Deconstructing Clinical Practice and Searching for Scientific Foundations: Examining decision-making scaffolds underpinning intervention choices by speech and language therapists

by

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ABSTRACT

Introduction: Speech and language therapy (SLT) is purported to be a scientifically-based discipline. A commitment to scientific practice is currently best represented by practicing in an evidenced-based way, specifically by the use of research evidence, yet studies examining the use of research evidence both within the profession and across disciplines, consistently suggest that research is less than influential in guiding practice decisions. This suggests practice may not be scientific. Furthermore, unscientific practice may be represented by the use of pseudoscientific and / or non-scientific therapies.

Aim: The aim of this research was to explore professional knowledge and decision-making scaffolds in SLT clinical practice with special attention paid to scientific underpinnings. The intention was to gain an authentic understanding of the role of science in practice and thus, a deeper appreciation of the nature of SLT practice.

Methodology and Methods: A mixed-methodology approach was undertaken targeting SLTs working in Ireland. The initial quantitative phase consisted of an electronic survey (n=271) focussing on therapy choices in disability and dysphagia, reasons for use and non-use of these therapies, and factors influencing decision-making. The subsequent qualitative phase utilised three focus groups (n = 48). Group one consisted of SLTs working in a disability setting, group two of SLTs working in an acute hospital setting and group three of SLTs working in a community setting. Data were analysed using a variety of techniques including descriptive statistics and inferential statistics for the survey data, and thematic analysis for the focus group data.

Results: The therapies SLTs always-use in both areas of practice represent limited approaches to intervention. In disability, practice is effectively represented by seven high-use predominantly augmentative and alternative communication therapies; in dysphagia the three high-use therapies are mainly bolus modification techniques. A limited range of reasons explained use. Across all areas of practice and all therapies and techniques, client suitability and clinical experience dominated as the main reasons interventions were always used. The principal reasons for not using therapies were lack of training, lack of knowledge and lack of suitability. A clinical lifespan is suggested with early-years clinicians being most dependent on external sources, specifically colleagues, to inform decision-making. Clinicians in the middle years of their careers appear more autonomous while those in the later years appear to branch out to external sources again, most specifically research evidence. Disability and dysphagia clinicians are significantly different in their use of all reasons for use and non-use with the exception of clinical experience. Scientific reasons are not well represented in either area of practice. Moreover, there is an apparent disconnect between attitudes and practice. For example, respondents demonstrate clear research values generally but not when therapy-specific reasoning is explicated.

Three main themes were identified from focus group data: practice imperfect; practice as grounded and growing, and; critical practice. Practice as defined by clinicians is grey-zoned, eclectic, experimental, developmental and pragmatic, being primarily pivoted upon a clinician’s tool bag and experimental practice. This tool bag is composed predominantly of population-specific experience and facilitates the clinician to construct individualised interventions. Clinicians demonstrate scientific thinking but do not automatically reference scientific scaffolds unless explicated.

Conclusion: Clinical practice is narrowly defined being predominantly scaffolded upon a limited range of therapies and case evidence and practical evidence. Practice is also constructed by SLTs as experimental and flexible. Scientific practice as characterised by research evidence is not evident in this study, however clinicians may operate scientifically through the use of scientific behaviours including experimentation, trial and error and on-going learning. This understanding of practice has implications for the dominant model of evidence-based practice.

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When people asked me what I was doing my PhD in, my answer was always: ‘Endurance’. This applied not only to my own exertions. My star of a mother occasionally inquired over the last few years: ‘When are we finished our PhD?’ When this question was relayed to colleagues who had been through the process, nods of acknowledgement and wry smiles were always the response. It appears to me that PhDs are not the products of singular effort. To this end I have a need to salute three main groups of people:

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‘I will arise and go now, and go to Inisfree…’
(William Butler Yeats)

Introduction

'Decision making is an essential part of health care….all…..decisions determine the quality of the health care that is provided' (Chapman & Sonneberg, 2000, p.3).

Clinical practice is an arena in which the clinician and patient engage in an interaction focused on providing best care and best outcomes. In the late twentieth and early twenty-first centuries, this arena has existed in the context of the dominant model of evidence-based practice (EBP). The growth of EBP has been partly driven by policy makers mainly to assist with the dilemma of allocating health resources (Rafferty, 2010) and to ensure that clinical practice is based on high quality research (Reilly 2004a). As Roddam and Skeat (2010) point out, third parties including governments and insurance providers 'were beginning to demand factual evidence rather than clinical wisdom as the basis on which to make decisions' (p.10). In the UK this resulted in a range of policy documents (e.g. Department of Health, 2001 and 2006) and the establishment of institutions concerned with clinical excellence and governance such as the National Institute of Clinical Excellence (NICE). Indeed, the very phrase 'evidence-based practice' has come to define good practice, being synonymous with clinicians who value practice grounded in proven methods and who identify themselves as competent and considered practitioners. Thus, not practising in an evidence-based way opens the door to questioning the competency of such practice. However, while on the whole lauded by the literature, EBP has failed to engage the clinical communities to the degree envisioned, giving rise to repeated suggestions that clinicians need to change the way they do things.

It is worth examining clinical practice to better understand the thinking and decision making processes underlying treatment decisions. What factors actually influence decisions? Are clinicians for example as Kahmi (1999) asks, more influenced by treatment efficacy studies or their own theoretical biases? And what roles do patients play in influencing decisions? It is currently less than clear what specific clinical reasoning scaffolds treatment decisions. Furthermore, this subject remains relatively under researched in speech and language therapy (SLT), particularly in comparison to other health disciplines. It may be as Fish & Coles (1998a) originally inferred, that only by bringing decision making to the surface, can we begin to understand practice, and therefore both the use and relevance of models such as EBP.

The question EBP has essentially posed is whether practice is grounded in science. This study aims to explore that question using therapies and techniques to examine the basis of decision making, with specific attention paid to scientific underpinnings. Perhaps it is the case as Doody (2011) argues, that 'empirical evidence itself is not always sufficient for rational decision making' (p.4). Moreover, if scientific constructs do not underlie clinical decisions, then the question to be answered is what does, and why might this be more meaningful to clinicians. Making explicit decision making scaffolds may lead to a better understanding of the compatibility issues between clinical practice and EBP, stimulate a broader debate about the nature of practice, suggest a better way to use EBP, or indeed postulate alternative models which may be more compatible with the nature of SLT clinical practice.

Chapter 1: Review of the literature

1.1 INTRODUCTION

'Insights into the foundations on which our practice is based can help us respond to the glare of scrutiny in contemporary health care' (Richardson, Higgs & Abrandt-Dalhgren, 2004, p.13).

Speech and language therapists (SLTs) along with their fellow health professionals, practice in the era of EBP. EBP can be said to effectively represent a commitment to incorporating science into practice but has been met with less than eagerness by clinicians. This lack of enthusiasm invokes questions of why such an apparently common sense model is struggling to find a place in clinical practice, and whether its scientific basis forms part of the explanation for its ostensible lack of allure. Discerning the scaffolds which underpin treatment decisions may facilitate our understanding of the role of science in the profession. Within this study the notion of scaffolds is used to encompass the bases or sources of knowledge which support intervention decisions.

A search of the literature was conducted using the following databases: Academic Search Complete; Biomed Reference Collection Expanded; CINAHL plus; Medline; Nursing & Allied Health Collection; Psycharticles, and; Psychinfo. The inclusion criteria included a date range of 1992-2012, English language only publications and scholarly (peer reviewed) journals. Keywords and Boolean operators were as follows:

- Science AND speech and language therapy OR speech and language pathology;
- Practice AND speech and language therapy OR speech and language pathology;
- Pseudoscience AND speech and language therapy OR speech and language pathology;
- Evidence-based practice AND speech and language therapy OR speech and language pathology;
- Clinical experience AND speech and language therapy OR speech and language pathology;

- Patient preferences AND speech and language therapy OR speech and language pathology;
- Clinical decision making AND speech and language therapy OR speech and language pathology;
- Clinical reasoning AND speech and language therapy OR speech and language pathology;
- Evidence-based practice AND clinical experience OR patient preferences;
- Evidence-based practice AND health professionals, and;
- Intervention AND decisions AND speech and language.

Further literature was retrieved using references cited by relevant articles captured from the search process. A number of main texts and grey literature including unpublished theses and selected policy documents were also utilised.

1.2 CLINICAL PRACTICE

1.2.1. The context and nature of clinical practice

'The subject of therapy and what it encompasses is a big issue' (Lum, 2002, p.154).

