holding?' and she could answer: 'a guinea pig'. These answers are short, just what you wanted. However, if you wanted a longer answer, you could ask: 'How do you fed your guinea pig?' or 'Why do you like her?' Can you think of some questions for short and long answers for the other pictures? Write the questions below. If you like, you can look at some more questions. Just click on the button 'More questions'.

	Questions to receive short answers	Questions to receive long answers
	<input type="text"/> More questions	<input type="text"/> More questions
	<input type="text"/> More questions	<input type="text"/> More questions
	<input type="text"/> More questions	<input type="text"/> More questions

[VIEW PROGRESS](#) 



Drag each example of feedback to the right box.

MODULE 4 - SMOOTH TALKING TIMES 2 (VERBAL FEEDBACK)

Aim of Module 4

Verbal Feedback for Fluent Speech

Your Turn: Labelling Verbal Feedback for Fluent Speech

Your Turn: Thinking about Verbal Feedback

Your Turn: More Thinking about Verbal Feedback

Your Turn: And More Thinking about Verbal Feedback

Your Turn: Final Thinking about Verbal Feedback

Your Turn: Labelling Verbal Feedback for Fluent Speech

You have seen that you can give verbal feedback in 3 ways to your child when s/he is fluent. Now drag the examples of feedback to the right box.

You sounded great!

Did you hear any bumps?

You sounded so smooth then!

That was lovely smooth talking!

No bumps there.

Smooth talking.

Hey did you say that smoothly?

That was smooth.

Was that smooth?

Praising your child for talking fluently

Letting your child know that s/he was fluent

Asking your child if s/he was fluent

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Aim of Module 4	
Verbal Feedback for Fluent Speech	
Your Turn: Labelling Verbal Feedback for Fluent Speech	
Your Turn: Thinking about Verbal Feedback	
Your Turn: More Thinking about Verbal Feedback	
Your Turn: And More Thinking about Verbal Feedback	
Your Turn: Final Thinking about Verbal Feedback	
Extra Tips to Organise Smooth Talking Time	
Your Turn: Dos and Donts for Smooth Talking Times	
Your Turn: More Dos and Don'ts for Smooth Talking Times	
Smooth Talking Time: Putting Modules 2 and 4 Together	

Your Turn: Dos and Don'ts for Smooth Talking Times

Read the following statements about Smooth Talking Times. Click on the traffic light to express your thoughts. Click on the green light when you agree and on the red one when you disagree.

- Smooth Talking Time should be done every day.

It is recommended to organise Smooth Talking Times every day. Smooth Talking Times should be fun for a child. Once they have become part of everyday life a child may spontaneously ask to have them.
- Smooth Talking Time should last for at least twenty minutes.

Smooth Talking Times should take about fifteen minutes. They could last twenty minutes or longer if a parent and child are enjoying them.
- Smooth Talking Time can be done when siblings are watching TV.
- The preschool teacher can do Smooth Talking Time.
- Many parents tell their children a story before they go to bed. This time can be used for Smooth Talking Time.
- It does not really matter when in the day Smooth Talking Time is done.
- Smooth Talking Time is only done during the week.
- A child's favourite activity can be used for Smooth Talking Time.

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Aim of Module 4	✓
Verbal Feedback for Fluent Speech	✓
Your Turn: Labelling Verbal Feedback for Fluent Speech	✓
Your Turn: Thinking about Verbal Feedback	✓
Your Turn: More Thinking about Verbal Feedback	✓
Your Turn: And More Thinking about Verbal Feedback	✓
Your Turn: Final Thinking about Verbal Feedback	✓
Extra Tips to Organise Smooth Talking Time	✓
Your Turn: Dos and Donts for Smooth Talking Times	✓
Your Turn: More Dos and Don'ts for Smooth Talking Times	✓
Smooth Talking Time: Putting Modules 2 and 4 Together	✓

Your Turn: More Dos and Don'ts for Smooth Talking Times

- Only creative people can do Smooth Talking Time properly as planning different activities requires creativity.
- Parents should do Smooth Talking Time every day, even if the child is unwell.
- A child should enjoy Smooth Talking Time.
- Variation is the key to a child's motivation.
- Some parents don't like to give feedback because it feels unnatural. These parents should not give feedback during Smooth Talking Time at all.
- There is nothing parents can do if a child is talking a lot without stopping during Smooth Talking Time.
- Parents give feedback to everything the child said fluently during the day.
- Even though a child can talk without stuttering during Smooth Talking Time, verbal feedback needs to be given.

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Appendix G *Print Packages of the Internet Parent Training*

Set-up of the Program

INTRODUCTION		You receive information about: Stuttering Lidcombe Program You decide if you should start the program with your child
PROGRAM	Part 1	You learn procedures in the 4 training modules You log in at regular but rather flexible times
	Part 2	You work directly with your child You log in at regular and fixed times You receive advice on how to proceed

Frequently Asked Questions (FAQ) about stuttering in young children and the Lidcombe Program

What is stuttering?

A child is stuttering when his/her speech is interrupted by disfluencies that are difficult to control. These stutters can be: 1) repetitions of words or parts of words, e.g. "mu-mu-mum, can you do that?" or "I-I like this". 2) prolongations of speech sounds (stretched sounds), when a sound is longer than normal, e.g. "I wwwwwant this" and/or 3) blocks (getting stuck), if a sound doesn't come out, e.g. "----- but ...". Stutters may be accompanied by signs of struggle and tension or by other behaviours. These can be speech-related, such as systematic use of "uhm", other words or noises, and/or physical, such as arm movements or excessive eye blinking.

Children vary greatly in how severely they stutter. A child's stuttering may also vary a lot over time, for example it may come and go over days or months or may be worse in certain situations (e.g. when a child is excited, anxious, sick or tired).

Do many children stutter?

Stuttering is not unusual in children under the age of 5 years. In Australia, up to 11% of young children start to stutter. Most (about 75%) will recover without professional help but this may take a number of years. However, it is not possible to predict if a child will recover, although it is known that girls are more likely to recover naturally than boys. Stuttering is more common in boys than in girls.

What causes stuttering?

There are many theories and popular beliefs about what causes stuttering. However, despite all the scientific research conducted from the second half of the 20th century onwards, the cause of the disorder is still unclear. All that can be said at present is that stuttering is most likely a slight wiring problem in that part of the brain that underlies speech production. That problem may resolve in time or may remain faulty. In short, stuttering is thought to be a physical disorder. It is not caused by psychological factors such as the way parents raise their children or communicate with their children when they are young, nor by nervousness or stress. However, psychological factors such as anxiety or stress can make stuttering worse. Stuttering tends to run in families and it is generally accepted that this is because genetics are involved in the cause. However, the precise way stuttering is inherited is unclear at present. Stuttering can sometimes start after an event such as an accident or the birth of a sibling, but these events should be seen as triggers rather than the cause per se.

When does stuttering start?

Stuttering typically starts when children are putting words together into short sentences (usually between 2 and 4 years of age). Stuttering can appear suddenly or can start gradually. In a few cases, onset can be so sudden and severe that parents think their child has a serious illness. In most cases, the first sign of stuttering is the child repeating syllables such as "I-I-I want ..." or "where-where-where is the ...". This can range from mild to severe. The type of stutters may change soon after the child starts to stutter and the child may prolong (stretch) sounds, for example "wwwwwhere is my drink?" or may block (complete stoppage of speech), for example "----- can I have a drink". Often, as stuttering develops, children show signs of effort and struggle while speaking.

Does stuttering have an effect on a child's daily life?

The impact of stuttering on children varies. It has been observed, however, that stuttering can interfere with communication soon after it begins. Children sometimes get frustrated when they stutter and cannot get the words out. They may also say things like "I can't talk properly". Other preschool children, or even older children, may react negatively to a child's stuttering, especially if the child gets really stuck and cannot get the message across.