At first glance the task of treating a patient appears fairly straightforward. Patient presents with problem. Therapist diagnoses problem. Therapist selects treatment method. Patient gets treated. Patient gets better. It seems simple enough. Nevertheless clinical practice frequently contains enough ingredients to make for less than predictable routines. In fact practice has been variously described as swampy lowlands (Schön, 1983), grey-zoned (Naylor, 1995) and uncertain (Thompson, McCaughan, Callum, Sheldon & Raynor, 2000). This suggests that rule-based methods may be insufficient to guide decision making and infers a high dependence on the individual clinician's competencies and commitment.

Clinicians exist in a multifaceted and dynamic arena (Sorenson & Yankech, 2008). They must respond to health services and professional standards which require more accountability than previous generations. This includes the need to abide by continuing professional development requirements and adapt to economic restrictions and amended policies. They also operate in the context of what Higgs and Jones (2000) call the 'knowledge explosion' (p.4), incorporating constantly emerging research, new treatments, attempts to persuade clinicians to buy something (Bowell & Kemp 2005), and the rapid obsolescence of practice knowledge (Higgs, Fish & Rothwell, 2004). Clinicians must both adapt to, and make on-going decisions about the reliability of such knowledge.

Additionally, the role of the clinician has been subject to change. It is now less about expert models of practice, but encompasses co-operative decision making typified by the integration of patient perspectives into treatment decisions and the demands of team-based practices. This necessitates consideration of a broader range of factors. Moreover, areas of practice are expanding to include among other things health promotion, the use of sophisticated technologies such as voice-output communication aids, and non-oral feeding. Clinicians are also encountering more complex patients represented by an aging population, increased social-cultural diversity and more acutely ill patients suffering from chronic diseases (Brunt, 2005). This may all contribute to what Fish and Coles (1998b) call, 'professionals under siege' (p.3).

Such developments may have increased rather than reduced the complexity of the clinician's task and mean as Ely et al. (1999) comment, that the range of clinical decisions, questions and forms of uncertainty are infinite. Furthermore, EBP which intends to simplify the process may instead be perceived to have contributed to the complexity. Translating these multiple considerations into reasoned clinical decisions appears complicated, suggesting that clinical practice by its nature requires constant engagement and adaptation. This may mean according to Higgs, Burn and Jones (2001), that clinicians frequently make decisions where there are no right and wrong solutions or actions. Intervention may thus be constructed as inquiry-based practice (Schön 1988), reflecting the notion of practice as including experimentation, theorisation and trial and error (Riley, 2004; Ylivisaker et al., 2002), each episode of care being what Logemann (2004) calls 'an individual clinical trial' (p.134). Such an unpredictable clinical context as Greenwood (2000) refers to it, implies a high dependence on the clinician's capacity to reason. Thompson et al. (2002) suggest that the clinician has two options: to ignore the uncertainty and let chance, and all the biases that come with unaided decision making influence the outcome, or; to acknowledge the uncertainty and find valid information that will reduce it. The response may revolve around whether clinicians feel the profession is scientifically grounded.

1.2.2. Speech and language therapy as science

'The goal of striving for scientific status by a professional group is…not a trivial matter' (Lum, 2002, p.2).

The SLT discipline has developed within the scientific paradigm, this method being for a long time regarded as the only legitimate means of problem solving in the health professions (Baker, 1996). Roulstone (2001) in reviewing and discussing the nature of science in SLT, reports on some of the scientific characteristics of the profession such as objectivity, professional integrity and communication of ideas. Despite this, Roulstone (2001) references concerns that the field is not an autonomous science. A number of authors have pointed to borrowing from other disciplines, including behavioural sciences (Siegel & Ingham, 1987), social sciences (Bench, 1991) medicine and the arts (Lum, 2002). This has led to suggestions as Bench (1991) argues, that communication disorders while being unique, is a 'heterogeneous discipline' or an 'epistemological hybrid' inferring a multitude of influences on practice (p.235).

These ideas of science refer more to paradigms than science in action. Lum (2002) argues that it is not only the use of statistics which makes a discipline scientific. A broader view of science according to Roulstone (2001) refers to imaginative and creative activity as well as hypothesis formulation and experimentation. However characterised, Lum (2002) states that a profession which adheres to scientific doctrine must accept that this 'entails a search for truthful knowledge' (p.2), represented by the use of systematic logical processes to search for solutions (Apel, 1999). Science is seen therefore according to Finn, Bothe and Bramlett (2005) as 'a virtual touchstone of truth' (p.172). There is ample evidence of the profession seeking to be identified as scientific according to Lum (2002) including science degrees and activities such as research, conference meetings and journal publications. Furthermore, subscription to EBP in informing treatment selections suggests a scientific commitment (Lum, 2002). Therefore, while a scientific basis would seem to be uncontroversial (Herbert, 2003), the case is far from proven. Kahmi (2004), for example argues that 'science, truth and logic have little impact on our professional identity' (p.111). Perhaps the definition of science needs exploration.

1.2.3. Understanding science

'Science is systematized knowledge derived from experimentation, study and observation' (Federspil & Vettor, 2000, p.242).

EBP is typically thought of as scientific, specifically research evidence, and it is the emergence of EBP into the language of the profession that has provoked the science debate. The function of science according to Packman and Attanasio (2004) is to uncover relationships between variables that are not apparent through common sense. It is 'a way of asking questions and evaluating various possible answers' (Beyerstein, 1995, p.2) and 'a process of checks and balances (Kida, 2006, p.73). Indeed Lum (2002) describes science as adopting a principled approach to the discovery of knowledge, specifying criteria and standards for describing, explaining, and deciding what stands as real knowledge and truth. The insistence on rigour and replication to establish that results are not confined to one clinician or researcher or set of circumstances (Favell, 2005) is core to the differentiation and substantiation of science. This results in the minimisation of bias and of random influences from the environment (Beyerstein, 1995) providing for reliable outcomes. In clinical practice some of these characteristics may be difficult to ensure (Bench, 1991) given the individual nature of practice. Furthermore, even conventional notions of scientific practice are not as clear cut as might be thought. Apel (1999) points out for example, that 'standardised tests seem scientific. They provide us with numbers. They allow us to duplicate procedures….document progress in intervention…to tightly control and eliminate confounding variables' (p.99). Yet he concludes they are often not valid measures as they do not test 'the phenomenon of interest' (p.99).

Interpretations of science might deter its acceptance even in a scientifically-based profession. They include the appearance of arduousness, not conforming to common sense, the complexity of the process and the 'perceived preoccupations with methodology' over meaningfulness (Favell, 2005, p.20). Gambrill (2005) also argues that misconceptions may help explain some resistance including the assumption that science knows all the answers, that linear thinking is preferred over intuitive thinking, and that the accumulation of facts is the primary goal. Furthermore, Favell (2005) suggests that resistance may emanate from negative evidence. If for example, the evidence for a favoured therapy is poor, what does the profession replace it with? Definitions of how a clinician should act scientifically may also play a part. McLean et al. (2007) for example, identify three core ways: the carrying out and publication of research; by tracking client progress through data collection; and, by clinical practice which is guided by the best knowledge regarding efficacious interventions. These can be said to limit the clinician to what can be seen as essentially research use and hypothesis testing. Lum (2002) argues for a broader definition when she states that to be a scientist, is in 'essence to think critically (or validly)' (p.137). Science is therefore also about thinking as well as knowledge, what Greenhalgh (2002) refers to as 'hypothesis generation' (p.398). Cohen (1988) and Nelson (1994) refer to scientific thinking as scepticism and Nelson (1994) comments that clinicians also act scientifically when they avoid making guarantees regarding outcomes to patients. It is part of what Friel-Patti (1994) describes as responsible clinical practice.

Thus, what underlies scientific behaviour might be best (but not only) described by the notion of critical thinking. Gambrill (2005) correctly points out other equally suitable terms including reasoning, clinical judgement, decision making, problem solving, reflection and scientific thinking. Buckingham and Adams (2000) refer to the "tangled web" of terminology in clinical decision making (p.984), giving the impression of overlap and interchangeable (King & Kitchner, 1994), synonymous

(O'Neill & Dluhy, 1997) definitions which are conceptually connected (Facione & Facione, 2000). O'Neill and Dluhy (1997) perhaps come closest to differentiating critical thinking and clinical reasoning when they frame clinical reasoning as a domain specific skill and critical thinking a generic thinking skill, requiring broader considerations.

In essence, such higher-order thinking skills are sciences' 'shortcut' (Treweek, 2005, p.553) contributing to the adequacy of professional knowledge (Schön, 1983). However there remain issues with the role of higher-order thinking skills in clinical practice. Adams, Stover and Whitlow's (1999) meta-analysis for example, showed no relationship between critical thinking and clinical competence. Murphy (2004) on the other hand, reports on studies which indicate that students who reflect are more active in the learning process, more self-aware and self-regulated and more complex in their thinking. The suggestion is that by combining this scientific thinking with research evidence, clinical decisions are rendered more sophisticated.

Thus it can be said that there are different ways of working rigorously (Higgs, Andresen & Fish, 2004) or scientifically. Science which at first seems to clearly represent conventionally described practices typically carried out in laboratories and absent from the clinical context, may therefore be considered from a wider perspective, to include notions of scientific thinking and actions. In considering scientific behaviours, we need also to consider those which are not.

1.2.4. What is not science

'At the borders of science, lurks a range of ideas that are appealing' (Sagan, 1996, p.221).

There is a risk for health professionals Newbold, Lohr and Gist (2008) argue, of being technical occupations rather than scientifically-grounded professions. This is perhaps most reflected in the uncritical adoption and habitual use of therapies, especially pseudoscientific, non-scientific and unvalidated practices. Speaking of clinical psychology, Newbold, Lohr and Gist (2008) note that the field is plagued with procedures that lack empirical support, do harm, and yet are frequently practiced. Examples include memory retrieval and self-help tapes (Lilienfeld, 1998). SLT is not immune from pseudoscientific practices, most notably and recently typified by Auditory Integration Therapy (AIT), also known as Listening Therapy, and Facilitated Communication.

A wider perspective includes complementary and alternative medicines (CAMs), practices not presently considered part of conventional medicine (Haltiwanger & Stein, 2009). The appeal of CAMs may be evidence of a desire for non-scientific or non-medicalised treatments. In the US in 2008, 38% of adults (and 12% of children) were using CAMs (National Center for Complementary and Alternative Medicine, 2009). These include practitioner-based therapies such as chiropracty, acupuncture and reiki, although nutritional supplements (e.g. fish oils) were most commonly used among adults. CAMs use is especially prevalent for chronic or incurable problems and in the absence of effective therapies (Vyse, 2005), including conditions such as cerebral palsy and some forms of cancer. Use in clinical populations is relatively high: anywhere from 27%- 100% of individuals with multiple sclerosis (Olsen, 2009); 70% of children with autism spectrum disorder (Christon, Mackintosh & Myers, 2009), and; 43% of patients with voice problems (Sloane, 2006). According to Sloane (2006), female and younger clients were more likely to use CAMs. Chronic populations are more vulnerable perhaps to alternative treatment practices (Tharpe, 1999) because conventional disciplines are unable to offer a cure. Main reasons for CAMs use include the failure or ineffectiveness of conventional practices, a belief that CAMs would cure or alleviate symptoms, anecdotal reports of success and even doctors' referrals (Olsen, 2009; Sloane, 2006).

Use of CAMs is not limited to the general public. Poole, Lindsay, Memon and Bull (1995) for example, identified large minorities of registered psychotherapists in America and Britain using techniques such as hypnosis, dream analysis and guided imagery to recover memories of sexual abuse. A replication by Nunez, Poole and Memon (2003) found unchanged practices. The discipline of physiotherapy has seen the rise of invasive treatments such as acupuncture and dry needling despite as yet minimal evidence. Knupp, Esmail and Warren (2009) identified one third of occupational therapists as using CAMs including acupuncture, reflexology and reiki. Jarvis (1998) suggests a plethora of reasons to explain CAMs use in the health professions including: boredom, low professional esteem, placing intuitiveness above logic, beliefs encroachment, both profit and prophet motives, and even psychopathic tendencies. Furthermore, only one fifth of Knupp et al.'s (2000) clinicians cited lack of supporting evidence as a reason for non-use suggesting science was not a strong scaffold in therapeutic choices. Sagan (1996) explains CAM use in the professions is because they 'provide easy answers, save us the trouble of thinking…making us routine and comfortable practitioners' (p.13). It may also be as Tarvis (2003) argues that such therapies may be attractive because they promise certainty. For whatever reason, many unsubstantiated and ineffective treatments appear to make their way not just into mainstream society but into mainstream practice (Newbold et al., 2008). It may be as Kida (2006) says, that 'pseudoscience is everywhere in our popular culture, while sceptical treatments are harder to find' (p.41).

The field of SLT has been subject to vigorous denunciation of two primary pseudoscientific therapies – AIT (ASHA, 2004; Mudford & Cullen, 2005) and Facilitated Communication (Charlton & Charlton, 2010; Schlosser & Wendt, 2008). Pseudoscientific therapies essentially claim to be scientific, but do not conform to scientific principles (Packman & Attanasio, 2004) and can be thought of as a body of beliefs and practices but seldom a field of active inquiry (Bunge ,1984). The characteristics of pseudoscience are numerous but essentially are what Newbold et al. (2008) call alternative and Lum (2002) refers to as non-scientific ways of knowing. These include practices based on faith or belief, authority, intuition, experience, popularity, and religion (Lum, 2002). Many pseudoscientific theories are not testable or falsifiable, being conjecture rather than science (Packman & Attanasio, 2004; Turpin, 2002). Despite clear mandates against use, the pseudoscientific practice of Listening Therapy is regularly advertised in the Royal College of Speech and Language Therapists (RCLST) professional magazine, suggesting implicit approval. On the listening program.com website a statement exists saying ‘Approved by the College of Occupational Therapy as relevant to the OT profession’. Clinicians must be confused by such apparent professional support.

There has also been active debate over non-scientific practices specifically oral-motor therapy (OMT) and non-speech oral motor exercises (NSOMEs), practices devoid of empirical support and of theoretical questionability. Despite its questionable status, clinicians continue to use NSOMEs across countries (Joffe & Pring, 2008; Lof & Watson, 2008). We cannot Lum (2002) argues be scientist clinicians and act in pseudoscientific ways. The use of such practices undermines any attempts by a discipline to operate scientifically (Lilienfeld, Lynn & Lohr, 2003) and to make informed decisions (Beyerstein, 1995). This is not to imply as Lilienfeld (1998) says, that all practices not scientifically validated are harmful or barren of value, it being possible that some therapies will ultimately demonstrate efficacy. Cochlear implants are an example of one such treatment. Others may become naturally extinct. Thus, empirical validation may be insufficient in providing direction for decision making especially as clinicians are often eager to try new methods (Creaghead, 1999) and testing a therapy can take time. Unscientific practice however, may not be limited to the therapies used, but to the nature of practice itself.

1.2.5. Practice as art

‘To overplay the hand of therapeutic techniques and minimise the contribution of personal and relational factors has more to do with the politics of evidence than its science’ (Larner, 2004, p.24).

Clinicians face ‘ill-defined problems’ (Higgs & Jones, 2000, p.4) and one of the ways clinicians adapt and cope with the inexact nature of professional practice according to Higgs and Jones (2000) is to ‘look beyond the science’ (p.4). Research into why and how therapy works is virtually non-existent (Larner, 2004) and it may be in fact that techniques have very little to do with therapeutic success (Bernstein-Ratner, 2005; Hubble, Duncan & Miller, 1999). A review of interventions in dysphagia (Speyer, Baijens, Heijnen & Zwijnenberg, 2010) for example, shows remarkably little difference in outcome between any types of therapies offered. This translates to other disciplines**.** Asay and Lambert (1999) report that 70-80% of psychotherapy outpatients show significant benefits as a result of a wide range of therapies that use very different techniques. Psychotherapy studies (Lambert, 1992) have shown that specific therapies account for no more than 15% of outcome*.* Furthermore, generic principles may have more impact. Tyler's (2008) review of evidence-based interventions for speech-sound disorders for example suggests factors that lead to increased efficiency, such as planning for generalisation, use of carers in a structured home programme and increased frequency and intensity of intervention. Hubble et al. (1999) describe this as the repeated finding that 'therapies and their associated technical operations do not significantly contribute to outcome' (p.12), raising questions for both what is researched and what is practiced.