Does stuttering have an effect on the child's family?

Recent research has shown that almost all parents are worried and distressed about their child's stuttering. Reported reactions from parents include worry, uncertainty about what to do or say to the child about the stuttering, frustration and self-blame.

What can parents do to help their child when s/he struggles with stuttering?

The best thing parents can do is to be an interested listener, to ask questions and to respond to their child, as they would do with any other child. If a child is upset, parents can help by saying that they understand that the child gets stuck sometimes and that they are going to find ways to help him/her.

Is it sensible to do the Lidcombe Program when the child is so young?

It is generally accepted that, if possible, children should start the Lidcombe Program before the age of 6 years. This is because:

- 1) The brain of young children is still developing, and this may allow children to find alternative 'pathways' to do the same task (i.e. speaking fluently).

- 2) The Lidcombe Program uses procedures, such as praising when they do something right, that are powerful when young children are learning new skills.

Can the Lidcombe Program cure stuttering?

Stuttering cannot be cured. Stuttering can be effectively treated with the Lidcombe Program in early childhood so that children stop stuttering or stutter very little. The Lidcombe program can still be effective when children are older, but they may have to think about their talking all the time to achieve fluency.

What is the best time to start the Lidcombe Program?

This depends on several factors:

It is known from research into clinic-based Lidcombe Program that waiting for a while before starting the program (even up to 1 year after a child started to stutter) does not mean the child will not respond as well. Hence, in principle, it may be sensible to wait for up to a year after a child starts to stutter to see if the stuttering goes away naturally. Unfortunately, it is not possible to know in advance if a child is going to recover naturally.

If a child's stuttering is interfering with social activities, and/or the child starts to become frustrated, angry or sad about his/her stuttering, it may be better to start the Lidcombe Program rather than waiting.

Family circumstances are taken into account when deciding when to start.

This program helps parents in deciding when to start.

How does the Lidcombe Program reduce stuttering?

It is not entirely clear how the Lidcombe Program reduces stuttering. The program has been developed in close collaboration between university researchers and speech pathologists and this means that it is well suited for most families. The positive feedback that the parent gives to the child about his/her speaking and the fact that Smooth Talking Times are done in the child's everyday environment may contribute to its success.

Is the Lidcombe Program safe?

Research into clinic-based Lidcombe Program has shown it to be a safe program for stuttering in preschool children. However, it is essential that the child enjoys the program and is not upset by the parent drawing attention to his/her speech. Research has shown that after the program, parent and child conversed naturally and that parent-child relationships and the behaviour of the child were not affected.

Can school aged children (+6 years old) be treated with the Lidcombe Program?

School aged children have been treated with the Lidcombe Program for stuttering, but the results have not been as good as with younger children. Certain procedures of the Lidcombe Program need to be modified in order to give older children the help they need. Parents of school aged children who want their children to get the Lidcombe Program, should contact a speech pathologist. They should not start this internet program.

Can stuttering come back after completing the Lidcombe Program?

Stuttering can reoccur in some children later in childhood. The program helps parents to deal with this. If the stuttering continues, the parent should contact a speech pathologist.

Are there other programs for stuttering?

There are other programs for stuttering. The Lidcombe Program uses a 'direct' approach, as it focuses directly on the child's speech. There are other more 'indirect' approaches and these involve things like parents talking more slowly. Some programs are a combination of 'direct' and 'indirect' approaches. However, clinic-based Lidcombe Program is the only program supported by extensive research, including clinical trials. It is important for parents to know that they can do clinic-based Lidcombe Program with a speech pathologist, if they do not want to do the program over the internet.

Can parents do the Lidcombe Program with their child if they stutter themselves?

There is no evidence that a parent's stuttering will interfere with the effectiveness of the program.

The aim of the Internet Lidcombe Program

is to help your child become as fluent as possible, at all times, in all situations

The program will:

teach you about stuttering and the Lidcombe Program

explain for you the different procedures of the Lidcombe Program

help you to organise and do Smooth Talking Times with your child

guide you through the program with personalised advice

support you if problems arise

Statements

By clicking the *I agree*-button in the Internet Lidcombe Program, you have agreed to the following conditions:

Privacy/Confidentiality Statement

This program will collect a limited amount of information about you and your family and about the progress through the program. This, however, will not include any information that identifies you, such as your name and address. The information will be used to give you advice and to evaluate if the program is useful and successful. For the latter reason, information may be statistically analysed and used for publications (journal, conference). Your email address will only be used for matters relating to this program, e.g. to send reminder messages.

Responsibility

This program has been developed after research with many children who stutter, in speech pathology clinics. The program ensures the best possible intervention, but its responsibility ends by providing the advice.

Some basic advice about doing the Internet Lidcombe Program

PART 1

Take your time to go through this introduction and the training modules in Part 1 of the program.

Expect the training to take at least a couple of hours. However, you can take breaks during this time.

Make sure the gaps between your log-ins to the program are not longer than a few days. Emails will be sent to you to remind you if you are away from the program for longer than this.

Practise at home what is listed in the action plans at the end of each training module but remember that this is not the program itself yet.

PART 2

Expect Stage 1 of the program to take at least 3 months and probably longer; Stage 2 may last up to a year.

The program may take longer for children whose stutter is more severe.

You will need to invest time to do this program, especially in Stage 1. You will be asked to sit down with your child for about 15 minutes and to record scores every day. The program also requires you to log in every week once you started Part 2.

Information You Need

If you would like to keep the information about stuttering and your child/family that you received in this Introduction, you should go back to the previous page 'Information You Need' to print the tips and advice. You will see a button 'PRINT' in the top left corner.

Examples of Stuttering

Repetitions

A child who stutters often repeats words or parts of words more than once, such as 'I-I-I want this', 'ba-ba-baby', 'beauti-beauti-beautiful' or 'over over over the fence'. This repetition is usually the first type of stutter that appears.

Prolongations

Sometimes a child seems unable to move past a sound and stretches that sound. Often such a stretched sound is easy to recognise, but sometimes it is subtle and hard to identify. Stretched sounds can be any sound, a consonant like in 'wwwwater' or a vowel like in 'IIII want to do this'. Often stretched sounds are produced with tension.

Blocks

If a child gets 'stuck' on a word and there is a period of abnormal silence, the stutter is called a block. For example, a child would like to say "but I go". Unfortunately this child gets stuck on trying to get the first sound out and therefore there is an abnormal silence, as in "...but I go". Blocks are often easy to identify as the child obviously struggles to get the word out. There can be a lot of tension and a child may be upset by not getting the word out. However they might be very subtle too.

Additional stuttering behaviours

Some children do more than repetitions, prolongations or blocks. They may:

Use little words such as um-um or wait-wait, which fill in time and which they think will help them to be more fluent. These may seem natural and therefore it can sometimes be difficult to know if a child is actually stuttering.

Use a baby voice or the voice of a TV character which can sometimes seem to reduce stuttering. However, using such voices is not helpful in the long run, so a child should not be encouraged to do that.

Make unusual noises, moving body parts or grimacing. This is not common and typically goes away as the stuttering reduces.