Common therapeutic factors which are held to account for outcome are client and extra-therapeutic factors (e.g. ego strength and social support) and expectancy and placebo effects (Lambert, 1992). Such influences are worth considering given the interactional nature of practice and what Packman and Attanasio (2004) refer to as the complexities of the human condition. It may be that therapeutic engagement itself is important. Systematic reviews show placebos consistently produce change in medical cases, from one third (Scovern, 1999) to one half of patients (Jerome, 1989) for a wide variety of diseases and conditions. Barbour (1991) in studying placebo effects for hypertension demonstrated that individuals who responded to treatment talked to themselves with an active voice, were information seeking, and exhibited a sense of internal locus of control. Indeed long lasting change in psychotherapy appears more lasting in clients who attribute the changes to their own efforts (Lambert & Bergin, 1994). This all means as Herbert (2003) says, that 'we know that virtually any intervention is superior to no treatment' (p.417).

It is not only the process and patients who can influence outcome but SLTs themselves. Lutterman (2001) says that SLTs are 'at heart …grief workers' and defines practice as being composed of 'content counselling' and 'affect counselling' (p.3). Thus clinician skills such empathy, warmth and encouragement of risk taking have been shown to impact outcome (Blatt, Sanislow, Zuroff & Pilkonis, 1996; Lambert, 1992). Garske and Anderson (2003) report on a number of studies in psychotherapy which consistently confirm that therapist effects supersede individual therapy effects. Among the effects correlated with outcome are the clinician's skill and interest in helping patients (Blatt et al., 1996), effective reinforcement, effective implementation of carryover procedures, and therapist flexibility in response to client needs (Oratio & Hood 1977), therapist understanding (Littauer, Sexton & Wynn, 2005), therapist attentiveness (Palmadottir, 2006,) interpersonal skills (Williams & Irurita, 2004) and warmth, calmness and gentleness (Littauer et al., 2005; Palmadottir, 2006). Fourie's (2009) patients identified 'restorative poise' as the ideal trait in SLTs and described therapeutic qualities (being understanding, gracious, erudite and inspiring) and therapeutic actions (being confident, soothing, practical and empowering) as important in the clinician. This underlines the argument regarding the importance of interactional factors, Fourie (2009) even going so far as to reiterate Brumfitt and Clarke's (1982) contention, that SLT could be 'deemed a special case of psychotherapeutic intervention' (p.998).

This feeds into the idea of therapy as more than science or specific technique, and leaves clinicians with few guidelines on why they might use one approach over another. The focus on science and relative neglect of art most epitomised by the dominance of EBP in recent years, has resulted in what Gabbay and LeMay (2004) call several dilemmas, including perhaps the devaluing of the contribution of artistry to outcomes. Resistance to acknowledging the impact of artistic elements may surround their intangibility and provoke comments such as Dowie and Elstein's (1988), which queries whether claims to artistry represent a 'refusal to apply the scientific approach' (p.4).

Neither are terms reflecting the unexplicated nature of some elements (emphasised by terms like tacit knowledge and clinical intuition) perhaps helpful in this regard. Law, Campbell, Roulstone, Adams, and Boyle (2007) argue that the inability to make explicit exactly how these operate or what they comprise, is problematic for the profession in the context of a need to demonstrate scientific principles and adherence to rational decision making. This is further complicated in female dominated professions such as SLT according to Buckingham & Adams (2000) which tend to be associated with decision making which is viewed as predominantly 'tacit, feminine and emotional', whereas medical knowledge is viewed as 'empirical and rational' and therefore given greater societal value (p.982). The question of art in practice is therefore highly important not just for outcomes and decision making, but for the discipline as a whole. Recognising artistry as integral to practice may mean as Miles (2007) has argued, recognising that science can only be a tool rather than the soul of practice.

1.2.6. Why science is important

'The thorny issues facing the profession are best analysed and resolved by reliance on scientific data rather than armchair philosophy, poorly grounded theory, and unsystematic observations and opinions' (Garske & Anderson, 2003, p.146).

Lum (2002) states that the SLT profession must reflect seriously at some point on what it means to be a scientific discipline. Abrandt-Dalhgren, Richardson and Kalmam (2004) contend that the label 'profession' is supposed to be a guarantee that choices of action are deliberate, well-founded and not arbitrary. The scientific method should enable clinicians Richardson, Higgs & Abrandt-Dahlgren (2004) reason, to be able to confidently defend their work and the quality of care the profession offers. The other option as Johnson (1999) points out is to risk credibility by utilising therapies from the 'margins of science' (p.67).

As McLean et al. (2007) have appealed for clinicians to be active and discerning consumers of research, so too should they be active and discerning consumers of the interventions they employ. Coyle (2011) argues that 'adoption of clinical methods without sufficient scientific justification does not make sense' (p.110). The profession's claim to being scientific is being increasingly tested with what Newbold et al. (2008) call 'escalating commercialisation' (p.1339), a growth of opportunities in the market place for SLTs to connect with various forms of training and therapies. It is also strained as Adam (2000) points out by the increasing integration of complimentary therapies into conventional arenas. This stands in stark contrast to the principles of EBP.

Use of unvalidated or ineffective treatments can in the very least be unethical through wasting patient's time and resources. Lilienfeld, Lynn and Lohr (2003) identify economic issues and opportunity costs – where a client could have gone elsewhere for efficacious therapy. Beyerstein (1995) adds personal costs for patients including the encouragement of false hopes, deterioration in self-image and depression. Adherence to a scientific philosophy is perhaps most important where clinicians can do harm (Lilienfeld et al., 2003). While iatrogenic effects are not broadly considered in the SLT literature, the relatively recent focus on dysphagia in clinical practice would seem to increase this potential. There are however, clear instances of harm from pseudoscientific therapies in the discipline. Lilienfeld et al. (2003) for example, point to untrue reporting of child abuse using the non-autonomous technique of Facilitated Communication. The subjection of a child to hours of continuous involuntary music through Listening Therapy is another possible example. The field of psychotherapy shows that on average, 10% of patients get worse after starting therapy (Jarrett, 2008) and that 28% of psychologists are unaware of the negative effects of their work (Boisvert & Faust, 2006). There are also lesser evils as Lum (2002) notes, such as clients (and the public) losing confidence in the profession's ability to treat them. This needs to be seen in the context of evidence from the field of medicine which shows that that most complex interventions achieve between only 10-20% change, with many not resulting in any change (Grimshaw et al., 2001), and that one-fifth to one-quarter of medical care provided is not needed or is potentially harmful (Eccles, Grimshaw, Walker, Johnston & Pitts, 2004). The story may be the same for SLT where Bernstein-Ratner (2006) comments that even validated treatments often do not 'cure'. The suggestion is that the process of therapy is not so clear-cut, and that a principled approach is essential for the profession.

The question of science also revolves around the notion of professional versus technical identity. If clinicians are mere applicators of techniques, how might they distinguish themselves from SLT assistants? It can be suggested that a scientific discipline is not passive in practice and thus does not merely apply a therapy, whether validated or unvalidated. Basmajian's (1975) advice remains. In an early article, he advised clinicians to regard all therapeutic procedures 'with suspicion' (p.608). Scientific thinking would therefore appear to be a sound basis to practice, the knowledge filter that facilitates the discrimination between truth and illusion (Shermer, 2001). Science is a threat to pseudoscience and therefore one would expect the profession of SLT to embrace it.

1.3 THERAPIES & TECHNIQUES

1.3.1. Definitions

'A search of today's electronic marketplace for tools to support clinical decision making yields an overwhelming number, variety and complexity of products' (Hayward 2004 p.66).

Interventions, therapies, programmes, approaches and techniques are among the labels given to the specific tools clinicians use to provide therapy. These terms however may vary in their foundations. Apel (1999) for example, says an approach is a set of procedures defined by its scientific base, whereas a tool is designed to provide intervention materials for the approach. Therapy refers to a type of approach such as oral-motor therapy, and techniques are the strategies or ways of implementing a programme or therapy. However, some therapies such as Talktools and Listening Therapy may be seen as both, as they provide both the equipment to carry out the procedures, sets of procedures, and in some cases theories upon which they are based.

Therapies can also be classified. For example Turner and Whitfield (1997) identified three broad categories in physiotherapy (orthopaedic/musculo-skeletal, respiratory and neurological) in addition to a common denominator technique, which was exercise. Odom, Boyd and Hall (2010) identified thirty comprehensive treatment models for individuals with autism, the majority based on an applied behaviour analysis framework, although a substantial minority followed a developmental or relationship-based model. We might therefore expect clinicians to use categories of therapies. In disability for example, augmentative and alternative communication (AAC) and interaction-based therapies might be prevalent. In speech disorders, it might be phonological or articulation approaches. In dysphagia, bolus modification and exercise techniques may be utilised.