Action Plan Module 1: Recognising Stuttering

With the information provided in this module, you may recognise your own child's stuttering a little better. Try now the following actions at home with your child:

Listen carefully to your child's speech

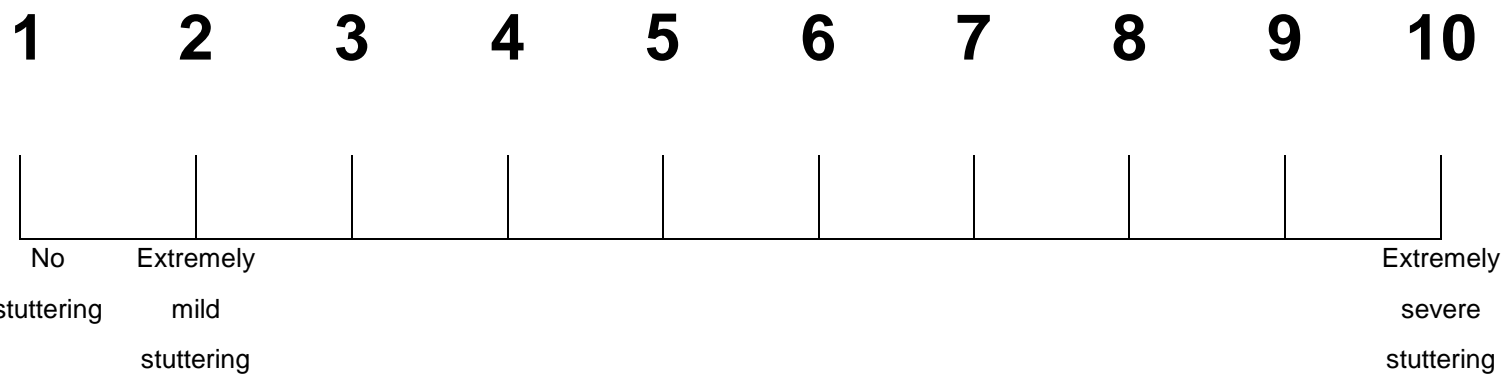
Try to recognise the stuttering in your child's speech

Make a video of your child's stuttering

Stuttering Severity Scale

The Lidcombe Program has a 10-point scale to score your child's stuttering severity each day. The scale starts at number 1; there is no zero. You give a stuttering severity score of 1 if your child did not stutter that day. You give a stuttering severity score of 2 if your child's stuttering was extremely mild or there were very few stutters that day. At the other end of the scale is severity score of 10. This is the highest score and is used for the most severe stuttering you can imagine any child to have. Scoring stuttering severity is not always easy and scores, even from experienced speech pathologists, can differ slightly. More concrete examples of different severity scores and more practice follows further in this module to help you give a reliable severity score to your own child's stuttering.

The severity score you give your child's stuttering is based on what you see and hear. The stuttering severity score takes into account both how often stuttering happens and what types of stutters occur on a whole day. There is no rule for this; you must simply weigh up in your own mind the severity of the stuttering, overall. While your child's stuttering may vary during each day, you should assign a score that you think best represents the stuttering for that day. If your child's stuttering is fluctuating a lot through the day, for example you would score your child's stuttering at a severity of 4 in the morning and at a severity of 7 in the afternoon and those higher severities are not related to very brief moments, such as when your child is excited, you should only record the most severe time of the day. Scoring your child's stuttering severity each day is essential because the severity scores are used to see how your child is responding to the program in Part 2. The severity scores are so important that without them, it will not be possible to guide you through Part 2. You will need to collect a typical severity score for your child's stuttering for a whole day, every day. You can discuss the severity of your child's stuttering with your partner or another person that is important in your life, but for consistency it should be only you who finally decides on the daily severity score.



Stuttering Severity Scores

	Score 1	Score 2	Score 3	Score 4, 5, 6	Score 7, 8, 9	Score 10
Severity of stuttering	No stuttering	Extremely mild	Mild	Moderate	Severe	Extremely severe
What types of stutters appear and how often?	No stutters	Very occasional repetitions and/or very occasional and brief prolongations and/or blocks	Occasional repetitions and/or occasional prolongations and/or blocks	More frequent repetitions and/or prolongations and/or blocks	Frequent repetitions and/or prolongations and/or blocks	Frequent and severe repetitions and/or prolongations and/or blocks
How does the child get his/her message across?	Gets message across easily	Gets message across easily	Gets message across quite easily	May take some time and effort to get message across	Takes lots of time and sometimes cannot get message across at all	Usually cannot get message across at all
Does the child's speech sound effortful?	No	No	No	Sometimes	Most of the time	Almost always
Would another person notice the stuttering?	There is no stuttering	Probably not	Probably	Certainly	Certainly; likely to feel uncomfortable about it	Certainly; will frequently feel uncomfortable about it

Stuttering-Severity-Chart

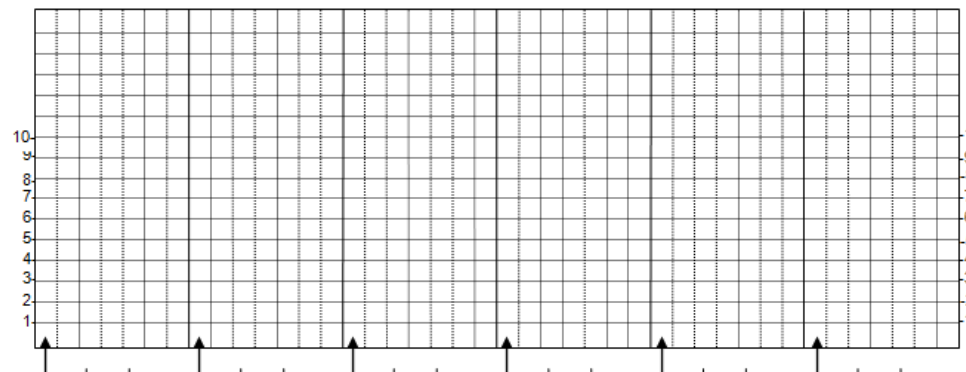
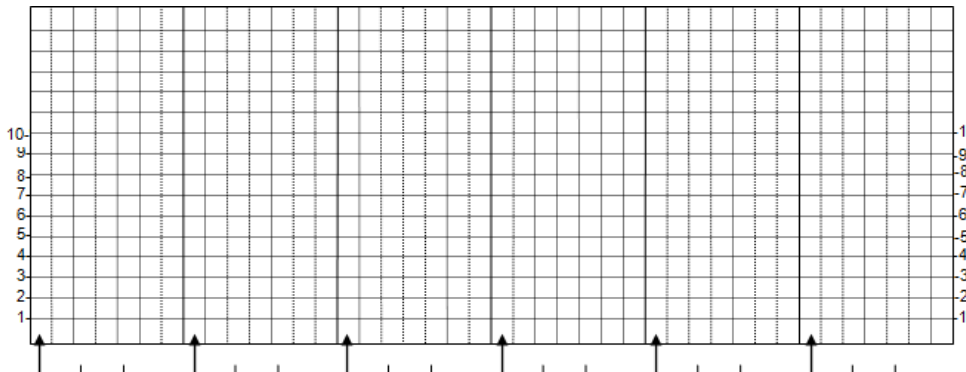
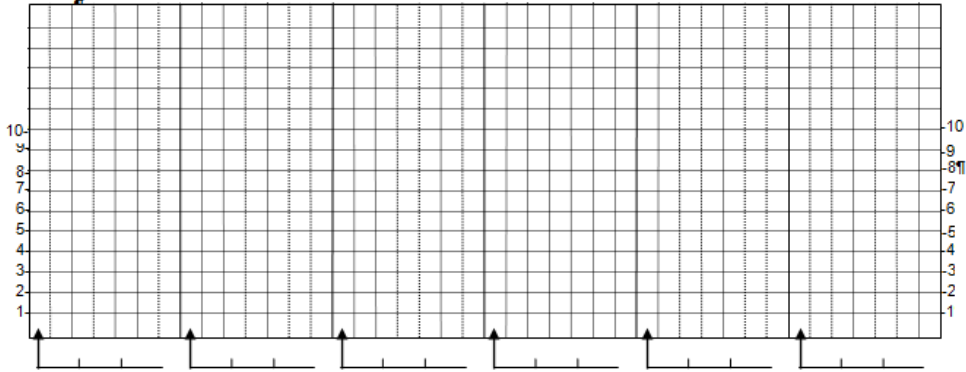
Stuttering Severity Scores

Stuttering Severity Score 1 = no stuttering

Stuttering Severity Score 2 = extremely mild stuttering

Stuttering Severity Score 10 = extremely severe stuttering

Page



Action Plan Module 2: Scoring Stuttering Severity

With the information provided in this module, you now know what severity scores are, how to make them and how important they are. Now take the following actions:

Print a stuttering chart and put a dot on the chart each day for your child's stuttering severity for that day. A stuttering chart is included in the PRINT PACKAGE at the end of this module.