Furthermore, the term 'conventional' is used to describe standard, scientific and community agreed interventions. The terms 'complimentary' and 'alternative' places a treatment outside of the accepted or more conventional approaches. Additionally, the idea of complex interventions (Hayhow, 2010) or therapies influenced by several factors, leads to the notion that some therapies may not be unique in their own right suggesting it might not be a useful construct in some cases. Understanding the broad categories of therapies clinicians utilise may serves to facilitate an understanding of philosophies of practice.

1.3.2. Conventional therapies in practice

'If there are more than two treatments for a disorder, there is probably no good treatment' (United Cerebral Palsy Foundation, 1998, p.1).

Most areas of practice have multiple intervention options. The volume of options may increase rather than reduce the complexity of the clinician's task, being overwhelming (Doubilet & McNeil, 1988). Bernstein-Ratner (2005) argues however, that this diversity of approaches is positive as a dynamic, developing discipline should not be reduced to a 'single manual of practice' (p.178). Some therapies have good evidence bases such as Lidcombe for stuttering and Lee Silverman Voice Treatment (LSVT) for dysphonia. Nevertheless, many therapies in use do not have empirical support and some have been the subject of vigorous debate in the professional literature, the most obvious being oral-motor therapies. Moreover, Lum (2002) argues that disagreements on the merits of individual therapies tend to focus on superficial aspects of treatment rather than on their intrinsic scientific value. Some therapies have clear theoretical bases and selection criteria for candidates such as Fastforward (Veale, 1999), whereas others are broadly applied to multiple populations (e.g. Facilitated Communication). This suggests a field without clear rules. Indeed, an influential report (Institute of Medicine, 1999) identified not only the underuse of effective treatments and tools, but the overuse of ineffective ones and misuse of some including some preschool hearing, speech, language and visual screening tests.

Relatively speaking, there has been little exploration of the therapies SLTs use or their decision-making practices around therapies. A recent study by Joffe and Pring (2008) in the area of developmental speech disorders showed that therapies were often combined, with a mean of two being used by clinicians in this area. Turner and Whitfield (1997) also found that physiotherapy techniques rather than being used in isolation were used in combination. Joffe and Pring (2008) further report on clearly preferred (e.g. minimal contrast therapy) and non-preferred (e.g. core vocabulary) options. Behrman's (2005) study of the assessment practices of voice therapists also indicated preferences, this time for non-instrumental approaches over the more objective instrumental techniques, suggesting perhaps a lack of appeal of instrumentation. The idea of preferred treatments appears to contradict Creaghead's (1999) comment that different clinicians use different therapies and Pring's (2004) argument that clinicians use different therapies because they know that patients differ and no single therapy will meet the needs of all patients. Some therapies appear to be strongly entrenched in the professional repertoire. Sensory Integration Therapy (SIT) is a good example of this, being particularly used in the occupational therapy field for well over thirty years without accumulating evidence, and with a recent transfer into SLT. SIT is for example, always-used by 82% of occupational therapists working with children with autism (Watling, Dietz, Kanny & McLaughlin, 1999). Discipline-specific examples include the use of traditional articulation exercises in the treatment of phonological impairments (Baker & McLeod, 2011) and NSOMEs in the treatment of speech disorders (Lof & Watson, 2008) in a vacuum of empirical evidence (Powell, 2008). Thus some therapies stand the test of time according to Smith (2005), without accumulating supporting evidence along the way and sometimes despite strong empirical evidence against them. Furthermore, such therapies may be broadly applied such as the use of NSOMEs as a warm-up exercise (Watson & Lof, 2004), in acquired neurological disorders (Mackenzie, Muir & Allen, 2010) and suspected childhood apraxia of speech (Kollias & Lester, 2005).

This broad use of favoured and culturally based interventions may raise concerns about the application of therapies in a replicating (Strauss & McAlister, 2000) or technical mode (Ogles, Anderson & Lunnen, 1999) and therefore the scientific underpinnings of treatment decisions. It may be as Shermer (2001) states, that health professionals have a boundary problem between science and pseudoscience. This may also reflect on a discord between what is researched and what is clinically utilised. There are many studies of specific therapies such as Hanen which are examined by originators of the programme (e.g. Girolametto, Pierce & Weitzman, 1996) or interested researchers (e.g. Pennington, Goldbart & Marshall, 2004). There are also many therapies which are used in clinical practice and fail to attract the interest of researchers. As Bernstein-Ratner (2006) states, real world problems are typified by ‘frequently employed treatments’ with ‘little firm validation data’ and ‘validated treatments not reaching the clinician’ (p.258). The net result may be what Rappolt and Tassone (2002) describe based on their interviews with rehabilitation therapists, as the typically ‘haphazard approaches’ to the evaluation and application of new knowledge (p.170).

1.3.3. Pseudoscientific therapies

‘*Therapies are dubious when their rationales and purported effects are poorly substantiated; they are controversial when advocacy for their use persists despite evidence regarding the insubstantiality of rationale and or impact’ (Jacobson, Foxx & Mulick, 2005, p.xiv).*

Clear examples of therapies lacking in scientific underpinnings exist, especially from the complementary arena (e.g. homeopathy and osteopathy). A number of features differentiate science from pseudoscience. For example, pseudoscientific treatments for rely mainly or wholly on anecdotal and testimonial evidence to support their use

(Gambrill, 2005; Smith, 2005). Such evidence can be highly persuasive according to Finn et al. (2005), especially when presented by people who are motivated to help others. However, as Shermer (1997) states ‘anecdotes do not make a science‘ (p.48), being insufficient to justify a therapy’s claim to effectiveness, a ‘reluctant response to human fallibility’ (Sagan, 1996, p.181). It is suggested that anecdote however may be a dominant form of transmission in the health disciplines based on the influences of colleagues reported by clinicians (e.g. Gabbay & LeMay, 2004; O’Connor & Pettigrew, 2009). Furthermore, it may be prevalent as a consequence of the absence of more empirically derived support for a therapy.

Scientific and pseudoscientific treatments are also differentiated by a therapy’s capacity to be testable and open to experimentation (Federspil & Vettor, 2000; Kida, 2006) and replication (Gambrill, 2005). Such testing provides a basis for modifying or eliminating ineffective treatments (Finn et al., 2005). Many pseudoscientific treatments are based only on the claims of originators or proponents, and are often ‘vague, circumspect or tautologous in their descriptions’ (Finn et al., 2005, p.173) with untestable principles such as chiropractic adjustment, and untestable metaphors such as universal intelligence (Mootz & Phillips, 1997). As Sagan (1996) notes, explanations of such treatments ‘can explain anything and therefore in fact nothing’ (p.181). Therefore, pseudoscientific practices typically place emphasis on confirmation rather than refutation (Lilienfeld, 1998) with disconfirming evidence where it is present, ignored or rationalised (Gambrill, 2005; Shermer, 2001). This contrasts with receptive attitudes to new ideas and a willingness to change which lies at the heart of a scientific approach to knowledge. As Finn et al. (2005) note, science’s goal is not to prove what is correct, but what is true. Testability however, can also be problematic when interventions have ‘many potentially active elements’ (Metz & Mulick, 2005, p.241) and this may be said to refer to many treatments in the conventional arena.

Pseudoscientific practices can be sometimes difficult to discriminate as they may amalgamate what Gambrill (2005) calls the trapping of science without the substance.

These trappings may include new or technical terminology and use of obscurantist language (Gambrill, 2005; Vyse, 2005), and misappropriation of constructs and concepts. Newbold et al. (2008) provide the examples of phrenology or creation 'science'. Additionally, claims can be based on uncontrolled studies or studies with unvalidated measures, or sophisticated technology can be used in unvalidated ways (Smith, 2005). Despite these trappings, such treatments are more unlike science than similar to it. For example, scientific endeavours define clear populations and conditions for treatments and usually report to improvements of functioning in everyday situations (Smith, 2005). Pseudoscientific therapies tend to talk in terms of full cure, what Finn et al. (2005) label 'grandiose' claims. As a consequence, use of such treatments tend to be belief or person rather than data-based. Osborne (2005) suggests they are often characterised by comforting beliefs, for example, healing can be effected painlessly, instantly and without effort. This means as Sagan (1996) comments, that pseudoscience 'speaks to powerful emotional needs that science often leaves unfulfilled' (p.14). Such treatments may also exist in what Lilienfeld et al. (2003) call the mantra of holism, a 'plausible ideology' according to Vyse (2005), particularly for complex conditions (p.14). As Mootz and Phillips (1997) point out, the concept of holism is difficult to approach from a scientific perspective as it is immune to measurement, testing and operational definition. The inherent implication argue Finn et al. (2005), is that science has lost sight of the bigger picture.