Open a file on your computer or phone if you prefer to record the severity scores digitally.

Listen carefully to your child's speech

Give a typical severity score at the end of each day, starting today

Put a dot on the line of the square for that day and use full numbers (e.g. not 3.5 but either 3 or 4)

If you are not recording your child's severity scores digitally, hang or put your chart in a place where it will remind you to give a severity score each day, such as on the fridge, bedside table or purse

Once you start Part 2 of the program, you will be asked to regularly enter your child's severity scores into the program

Activities at Home

It may be useful to keep the answers of the exercise on 'Activities at Home' you have done in this Module. You can go back straight to that page if you click the name 'Activities You Have at Home' in the left column. You will see a button 'PRINT' in the top left corner.

List of Activities for Smooth Talking Times

Here is a list of books, activities and games that you could use as activity for Smooth Talking Times with your child. Many games or books from your child's toys shelf can also be used as activity for Smooth Talking Times. Libraries have lots of books and sometimes toys. Or check if you can borrow some books, activities or games from friends. Certain activities are age-dependent (a 5 year old likes other activities than a 3 year old) and certain activities have more structure than others. You are your child's expert, so you probably know what your child likes and needs.

Picture books:

Remember **not to read** stories; let your child tell the story (use questions to help your child and relate the questions to the book's pictures).

Lift the flap books (e.g. 'Spot' books by Eric Hill)

First words books in other languages (e.g. 'First words in French' by Usborne)

Simple picture books (e.g. 'Maisy' books by Lucy Cousins)

Finding books (e.g. '1000 things to spot' series by Usborne, 'Busy People' series by Richard Scarry)

Books to learn colours, numbers or specific vocabulary (e.g. animals, food)

Simple and familiar stories with pictures (e.g. gingerbread man, the 3 little pigs)

Story book collections (e.g. Disney, Dora the Explorer, Bob The Builder)

Activity books (e.g. 'Find the difference', 'where is the...', 'what is wrong?')

Storybooks with a repetitive storyline and clear pictures, known by the child (e.g. 'The Enormous Crocodile' by Roald Dahl, 'Charlie and Lola' books by Lauren Child)

Picture description:

Remember that only labelling the pictures will not lead to a conversation. Therefore, ask more specific information about the picture, e.g. for picture of a cat: 'Where does it live', 'What does it eat/drink', 'What's your cat's name if you got one', 'What is your favourite pet', 'What name would you give it', 'What colour do you prefer it to have' etc.

I like/I don't like game: Print pictures from the internet or cut out pictures from junk mail catalogues. Discuss each picture and divide them into a 'like' pile or 'don't like' pile. The game can be extended into short sentences by getting your child to explain why they 'like' or 'don't like' the picture.

Mystery bag: Put some pictures in a bag; ask your child to take them out one by one and discuss them.

Activity cards: You can also find books with this type of activity. Discuss each picture after your child did (part of) the task. (e.g. 'What's the Difference?', 'Sequencing', 'How?', 'That's Silly', 'Story Starters', 'Let's name things', 'Wh- questions', 'What's wrong with this picture'; good series is 'Fun Decks' by Super Duper).

Junk mail scrapbooking: Cut out pictures and ask your child to stick pictures together in groups, e.g. animals, toys, food etc. Discuss each picture before your child sticks it onto a sheet of paper.

Family photo description: Find pictures of an event your child has gone to and discuss each person on the picture, as well as the event.

Sorting pictures: Make several sheets with the group clearly drawn on it (e.g. farm and zoo if you would use animal pictures; air, sea and road if you would use transport pictures). Discuss each picture and ask your child to put it in the correct group.

Picture description on computer or iPad/Smart Phones

Activities and games:

Activities and games are used to have a conversation in Smooth Talking Time. Never just play the game, but ask questions about the pictures or objects you use.

Memory: Put the cards on the table with the pictures facing down. In turns, you or your child turn(s) over 2 cards. Discuss the pictures on the cards. If they are the same, you or your child can keep them. The one who has most pairs is the winner.

Domino: Put one card on the table with the picture facing up. Divide the other cards between you and your child. If there are too many cards, put the rest on a pile. In turns, you or your child put(s) a card with the same picture next to the picture that is lying on the ground. The one who could play all his cards is the winner.

Go fish: Use cards that make pairs (you can use memory cards for this game). Give your child and yourself 4 cards. Hold a barrier between you and your child so you don't see each other's pictures (e.g. a sheet). Put the other cards in a pile, pictures facing down. Let your child ask if you have a picture that lies in front of him/her. If you have it, you should give it to your child and your child can put the pair aside and s/he can have another turn. If you don't have it, you should say 'Go fish' meaning that your child can take a card from the pile. Then it's your turn.

Snap: Use cards that make pairs (you can use memory cards for this game). Make a pile with the cards, pictures facing down. Turn over 1 card and discuss the picture. Turn over a card of the pile and if it is the same picture, tap on the table and say 'snap' as quickly as possible. The person who said 'snap' first can get the pair of cards. If it is not the same picture, keep on turning cards until it is a snap. Don't forget to have a conversation with your child and discuss the pictures when you turn them. Do this until the cards are all played. The winner is the person who had most pairs.

Simple inlet puzzles: Often inlet puzzles are a group of pictures, e.g. animals, food, toys, furniture. Discuss the pictures when your child is making the puzzle.

Things that go together games/lotto: Discuss what is going together but also why it goes together; discuss if there are other objects that would match them. (e.g. 'What's Missing?' by Smart Toys, 'Starter tiles' by DK).

Magnet board stories: Discuss each magnet when your child is putting it onto the board. Many activities can be done with magnets, e.g. let your child make a story, ask him/her to put them in groups. (e.g. Thomas the Tank Engine, Dinosaurs).

Felt scenes: Discuss each felt piece when your child is putting it onto the felt board. Many activities can be done with felt pieces, e.g. let your child make a story, ask him/her to put them in groups. (e.g. 'Classic Series' by Fuzzy Felt).

Fishing game: Print pictures from the internet or cut out pictures from junk mail catalogues. Fold the pictures and put paper clips onto each picture. Use a magnet on a string to catch the fish. Let your child catch the 'fish' and discuss each picture.

Find a word: Let the child find words with a specific colour, of a certain theme (e.g. animals), or with a specific beginning sound.

Mystery bags: Put puppets, superheroes, favourite characters or other objects into a bag. Ask your child to reach in and pull out a character or object. Discuss each character or object.

Headbantz game: Use pictures from another game or print pictures from the internet. Use a bandana to keep the picture on your/your child's forehead. Put a picture on your child's forehead and make sure s/he doesn't see the picture. Let your child ask questions about the picture. By doing so, your child should find out what the picture is. Discuss the picture. Then it's your turn.

Barrier games: Use cards that make pairs (you can use memory cards for this game). Give your child a set of cards and keep one set for yourself. Hold a barrier between you and your child so you don't see each other's pictures (e.g. a sheet). Ask your child to put the cards in a line. Let your child instruct you how to put the cards, so that they are the same as s/he has put them. Then check and discuss each picture. Many different activities can be done in barrier games: e.g. colour a picture in a certain way, add things to a picture, or make things identical by giving instructions. An example of a barrier board game is 'Guess Who' by MB Games.

Treasure hunts: Hide cards, pictures or objects and let your child find them. Discuss the cards, pictures or objects found before you let him/her find another one.

Eye spy description game: Let your child describe an object (e.g. "I spy something that has a rough trunk and soft green leaves"). Then it's your turn.

Making up a story: Let your child use one sentence at a time to start a story. Take turns and always add a sentence to make your story. Instead of adding sentences, you could use pictures to make a silly story.

Talk about topics: Write topics on cards, balloons, bean bags etc. Hide the cards, use them in a fishing game or put them in a mystery bag. Let your child pick one, fish one or catch one and talk about that topic.

Memory games with objects: Hide several objects under a tea towel. Ask your child to remember them all. Then discuss them all. You could play the same game but with changing something on yourself (e.g. put a clip in your hair). Discuss the changes.

Best and worst game: At the end of each day, your child and you take turns at describing the best and worst part of your day. This can also be done after an event, e.g. birthday party, visit to the library.

Imaginary play: Let your child set up a scene and discuss the scene. Also talk about what happened and what could happen in the scene. You could use these toys for other activities, such as barrier games

Boys' themes: space set, castle and knights, little soldiers (army), dinosaur set, construction tool set, police set, cars on a carpet, train set, other vehicles, construction vehicles set, airport set

Girls' themes: doll house, hair dresser set, dolls (polly pocket, littlest pet shop, barbie,...), tea party

General themes: farm set, zoo set, animals, kitchen, shopping, doctor set, vet set, duplo lego

Hand or finger puppets: Let your child make up or retell a story by using hand or finger puppets.

Play doh: Let your child create things and talk about it together.

Cooking (e.g. biscuit decorating, making cupcakes): Discuss the ingredients, where they come from, what you could use it for; discuss all the steps and the tools that you need to do that.

Craft activity (e.g. beading, colouring in): Discuss what your child is doing or let your child make up a story related to the activity.

Nature walks: Discuss what you see around you; try to have conversations related to your activity.

Conversation starters: (e.g. 'family conversation starters' by Kikki K.). Conversation starters are ideas to talk about, e.g. 'Describe your favourite meal', 'If you got a lot of money, what would you do with it'.

Type of Questions that have Short/Long Answers

You can print the information on the exercise “Type of Questions that have Short/Long Answers’ if you would like to. You can go back straight to that page if you click the name ‘Conversations you have with the Child – Practice the Questions’ in the left column. You will see a button ‘PRINT’ in the top left corner.

Action Plan Module 3: Smooth Talking Times (1): Activities and Conversations

With the information provided in this module, you now know what sorts of activities you can do and how to have a conversation with your child during Smooth Talking Times. Take now the following actions:

Think about familiar activities that will encourage your child to talk

Try asking your child questions that have short answers and longer answers and add comments so your conversation feels natural

Sit down with your child and do a familiar activity that is appropriate for Smooth Talking Time. Have a conversation in which you use the sort of questions that help your child to become more fluent

Try this only once a day for about 15 minutes, not all day long. Remember that these are not the real Smooth Talking Times yet; there is more to learn in Module 4.

The 3 Types of Verbal Feedback for Fluent Speech

Praising fluent speech motivates the child to do the same again (i.e. speaking smoothly). Typically, you stop your conversation for a moment and you look at your child when you praise him/her. However, praises can be overdone so make sure that you are sincere when you praise your child's talking. You continue with your conversation immediately after the praise. Examples of praising fluent speech are "You said that so well! No bumps at all! Nice talking!"

Letting a child know that you heard fluent speech lets the child know that s/he is doing fine. The child does not have to say or do anything after this type of feedback. For example, you tell your child that s/he was smooth immediately after your child says something fluently and continue with your conversation. An example is "That was smooth."

Asking a child whether s/he was fluent increases the child's awareness about his/her way of talking; s/he will think about how s/he said something. You need to make sure that your child was fluent when you ask for a self-evaluation, so that your child's answer will be 'yes'. An example of requesting a self-evaluation is "Was that smooth?"

How to Give Correct and Appropriate Feedback

You need to vary the type and wording of the verbal feedback. Variation in types of verbal feedback and variation in wording are very important. It is different for every child and you know your child best. By exploring what your child and you like you will find the types and the wording of verbal feedback that you are both most comfortable with. The types and wording of verbal feedback may and probably will change as you progress through the program. You may find that your child won't need as much praise when s/he is fluent most of the time.

You should not praise your child in an exaggerated way, because you probably will interrupt the conversation disturbingly. It is important to give verbal feedback as naturally as possible.

Try to be specific when you give feedback to your child. General feedback such as 'Good boy' or 'Good girl' may confuse your child because it could appear that the feedback is for something else than talking smoothly, for example for correctly answering a question. It is important at this stage to only give feedback for fluent speech. You will learn how to give feedback for stuttering later in the program.

It is important that you remember to give verbal feedback for your child's fluent speech, even if your child is nearly fluent all the time.

Organising Smooth Talking Times Each Day

Some general tips:

To start with, it may help to do a Smooth Talking Time at a specific time during the day, for example immediately after breakfast. It is important for your child to realise that Smooth Talking Time is now part of the daily routine. Times will need to vary later on in the program, but for now it is OK to have them at times that are convenient for you and your child.

Distractions such as TV, radio, computer or phones should be avoided or minimised during Smooth Talking Time. Smooth Talking Times should not be done during an exciting activity or within a noisy environment (for example when friends are coming over) because your child will most likely be distracted. Your child needs to be alert and interested during Smooth Talking Times.

Some more individualised tips

You think it will be easy to fit Smooth Talking Time into your day...

It is great that you think you will be able to organise 15 minutes alone with your child each day for Smooth Talking Time. Decide when your child concentrates best. For most children, this is some time during the morning, so it is preferable to do a Smooth Talking Time then. If you only have time in the evening, try not to have Smooth Talking Time just before bedtime or instead of your child's story time.

You may think now that it will be easy to have 15 minutes alone with your child each day, but it can be harder than you think. If you find you sometimes forget to do Smooth Talking Times, you could use the reminder note in your print package. Hang it in a prominent place, for example on your fridge.

Remember that, if you want your partner or another significant person in your child's life to get involved in working with your child, make sure that this person also completes Part 1 of this program.

You don't think it will be easy to fit Smooth Talking Time into your day because of work, preschool, day care or other commitments...

It may be difficult to organise 15 minutes alone with your child each day to do Smooth Talking Time. However, it is necessary to do them every day, certainly at the start of the program. Sometimes it may be necessary to change routines to fit in Smooth Talking Times each day. For example you could find time in the morning by making the existing morning routines easier, by, for example:

- Getting everything ready for your child and the family the evening before, such as organising back packs, lunch boxes, clothes and shoes
- Setting the breakfast table the evening before
- Sharing tasks with your partner if possible

Similarly in the evening, you could:

- Leave the table and the dishes for a while and do a Smooth Talking Time immediately after dinner

- Ask your partner to share tasks

All this will require extra effort but you will be rewarded if your child becomes more fluently.

Work out when your child can concentrate best. For most children, this is some time during the morning, so it is usually preferable to do a Smooth Talking Time then. If you only have time in the evening, try not to have Smooth Talking Time just before bedtime or instead of your child's story time.

If you find you sometimes forget to do Smooth Talking Times, you could use the reminder note in your print package. Hang it in a prominent place, for example on your fridge.

Remember that, if you want your partner or another significant person in your child's life to get involved in the program, make sure that this person also completes Part 1 of this program.

You don't think it will be easy to fit Smooth Talking Time into your day because other young children in the household may interrupt you and your child...

It may be hard for you to organise Smooth Talking Time when siblings are around. They can distract your child during Smooth Talking Time. Try not to involve other children in Smooth Talking Time, especially at first, so that you and your child can focus on the activities and on smooth talking. It can be challenging to keep siblings quiet during your child's Smooth Talking Time. Some siblings do not understand that they should not be included and may interrupt. You could:

Set up another activity for them while you are doing Smooth Talking Time with your child

Plan a Smooth Talking Time when they are having their nap

Ask other adults (e.g. grandma, partner) or an older sibling to take care of the younger ones while you do Smooth Talking Time with your child



Don't forget

about

Smooth Talking Times



Done today:

Smooth Talking

Time





Nearly forgot
our Smooth Talking
Time today !