Thus a critical attitude is basic to scientific practice (Gambrill, 2005) but pseudoscience is characteristically a place where 'passion passes for rigour' according to Thompson (2008, p.123). Critical scrutiny typically involves peer reviewed publications whereas evasion of peer review is stereotypical of pseudoscientific practice (Lilienfeld et al., 2003). Publication in peer reviewed journals means that information is shared and dissected. Less scientifically-based therapies usually disseminate information by different methods, enabling them to circumvent the process of peer review. Such techniques may involve training workshops or courses, or going to the public directly through websites or the media.

The demarcation line between what is based in science and what is not may not always be clear however, there being a fuzzy middle ground which some therapies may fit into. These includes those which have not yet been validated but have made their way into clinical practice and those which have been in practice a long time but have not been empirically tested. Smith (2005) talks of ‘plausible’ but untested treatments which make sense theoretically, but have been untested or have some ‘red flags’ about them and offers as examples, theory of mind (core deficit), Floortime (untested), and Natural language paradigm (the word ‘natural’). Furthermore some of the characteristics which typify pseudoscience can be applied to non-scientific and even scientific treatments. For example, pseudosciences are often described as commercial ventures (Beyerstein, 1995), being subject to ulterior motives which compromise objectivity. However there are both valid and non-valid treatments which fit this criterion for example, LSVT and Talktools. Therefore it can be postulated that there exists from a scientific point of view potentially three levels of clinical practice: scientific, nonscientific and pseudoscientific. Perhaps to be termed a non-science, it is not necessary to be guilty of all the ‘sins’ described above, ‘only a reasonable number of them’ (Beyerstein, 1995, p.27). While Sagan (1996) says that ‘the method of science, as stodgy and grumpy as it may seem, is far more important than the findings of science’ (p.22), it may often be difficult for clinicians to differentiate between treatments which are scientific and those which are less than scientific.

1.3.4. Therapy specific reasons for selecting and using therapies

‘Clinicians in our field have been trained and educated to make informed decisions concerning clinical practice’ (Kahmi, 1999, p.97).

Decision making regarding interventions has been acknowledged to be one of the main kinds of clinical uncertainty clinicians encounter (Ely et al., 1999; McCaughan, 2005). Despite this, clinicians obviously have reasons for using the therapies they do. Papadopoulos, Noyes, Barns, Jones and Thorn (2012) found physiotherapists aimed for simplicity and function in their treatment choices. Kahmi (1999, 2006a), likewise argues that clinicians are more likely to adopt approaches if they result in better or quicker functional outcomes, and suggests that many clinicians are more influenced by behavioural changes and 'because it works' (Kahmi, 1999, p.93) than theoretical beliefs. This concurs with Watson and Lof's (2004) study of NSOME use which showed that 85% of therapists believe it works based on changes observed in clinical practice, this despite empirical evidence to the contrary. Such reasoning is not limited to SLTs but also seen for example in teachers (Gersten & Brengelman, 1996). The 'because it works' attitude may be more complex than it first appears, perhaps subject to bias, influenced by manufacturer's claims (Apel & Self, 2006) resulting from the placebo effect (Beyerstein, 2003) and even the will to believe (Beyerstein, 1997).

Indeed it may be that for the clinician w*hat* is targeted is often more important than *how* it is targeted (Kahmi, 2006) and this may result in a healthy mix of (Bernstein-Ratner, 2005) or an eclectic approach to treatments as seen in phonology studies (Joffe & Pring, 2008; Roulstone & Wren, 2001). Rosseau, Packman, Onslow, Robinson and Harrison (2002) also found eclecticism showing that half the SLTs using the Lidcombe programme for stuttering did not use it as set out by its authors. Joffe and Pring (2008) speculated that clinicians might be inclined towards eclecticism by reasoning that each child might receive some therapy which is beneficial. Certainly it might help to explain the wide-ranging application of some treatments. Mackenzie et al. (2010) in examining the use of NSOMEs in adult-acquired disorders reasoned that rather than being isolated to speech work, these exercises were simultaneously used by the clinicians to target other functions effecting drooling, dysphagia and sensory awareness. Furthermore, it may be that such broad-based or broadly applied treatments may be more appealing to less experienced clinicians. Joffe and Pring (2008) found for example that non-specific oral-motor work was popular with less experienced clinicians.

Such a pragmatic rather than theoretical approach to intervention may mean as Mackenzie et al.'s (2010) SLTS and Papadopoulos et al.'s (2012) physiotherapists indicate, that clinicians aim for simplicity and function in their treatment choices. Theory may not therefore be a useful guide in selecting or applying treatments.

Indeed, Kahmi (1999) argues that most clinicians are pragmatists, and 'have little problem with 'theoretical inconsistencies' (p.93) such as those evidenced in pseudoscientific practices (Creaghead, 1999). Thus if clinicians do not value theory, then pseudoscientific practices may not be problematic for them. However, intervention choices may not be as devoid of theory as suggested. Kollias and Lester's (2005) SLTs used oral-motor therapies primarily with children with motor and tonal problems (Down syndrome and Cerebral Palsy), suggesting that treatments aimed at motor functions are targeted primarily at individuals with motor problems. Clark (2005) would contend this is the reason oral-motor treatments are offered inappropriately; clinicians she argues, understand that speech and swallowing are motor behaviours, therefore clinicians may believe that alleviating underlying motor impairments or facilitating motor system development will bring about improved speech and swallow skills.

Other reasons may revolve around the relatively modest improvements yielded by scientifically-validated treatments (Smith, 2005), especially in areas such as developmental disabilities (Vyse, 2005). In the absence of a treatment that cures, SLTs may be more open to trying alternative options. Creaghead (1999) states that the combination of individuals for whom traditional intervention strategies do not produce the desired treatment gains and clinicians eager to try new methods might facilitate the use of pseudoscientific or non-scientific methods. This search for solutions may thus facilitate the premature entrance of unvalidated therapies into the clinical context. Additionally, such therapies may also enter into a clinician's dialogue because a family brings it to the table, and clinicians may be responding to the family's needs (Veale, 1999).

In addition to patient responsivity, clinicians may also react to commercial and economic pressures when decision making regarding treatments. For example, some treatments may be more expensive than others and Veale (1999) argues decision making should be based on the attached cost. Whether clinicians use this criterion when selecting treatments is not well known and they may be influenced by commercial factors in other ways including the influence of promotional materials (Beyerstein, 1997; Bowen, 2005). Certainly branding of therapies has become more evident in SLT. Bernstein-Ratner (2005) refers to treatment through allegiance to training regimens such as Lidcombe and LSVT. Lum (2002) expresses concern that clinicians often judge resources based on face validity rather than on the basis of any scientific explanation regarding efficacy, and suggests that critical evaluation of these products may be limited. This assumes an uncritical user. Evans, Over and Manktelow (1993) say that the sophisticated chooser will make allowances for promotional techniques. The growth of such consumerism say Dowie and Elstein (1988) entails greater accountability for professional judgments and decisions

The nature of individual therapies themselves receives little attention in the literature to explain use. Stephenson (2009) points to the conceptual appeal of some therapies such as SIT which may explain its popularity. Ineffective practices may also spread because they are easy to use. Kahmi (2004) for example, suggests that the reason auditory processing disorders and sensory integration disorders have become commonplace is because they offer simple (even if superficial or incorrect) answers to the causation question and direct treatment goals. Kahmi (2006b) also highlights diverse and engaging activities that offer opportunities for measurable success as partly explaining the use of NSOMEs. What of the empirical evidence for a treatment? Kahmi (1999) says the ‘because it worked’ argument means that treatment efficacy studies may have limited impact on a particular approach a therapist uses, and EBP barrier studies appear to confirm this across disciplines including dieticians (Thomas, Kukuruzovic, Martino, Chauhan & Elliot, 2003), doctors (Gabbay and LeMay, 2004), occupational therapists (Bennett et al 2003; Curtin & Jaramazovic, 2001), nurses (Parahoo, 2000) and SLTs (Brener, Vallino-Napoli, Reid & Reilly, 2002; O’Connor & Pettigrew 2009). The relative lack of influence of negative research is evident in the use of less scientifically-based therapies. Ninety nine per cent of Watling, Dietz, Kanny and McLaughlin’s (1999) occupational therapists working with children with autism used SIT. This is similar to Watson and Lof’s (2004) study of SLTs’ use of NSOMEs which further suggests that clinicians may not be aware of the research evidence –

nearly two thirds claiming that evidence was supportive. Furthermore, even in cases where there is clear evidence for a treatment approach (Kahmi, 2006b points to the Complexity Approach in phonology), there remains under-use of validated treatments. It seems that clinicians choose not to use treatments for which there is evidence as well as those for which there is none. This concurs with Eccles et al. (2005) finding from medicine that around a third of practice was not provided according to current scientific evidence. There is no reason to think the figures for SLT would be much different.

1.3.5. Unvalidated therapies and clinical practice

'Rehabilitation….requires the clinician to select interventions for which evidence of a reasonable likelihood of successful, important outcomes exists' (Coyle, 2008, p.43).

There is a proliferation of therapies available which are unsupported by empirical evidence. Although there is criticism of clinicians adopting unproven therapies, Lum (2002) points to a common practice in SLT of trying new things, what Creaghead (1999) calls readiness to have a go. Lum (2002) presents a typical scenario: someone has a bright idea for therapy, the idea is then packaged for sale, and; busy clinicians with keen eyes for resources that might make their work more efficient, purchase the new untested idea. The fact that clinicians do not require a seal of approval (Kahmi, 1999) means that they are freer to explore new options. Furthermore, Bernstein-Ratner (2006) states that the expert clinician is obliged to 'seek new information to improve therapeutic effectiveness' (p.258). This all reflects on practice as dynamic.

Lum (2002) ponders whether SLTs wrestle with the ethical questions of providing unsubstantiated treatments. It may be that clinicians are not bound by the same standards as researchers. As Bernstein-Ratner (2006) states, ideal world scenarios would involve treatments emerging followed by validation followed by dissemination and application to 'those whose profiles fit the trial population characteristics' (p.258). Perhaps as Schwartz (2005) argues, clinicians might be doing their own testing and retesting of therapies, their own versions of evidence. The fact that some therapies might have limited rigour, and that clinicians attend courses on them, does not mean that clinicians are ‘legitimizing the unscientific practices’ according to Sampson, French and Green (1999). Indeed, Nelson (1994) comments that most clinicians describe clinical interventions in cautious terms, avoid making guarantees and regard any new clinical breakthrough with a healthy degree of scepticism.

Neither are all new therapies automatically integrated into practice. Even some that become pervasive can be abandoned (Jacobson et al., 2005), especially when as Creaghead (1999) comments, ‘their value was not supported either by lasting gains or research results’ (p.335). Creaghead (1999) also points to therapies which while initially rejected, prove their worth over time (e.g. phonological therapy). This implies argues Lilienfeld et al. (2003) that it would be ‘a serious error to dismiss any untested techniques out of hand’ (p.3), in other words to avoid premature dismissiveness as much as premature promotion. The scientific obligation for progression implies the discipline must remain open to new therapies with, as Sagan (1995) notes, a unique mix of open mindedness and scepticism. This appears to reflect practice. The problem however as Lum (2002) states, is that some questionable therapies tend to become established despite being unvalidated and once established, it can be difficult to remove a therapy.

It might be fair to say that clinicians are not helped by the dearth of evaluation of therapies in use, and neither by the apparently poor outcomes of multiple interventions. Treweek (2005) speaking of the medical field but which is likely to have applications to SLT, reports that many interventions have no impact. This is of course highly concerning. After all, why provide a treatment if it results in no change? It must be considered that scientific measures may not measure clinically relevant changes. Clinicians after all may be concerned with functional outcomes (Kahmi, 2006; Papadopoulos et al., 2012) rather than results on standardised tests. Furthermore, some interactions may not be directly measureable including those related to elements of the therapeutic alliance and self-reported outcomes. Indeed, it may be as Beutow, Upshur, Miles and Loughlin (2006) argue that patient-specific factors are more important or predictive of outcome. Intervention itself may be subject to such individualisation that rules and regulations attached to individual therapies are seen as less important than responding to the individual patient. This is previously suggested by ideas of eclecticism and pragmatism. So how does EBP fit into clinical practice?

1.4 THE CONTEXT OF EVIDENCE BASED PRACTICE

1.4.1. Understanding EBP

'Evidence-based medicine is essentially literature-based medicine' (Ioannidis & Lau, 2000, p.110).

The contemporary applied origins of EBP are clearly aligned to the need for accountability in service provision (Lum, 2002), the failure to apply consistent practice guidelines (Cohen & Hersh, 2004), the continuing use of ineffective therapies and poor uptake of effective ones (Walshe & Rundall, 2001), and the wide variations in clinical practice observed in the health professions (Tallon, Chard & Dieppe, 2008). SLT is not immune to these variations in practice. Mathers-Schmidt and Kurlinski (2003) for example, identified significant discrepancies in the practice of dysphagia. Other catalysts include consumerism, an upsurge of managerialism, and a concern with value for money (Swinkels, Albarran, Means, Mitchell & Stewart, 2002). Some professional bodies have incorporated EBP into their professional scope of practice thus formalising it (e.g. ASHA, 2005). The concept of EBP has effectively, according to Walshe and Rundall (2001) become part of the language of the health services throughout the world. Justice (2008) acknowledges pleasure about the impact of EBP on SLT, as it gives due consideration to scientific evidence making practitioners as Jenicek (2006) says, more 'rational' in subsequent decision making.

Very early definitions of EBP were clear, state Beutow and Kenealy (2000), in equating evidence with empirical evidence. Sackett et al's (1996) definition is considered the standard stating that EBP is: 'the conscientious, explicit and judicious use of current best evidence in making decisions about the care of individual patients' (p.71). In recent years the concept has come to embrace more fully less overtly scientific forms of evidence. Dollaghan (2007) reflects this emphasis when she adapts the Sackett et al (1996) definition and defines EBP as: ‘the conscientious, explicit and judicious integration of 1) best available external evidence from systematic research, with 2) best available evidence internal to clinical practice, and 3) best available evidence concerning the preferences of a fully informed patient’ (p.2). This clearly highlights the three pillars of research, clinical experience and patient preferences, although it can be said that the highest credence continues to be given to research findings (Sackett, Straus, Richardson, Rosenberg & Haynes, 2000). In this way EBP can be seen in hierarchical terms and this is also reflected in the levels of evidence where the best evidence is based on the gold standards of randomised control trials, systematic reviews, and meta-analyses. The lowest levels of evidence are considered to be clinical expertise or clinical consensus. This attribution of value has significance for any discipline claiming to be scientific, especially in the absence of high-level evidence. As Roulstone (2001) notes, the dearth of top levels of evidence in SLT, means clinical expertise and clinical consensus are heavily relied upon in the profession.

This idea of best evidence is not random given as Thompson (2003) explains, that EBP is ‘designed to be a systematic means of combating the biases that arise from uninformed decision making’ (p.231). It achieves this by use of the best evidence. ‘Best’ in this context means research based on rigorous designs most likely to lead to valid and reliable results. Tensions exist between the values placed on the various pillars and Miles, Loughlin and Polychronis’s (2007) suggestion that EBP is an approach that was “operationalized” before being “conceptualised” may help explain this. There are calls for further broadening of the definition. Thompson et al. (2002) for example, argue for the inclusion of a fourth pillar centred on available resources. Beutow and Kenealy (2000) have suggested theoretic evidence, judicial evidence and ethics-based evidence should also influence decision making.

In its current state, it is EBP’s commitment to the scientific method which is seen as an important reason for its adoption (Lum, 2002). Johnston (2005) for example, reflects on EBP as an important renewal of the SLT profession's commitment to the link between research and practice, keeping the discipline bound to the scientific tradition through identifying interventions most likely to produce positive outcomes. Essentially it discourages ineffective practice (McCluskey & Cusick, 2002), increasing the quality of optimal care to people with communication disorders (ASHA, 2004) and may be especially critical in dysphagia says Logemann (2011), where there is potential for harm.

1.4.2. Standpoints on EBP

'The use of sound evidence is the best way to navigate the debates within our field of practice' (Logemann, 2011, p.121).