Time

for your

Smooth Talking
Time today!

REMINDER



Smooth Talking
Time!

DOS and DON'TS for Smooth Talking Times

DOS

Smooth Talking Time should be done every day

It is recommended to organise Smooth Talking Times every day. Smooth Talking Times should be fun for a child. Once they have become part of everyday life a child may spontaneously ask to have them.

Smooth Talking Time can be done when siblings are watching TV.

It can, if your child who stutters is not distracted by the TV (e.g. when the TV is in another room). If your child feels that s/he is missing out on watching TV because of Smooth Talking Time, you could plan special TV times for that child at some other time.

It does not really matter when in the day Smooth Talking Time is done.

Smooth Talking Times should be done at a time that is convenient for you and your child.

A child's favourite book can be used for his/her Smooth Talking Time.

It can, but if the child looks at the favourite book too frequently, s/he might get bored with it.

A child should enjoy Smooth Talking Time.

It is very important that a child enjoys Smooth Talking Time. Children typically love having time alone with a parent doing something they enjoy.

Variation is the key to a child's motivation.

Not only variation of activities, but also variation in timing and the place of Smooth Talking Times are important. Different activities, different places, different times and different types of verbal feedback will help keep a child interested and co-operative. Variation will help the child practise his/her fluent speech in other situations too.

Even though a child can talk without stuttering during Smooth Talking Time, verbal feedback needs to be given.

Yes. A child may be talking very smoothly during Smooth Talking Time but feedback for fluency still needs to be given. It may be that the child is ready for a more challenging activity and/or conversation. The parent needs to find that out. Verbal feedback should always be given during Smooth Talking Time.

DON'TS

Smooth Talking Time should last for at least 20 minutes.

Smooth Talking Times take about 15 minutes. They could last 20 minutes or longer if you and your child are enjoying the Smooth Talking Time.

The preschool teacher can do Smooth Talking Time.

Only people who live with the child (usually parents) and who have completed this training should do Smooth Talking Time.

Many parents tell their children a story before they go to bed. This time can be used for Smooth Talking Time.

Smooth Talking Time should not replace daily routines, especially story time. A child could respond negatively to the Smooth Talking Time if it replaces a loved routine with the parent at the end of the day.

Smooth Talking Time is only done during the week.

A child will benefit from daily Smooth Talking Time especially in the beginning of the program. Parents should aim to do Smooth Talking Time every day of the week. On busy weekend or week days, it may help to have a Smooth Talking Time in the morning so then

parents don't have to worry about it later in the day, when things get busy.

Only creative people can do Smooth Talking Time properly as planning different activities requires creativity.

Parents don't have to be especially creative to do Smooth Talking Time. Most households have many picture books, toys, games, activities or family photos that can be used during Smooth Talking Time. Lots of activities for children can also be found on the Internet. If parents run out of ideas, they may have friends who can lend toys and games or they can borrow picture books from the library.

Parents should do Smooth Talking Time every day, even if the child is unwell.

If a child seems unwell or seems unable to concentrate, Smooth Talking Time can be postponed until the child is feeling better.

Some parents don't like to give feedback because it feels unnatural. These parents should not give feedback during Smooth Talking Time at all.

Some parents find it difficult to give feedback at first. It is a new experience and may seem odd. However, feedback is thought to be a critical part of the program. After a few Smooth Talking Times, parents and children typically feel more comfortable and the feedback becomes part of the Smooth Talking Time.

There is nothing parents can do if a child is talking a lot without stopping during Smooth Talking Time.

It is challenging for parents when a child talks a lot during Smooth Talking Time. At this point in time, the best thing to do is to try and ask more questions so that the child does not talk all the time. The parent may need to explain to the child why this needs to be done. Other tips will be given further in the program if this way of having conversations is not helpful enough.

Parents give feedback to everything the child said fluently during the day.

At first, giving feedback should be limited to the Smooth Talking Time only. Parents will give feedback outside Smooth Talking Time in Part 2 of the program, but the program will explain when and how.

Action Plan Module 4: Smooth Talking Time (2): Verbal Feedback

With the information provided in this last module, you know enough about Smooth Talking Time to get you started. You are now ready to have Smooth Talking Time with your child. You should take the following actions, starting today.

Collect daily severity scores of your child's stuttering. Remember that these scores represent the typical severity of your child's stuttering for the whole day. Do not include Smooth Talking Time in this score. Record the daily severity scores on the stuttering chart. [Click here](#) for a severity chart or find it in the print package.

Have Smooth Talking Time once a day. However, do not expect your child to become fluent immediately. Setting up this routine takes a few days and you and your child need time to get used to it.

In the first few weeks of working with your child, choose activities that are familiar to you and your child, so you can focus on listening to your child's speech and giving correct and appropriate feedback. The program will tell you when it is time to move on.

For now, only give feedback for fluent speech (that is, no stuttering) during Smooth Talking Time.

An email with a link to the program will be sent to you every week. It is important for you to get assistance and feedback from the program, so it is essential to log in when you are asked to.

When you log in, you will be asked to enter your child's severity scores for the previous week.

Always make sure the information you give the program is correct, otherwise the program will not be able to help you.

It may be useful to refresh your knowledge once you have started your child's Smooth Talking Times. You can always go back to the training modules and watch the videos again or print out information in the print package.

Appendix H *Problem-based and Case-based Video Scripts of the Internet Parent Training*

MODULE 3: Video 37 (treatment)

Child is playing with toys on the ground. Dad tells the child that it's time for their *special talking time*. The parent promises that after the special talking time, child can go play again. They put the child's toys away.

The dad asks the child if she wants to talk about a book or about pictures on the computer. Child likes to look on the computer. They will look at a picture of animals at the zoo.

No stuttering; simple activity with short answers of child. no PVC

MODULE 3 Video 38 (activities)

The child is sitting in a sofa. The parent and child will: (1) look at a picture book (lift the flap book) (sofa); (2) take objects from a magic bag and name them (ground); (3) why/because pictures (table); (4) talk about items of a magnet story (ground/white board); (5) simple story such as the gingerbread man; (6) I like/don't like game with food pictures, (7) memory game, (8) go fish, (9) barrier game with cars: traffic jam, (10) Charlie and Lola (book), (11) look at pictures on the iPhone.

No stuttering, only PVC for fluent speech but do not use the word *smooth*, no rewards.

MODULE 3 Video 39 (treatment changes)

The child and the parent are sitting in the sofa. They are looking at a book with very busy pictures. The parent asks for general information: "What do you see here?" and the child stutters. Subsequently parent asks for more specific information and then child is fluent.

Length of answers needs to be clearly different in both situations

Child has a few stutters in the beginning. No PVC, no rewards.

MODULE 3 Video 40 (treatment changes)

The child and the parent are sitting in the sofa. They are going to look at a book of Thomas the tank Engine. The child is too excited and stutters. The parent then decided to look at another book and the child doesn't stutter anymore.

The type of activity had changed; that's the only change.

Child has a few stutters. No PVC, no rewards.

MODULE 3 Video 41 (treatment changes)

The child and the parent are sitting at the table together. They are going to play a memory game. The child is familiar with the game; parent asks: "Shall we play this game again?" Child is enthusiastic. Parent asks questions about the pictures (not labelling!). The child answers with single words but stutters. Then the parent gives binary choices, models words or asks to count things on the cards. The child is fluent.

Only the conversation technique has changes. Length of answers has stayed the same.

Child stutters. No PVC, no rewards.

MODULE 3 Video 42 (treatment changes)

The parent sits at the table. They play Guess Who. The child stutters. Then the parent takes another game (Lotto) and keeps the answers shorter by asking for more specific information.

The type of activity and the length of the child's answers have changed.

Child stutters. No PVC, no rewards

MODULE 3 Video sample 43 (treatment changes)

The child is sitting in the sofa and the parents wants to look at a picture book. The child complains: not that book again! The parent opened the book and starts to ask questions but the child is talking about things that are completely not related to the pictures in the book. The child started to stutter. Then the parent changes the activity. They start to play bingo on the ground. The child is interested again and is fluent. The length of answers needs to be similar in both activities.

The changes are type of activity and place of activity. Length of child's answers stays the same.

Child is cheeky and stutters. No PVC, no rewards

MODULE 3 Video sample 44 (treatment changes)

The child is sitting at the table, playing a game (snap). The child is fluent all the time. The parent interrupts and tells the child to do something else, because the game is too easy. The parent and the child use the pictures to play a matching game. The parent asks the child why the pictures go together. Child is still fluent.

Activity and length of answers is different.

Child doesn't stutter. No PVC, no rewards.

MODULE 3 Video sample 45 (treatment changes)

The child is sitting in the sofa, looking at a picture book. The parent asks simple questions, expecting short answers (word-short sentence level). The child is fluent. Then the parent asks questions, expecting longer answers. The child started to stutter. The parent then changed the type of questions again and the child becomes fluent again.

Child stutters. No PVC, no rewards.

MODULE 3 Video sample 46 (treatment changes)

The child is playing with blocks. The child is chatty and talks away. The parent has troubles having a conversation with the child (e.g. P:“Is that a tower?” Ch: “No of course not, can’t you see it’s a bridge.”) The child has stutters. Then the parent suggests to do another activity with the blocks: divides the blocks in 2 equal piles and plays a barrier game.

Child stutters, No PVC, no rewards.

MODULE 3 Video sample 47 (treatment changes)

The child is looking at a story book and talks away but stutters. Then the parent explains what they are doing (having fluent speech and that’s easiest with short bits first) and starts to interrupt a little more. The child is fluent all the time.

Child stutters. No PVC, no rewards.

MODULE 3 Video sample 48 (treatment changes)

The child is playing with the hand puppets behind the table. The parent asks for general

information (tell me the story) and the child answers with long utterances. The child is stuttering a lot.

The parent then decides to interrupt and start telling the story with pictures together. S/he asks for more specific information and expects short answers (word level). Then the child becomes fluent.

Child talks a lot. Child stutters. No PVC, No rewards.

MODULE 3 Video sample 49 (treatment)

The child and parent will have a treatment together. The treatment is highly structured. They are talking about pictures and the child is looking what the differences are between the pictures. The parent keeps the answers short (a few words to a sentence) and uses Q&A. The treatment has a clear start and end.

MODULE 4 Video 50 (praise for fluent speech)

MODULE 4 Video 51 (acknowledgement for fluent speech)

MODULE 4 Video 52 (request for self-evaluation of fluent speech)

The child and parent are sitting at the table and are playing with the farm set. The parent structures the conversation highly: asks the child to label the animals and to sort them together. The child is fluent and the parent gives the specific verbal feedback.

Only PVC for fluent speech

MODULE 4 Video 53 (non verbal feedback fluent speech)

Child and parent are sitting in the sofa/at a table. They will do the same activities as in video 38 but now the parent gives rewards.

Maisy book → give parts of ker plunk

Magic Bag → give pegs in container

Why because → give magnets of Dinosaur is so big

Magnet story → give plastic counters in piggy bank

Gingerbread man → give parts of a game

Food: I like/I don't like → stamps on a sheet

Memory → puzzle pieces

Go fish → duplo blocks

Barrier game cars → felt pieces

Charlie and Lola → cars

No stuttering; PVC for fluent speech (good mix), rewards.

MODULE 4 Video 54 (acknowledgement stutter)

MODULE 4 Video 55 (request for self-correction of a stutter)

The child and parent are sitting at the table and are playing with the farm set. The parent structures the conversation highly but child has an occasional stutter (after quite some fluent speech). The child is stuttering and the parent gives the specific verbal feedback.

Some stuttering; PVC for fluent and non fluent speech, no rewards

MODULE 4 Video 56 (verbal and non verbal feedback)

Parent and child are sitting at the table. They play *go fish*. Parent gives verbal feedback in random order at the correct ratio (> for fluent speech). Use non verbal feedback too.

This is what could happen:

That was smooth!

Well done

Great talking

Did you hear any bumps?

I just heard a bump now

A whole sentence and it was all smooth

Oops can you say [word] again, but smoothly?

Very good smooth speech

Do you think you were smooth?

High five for all the smooth speech

A few stutters. PVC (good mix), rewards

MODULE 4 Video 57 (intentional errors)

The child and parent are sitting at the table. They will play a matching game. The parent always gives the same verbal feedback all the time (*That was soooo smooth!*).

Exaggerate: always give the same verbal feedback

No stuttering, only 1 PVC always the same, no rewards

MODULE 4 Video 58 (correct way)

The child and parent are sitting at the table. They will play a matching game. The parent uses a combination of verbal feedback.

No stuttering, mix of PVC, no rewards

MODULE 4 Video 59 (intentional errors)

The parent and the child are sitting in the sofa. Child talks about pictures in a book. Parent always breaks the conversation with exaggerated verbal feedback (*Wow, that was really smooth, great work*) etc. Child loses interest.

Exaggerate: interrupt the child

No stuttering, only praise but exaggerated, no rewards

MODULE 4 Video 60 (correct way)

The parent and the child are sitting in the sofa. Child talks about pictures in a book. Parent gives verbal feedback in an appropriate way (also acknowledging without really interrupting the child).

No stuttering, mix of PVC, no rewards

MODULE 4 Video 61 (intentional errors)

The child and the parent are sitting at a table. They will play a fishing game together. The child stutters and the parent does not pick up on them or does so wrongly!

Ignores a stutter

Praises a stutter

Some stuttering, wrongly identified, no rewards

MODULE 4 Video 62 (correct way)

The child and the parent are sitting at a table. They will play a fishing game together. The child stutters and the parent gives appropriate verbal feedback.

Some stuttering, correct identified good mix of PVC, no rewards

MODULE 4 Video 63 (intentional errors)

The child and the parent are sitting in the sofa. They are looking at a picture book. Parent is focused on the stutters instead of on the fluent speech. Child stutters a lot.

Exaggerate: parent only comments on stutters

Some stuttering, only focused on stutters, no PVC for fluent speech, no rewards

MODULE 4 Video 64 (correct way)

The child and the parent are sitting in the sofa. They are looking at a picture book. Parent is giving appropriate verbal feedback.

Some stuttering, good mix of PVC (> for fluent than for stuttering)

MODULE 4 Video 65 (treatment)

This video shows a complete treatment with all its aspects. It has a clear start, activity, verbal and non verbal feedback and clear end. Parent leads the activity and the conversation and structures according to what the child needs.

Child sits in sofa with parent and talks about busy pictures.

Some Stuttering, good mix of PVC, rewards

INTRODUCTION Video 66 (treatment without sound)

This video shows a treatment without sound. The child and the father are playing with plastic animals on the ground.

INTRODUCTION Video 67 (treatment without sound)

This video shows a treatment without sound. The child and the mother are looking at a picture book in the sofa.

INTRODUCTION Video 68 (treatment)

This video shows a treatment without sound. The child and father are doing an activity in the sofa.

INTRODUCTION Video 69 (treatment without sound)

This video shows a treatment without sound. The child and dad are talking about dolls and are putting them on the table.

**TASKS FOR PARTICIPANTS OF TESTING THE INTERNET LIDCOMBE PROGRAM-
TRAINING**

Please answer the following 10 multiple choice questions. We ask you these questions to know if the Internet Lidcombe Program-training explains the Lidcombe Program procedures clearly enough. So it is not you being tested but the Internet Lidcombe program-training.

Match the dots of each type of stuttering with the examples from the list.

- | | | |
|------------------------------------|---|---|
| Prolongations | • | • I-I-I-I like this |
| Additional stuttering
behaviour | • | • Can wwwwwwwe go
now? |
| Repetitions | • | • I [-----no speech---] never
want to go |
| Blocks | • | • Excessive eye blinking
when blocking on sounds |

If your child did not stutter for an entire day, what severity score would you give?

- 0 1 2 10 I don't know

How often should you score your child's stuttering severity?

- Every hour
- Every day
- Every week
- Every situation in which the stuttering severity is different
- I don't know

How often should you have Smooth Talking Time with your child? At least ...

- Every hour
- Every day
- Every second day
- Every week
- I don't know

What could you do if you notice that your child stutters a lot during Smooth Talking Times?

More than one may apply.

- Ask questions that elicit longer answers
- Ask questions that elicit short answers
- Help your child by asking binary choice questions or start his/her answers
- Think about whether the activity is appropriate and change it if it is not
- I don't know

What are things that you could say to your child during Smooth Talking Time if s/he says something without stuttering? *More than one may apply.*

- Great talking!
- That was smooth.
- Good boy/girl.
- Did you hear any bumps?
- I don't know

What would you do if you are unsure whether a particular word was a stutter or not?

- Give feedback for example: 'That was good talking.'
- Ignore and move on
- Stop Smooth Talking Time
- Change the activity
- I don't know

According to program recommendations, how long would Smooth Talking Times typically last?

- About 5 minutes
- About 15 minutes
- About 30 minutes
- Doesn't matter
- I don't know

What type of activity is not suitable for Smooth Talking Time?

- Soccer
- Puzzle
- Felt activity
- I spy game
- I don't know

What should you do if you and your child are not enjoying the Smooth Talking Times?

- Ask someone else to do it for you
- Promise your child a prize if s/he co-operates well
- Persevere
- Contact a Speech Pathologist and ask for advice
- I don't know

**Stuttering Severity Rating during
conversation =**

VIDEOS

Please watch the following videos. You will see a parent and a child having a Smooth Talking Time together. The parent needed to adjust the conversation and/or activity to help her child become/stay smooth. Can you identify in any of the following videos what the parent did to help?

Video 1. What did the parent do to help her child become more fluent?

- The parent used strategies such as asking choice questions or starting the child's answer because the child was stuttering even when giving very short answers
- The parent adjusted the type of questions she asked to elicit longer answers
- The parent adjusted the type of questions she asked to elicit short answers
- The parent changed the activity to a more familiar and simpler one
- I don't know

Video 2. What did the parent do to help her child stay fluent?

- The parent used strategies such as asking choice questions or starting the child's answer because the child was stuttering even when saying very short answers
- The parent adjusted the type of questions she asked to elicit longer answers
- The parent adjusted the type of questions she asked to elicit short answers
- The parent changed the activity to a more challenging one
- I don't know

Video 3. What did the parent do to help her child become fluent?

- The parent used strategies such as asking choice questions or starting the child's answer because the child was stuttering even when saying very short answers
- The parent adjusted the type of questions she asked to elicit longer answers
- The parent adjusted the type of questions she asked to elicit short answers
- The parent changed the activity to a more familiar and simpler one
- I don't know

The next videos show a parent and a child having Smooth Talking Times together. The parent gave feedback for her child's fluent speech. Can you identify if the parent gave the feedback correctly and appropriately? If the feedback was given incorrectly and/or inappropriately, can you explain why?

Video 4. Did the parent give feedback for her child's fluent speech correctly and appropriately? yes no

If you answered **no**, please indicate what the parent did not do correctly or appropriately:

- The parent did not give feedback for her child's fluent speech
- The parent did not use enough variety in type or wording of feedback for her child's fluent speech
- The parent gave feedback for her child's fluent speech in an exaggerated way
- The parent incorrectly praised a stutter
- I don't know

Video 5. Did the parent give feedback for her child's fluent speech correctly and appropriately? yes no

If you answered **no**, please indicate what the parent did not do correctly or appropriately:

- The parent did not give feedback for her child's fluent speech
- The parent did not use enough variety in type or wording of feedback for her child's fluent speech
- The parent gave feedback for her child's fluent speech in an exaggerated way
- The parent incorrectly praised a stutter
- I don't know

Video 6. Did the parent give feedback for her child's fluent speech correctly and appropriately? yes no

If you answered **no**, please indicate what the parent did not do correctly or appropriately:

- The parent did not give feedback for her child's fluent speech
- The parent did not use enough variety in type or wording of feedback for her child's fluent speech
- The parent gave feedback for her child's fluent speech in an exaggerated way
- The parent incorrectly praised a stutter
- I don't know

Video 7. Did the parent give feedback for her child's fluent speech correctly and appropriately? yes no

If you answered no, please indicate what the parent did not do correctly or appropriately:

- The parent did not give feedback for her child's fluent speech
- The parent did not use enough variety in type or wording of feedback for her child's fluent speech
- The parent gave feedback for her child's fluent speech in an exaggerated way
- The parent incorrectly praised a stutter
- I don't know

SHARING YOUR EXPERIENCES

Could you now share you experiences about the technical aspects, the content and your personal experiences of Part 1 of the program with us?

The technical aspects of the program:

Did you find Part 1 of the Internet Lidcombe Program (Introduction and training modules) user-friendly?

Yes

No. Please explain why:

.....
.....

Did you experience any difficulties watching the videos?

No

Yes. Please explain which difficulty/difficulties:

.....
.....

Did you experience any other difficulty while doing Part 1 of the program?

.....
.....

Have you any comments/suggestions to improve the technical aspects of Part 1 of the program?

.....
.....
.....
.....
.....

The content of the Internet Lidcombe Program-training:

Was the 'speech pathologist' helpful in clarifying what you had to do (text boxes and audio)?

yes

no. Please explain why:

.....
.....

Were the instructions for each task clear?

Yes

No. Please explain why:

.....
.....

Were the aims of the Introduction and each of the training modules clear to you?

Yes

No. Please explain why:

.....
.....

Do you know what you will be expected to do in Part 2 of the Internet Lidcombe Program?

Yes

No. Please explain why:

.....
.....

Were the videos examples clear?

Yes

No. Please explain why:

.....
.....

Was the information contained in the print packages helpful?

Yes

No. Please explain why:

.....
.....

Have you any comments/suggestions to improve the content of Part 1 of the Internet
Lidcombe Program?

.....
.....
.....
.....

Your 'emotional' experiences:

Have you enjoyed implementing Part 1 of the program?

Yes

No. Please explain why:

.....
.....

Was Part 1 of the program helpful in 'understanding' your child's stuttering better?

Yes. Please explain why:

.....
.....

No. Please explain why:

.....
.....

Was it difficult to make the decision to start the Internet Lidcombe Program, to monitor your child's speech for a while or to leave the program based on the information at the end of the Introduction?

No

Yes. Please explain why:

.....
.....

In general, have you any comments/suggestions for us to improve Part 1 of the Internet Lidcombe Program?

.....
.....

Appendix J Telephone Questions for Participants and Speech pathologists after Starting the Clinic-based Lidcombe Program

Questions for participants

Did the clinician tell you many things that you did not know from the training?

Did you misinterpret things from the training but the clinician told you how to do it?

Now that you have seen a clinician, do you think the training misses things or has weak points?

Was seeing a clinician necessary for you or would you have been OK continuing the program on the internet?

Questions for speech pathologists:

When was the first visit scheduled after the parent completed the Internet-LP?

How many visits did they have with you?

What were your impressions of the knowledge and ability of the parent to do the LP?

What are the weak points, i.e. where did parents need more support?

Do you think it was a surplus that the parent did this training?

Would it be possible that it reduced treatment time?

Did you notice a difference between those parents and your regular parents?

Extra comments?