EBP has gained a significant place in the clinical world. Mykhalovskiy and Weir (2004) call it 'arguably the most important contemporary initiative committed to reshaping biomedical reason and practice' (p.1059). Rycroft-Malone et al. (2004b) say 'evidence' may well be one of the most fashionable words in health care. EBP has been seen as an approach towards rationalising clinical practice (Porta, 2004), an attempt to introduce more objectivity into practice (Ioannidis & Lau, 2000), and most importantly a process for facilitating clinicians to arrive at well-reasoned decisions (Gambrill, 2005). It is, Gambrill (2005) argues, essentially a process for handling the uncertainty surrounding decisions that must be made. Well-reasoned decisions means as Ylivisaker et al. (2002) note, that 'responsible clinicians pay particular attention to validated population-evidence statements in making decisions about clinical management of individual cases' (p. xxvii). Thus as Charlton and Miles (1998) state, EBP has 'effectively labelled itself as rational, objective and altruistic – while any opposition was implied to be promoting a practice that is illogical, self-indulgent and opposed to evidence' (p.371). Indeed rationality seems to be central characteristic of EBP and the 'assumption appears to be that EBP is the right thing to do' (Beecham, 2004, p.131). As Hammersley (2001) comments, it is deemed irrational to argue that practice should not be based on evidence.

Opposition perhaps as a consequence appears limited. Swinkels et al. (2002) would say levels of resistance to EBP have been generally low possibly, because it *has* been conveyed as rational and neutral. Indeed, studies indicate positive attitudes to EBP across disciplines (e.g. Bennett et al., 2003; Metcalfe et al., 2001; Risahmawati, Emura, Nishi and Koizumi, 2011; Zipoli & Kennedy, 2005). Curtin and Jaramazovic's (2001) study of occupational therapists perhaps stands out as one study with a contrary finding having demonstrated that only 16% of respondents reported that research was an important influence on practice. It also appears that the most experienced practitioners express either the least favourable attitudes about EBP (Bridges, Bierema & Valentine, 2007) or the most (Turner, 2001) depending on the study.

Yet EBP has been subjected to ridicule by a combination of quacks, egoists, curmudgeons and ideologues states Gibbons (2009). These include Murray, Holmes, Perron and Rail (2007) who argue that clinicians and researchers who blindly adopt EBP are acting without intellectual integrity. Furthermore, opposition is clearly expressed in the consistent failure of EBP to be integrated into SLT practice (e.g. Brenner et al., 2003; Nail-Chiwetalu & Bernstein-Ratner, 2007; Zipoli & Kennedy, 2005) and SLTs may perceive more barriers than their colleagues in physiotherapy and occupational therapy (Metcalfe et al., 2001). Adam's (2000) doctors highlight open antipathy. The vast majority considered EBP as a 'direct threat', 'a restrictive approach' and as opposed to 'clinical freedom' (p.250). Resistance is seen by researchers as well as practitioners. Terms such as omnipresent (Schlosser & Sigafoos, 2008), professionals under siege (Fish & Coles, 1998), methodological fundamentalism (Murray et al., 2007), patient-removed practice (Porta, 2006) and painting by numbers (Silverman, 1996) signify this. There are particular concerns that EBP may undermine clinical expertise (Charlton, 1998), undervaluing the importance of tacit clinical knowledge and encouraging 'cookbook' practice (Gabbay & LeMay, 2004). At the same time, Miles et al. (2007) state that EBP is divisive as it misrepresents evidence, disregards theory, and limits the development of knowledge. Other reasons for resistance are offered by Rubin and Parrish (2007a) and include a negative view of positivist science; ignoring patient's values and preferences, and; being seen as a cost-cutting tool.

These however, may represent misinterpretation of what EBP is. It does not Fey (2006) argues limit SLTs to the use of practices that have been demonstrated to be efficacious through research. If constructed as a decision-support system rather than a decision-mandated system state Higgs, Jones, Edwards and Beeston. (2004), there is no reason to see why resistance should be evident. Furthermore, the modern definition of the concept integrating the pillars of experience and preferences, intimates a valuing of knowledge other than that which is empirically derived.

1.4.3. Clinical experience and expertise

'External clinical evidence can inform but never replace clinical expertise' (Malterud, 2002, p.125).

Practice can be said to be composed of two forms of knowledge – propositional and non-propositional (Rycroft-Malone et al., 2004b). Propositional knowledge explains Rycroft-Malone et al. (2004b), is formal, explicit, derived from research and concerned with generalizability. Non-propositional knowledge is informal, implicit and derived primarily through practice, and not usually concerned with transferability beyond the case or particular setting. Such knowledge however, is a rich source of similar patients to whom a patient-at-hand can be compared (Tonelli, 2010), and has the potential to become propositional knowledge once it has been made explicit, discussed, debated and verified through wider communities of practice (Rycroft-Malone et al., 2004b).

Clinical experience is essentially knowledge originating from clinical practice which guides clinical decision-making (Higgs et al., 2001). Eraut (1994) describes this type of evidence as practical knowledge, Titchen (2000) as professional-craft knowledge, and Rycroft-Malone et al.'s (2004a) practitioners refer to it as practical evidence. It is this tacit knowledge of professionals which the EBP model defines as clinical expertise. Beutow and Kenealy (2000) explain it as an integral form of evidence as it 'views positively the atypical case' (p.87). Thus practical evidence is considered vital for its potential to deepen our understanding and to help to manage uncertainty (Ely et al., 1999) especially when immediate solutions are needed. It is also considered central as the integrator of the other pillars of evidence. In this way, EBP gives due credence to tacit knowledge (Sain, 2004) and recognises as Thompson (2003) points out, that for most day-to-day clinical situations; the evidence supporting decision-making is experiential knowledge. Tonelli (2010) states that effectively clinical experience offers a way to help bridge the gap between research and care of the individual.

Consequently, clinicians appear to value practical evidence highly. Zipoli and Kennedy (2005) for example, found SLT clinical experience and peer opinion were used to guide decision making more than research studies or clinical-practice guidelines. This finding is thoroughly replicated (Bennett et al., 2003; Copley & Allen, 2009; Lenne & Waldby, 2011; McCaughan, 2005; Oswald & Bateman, 2000; Thompson et al., 2001; Upton & Upton, 2006) across disciplines. Clinicians see themselves therefore, as Moerman (2002) states, as the 'primary active ingredients" in treatment (p.95). Their knowledge however, is often interpreted as subjective and biased perhaps with reason. As Jones, Grimmer, Edwards, Higgs and Trede (2006) note, experts are subject to cognitive biases and error (Kahmi, 2004) many of which arise directly from individual experiences (Bornstein & Elmer, 2001). Clinicians are aware of the potential for bias. Copley and Allen's (2009) clinicians for example, were well aware of the possibility that practice-generated evidence was at risk of being biased. This underscores the influence of personal factors such as enthusiasm and belief in the effectiveness of a treatment approach (Garske & Andreson, 2003; Kahmi, 1999).

The integration of clinical experience into the EBP model is problematic for other reasons. There continue to be questions for example, around what experience constitutes, an obvious failing especially as Dodd (2007) points out, that clinical expertise varies. King et al.'s (2008) study of paediatric rehabilitation therapists identified motivation and complexity of work experiences as central to the attainment of expertise. Other characteristics include the volume of knowledge, better organisation of knowledge, deeper problem representation, executive reviews of reasoning (Gambrill, 2005), better management of uncertainty, running mental simulations and having a repertoire of patterns (Phillips, Klein & Sieck, 2005). Thus, experience alone does not constitute expertise and Choudry, Fletcher and Soumerai (2005) note that time in practice does therefore not appear to be associated with better patient outcomes. Furthermore, a number of definitive studies have shown people generally tend to be overconfident about their knowledge, when it comes to decision making or judgement tasks (Thompson, 2003). Experience can thus provide a clinician with a false sense of certainty and may be of little help when faced with a situation not previously encountered (Thompson et al., 2002).

Despite acknowledged differences in clinical experience the EBP paradigm has failed to attach clear descriptions to this pillar such as seen for research evidence, or indeed define protocols to integrate practical with other forms of knowledge. This remains a problem for the model and implies it can only be surmised, a lesser valuing for practical evidence. This is typified by comments such as Coyle (2011) equating practice evidence with expediency and Dopson, Locock, Gabbay, Fearlie and Fitzgerald, (2003) saying it may be misleading and therefore needs to be interpreted cautiously. Given the uniqueness of clinical experience, Tonelli (2010) argues it will necessarily lead to variability. In this sense use of empirical evidence may be seen as Rappolt (2003) suggests as an effort to neutralise experience. Concerns are not always warranted. Charman (2010) for example, points to several studies in the field of autism which show that for two-year olds, expert clinical judgment is more reliable than the standard diagnostic instruments for diagnosis. Tonelli (2010) comments that practical evidence is less explicated in intervention decision making than diagnosis which is of course the primary interest of EBP.

Despite the concern with the human elements of practical evidence, clinical expertise is now seen to be fundamental to the delivery of EBP (King et al., 2007). It may for example, determine that a validated therapy is ineffective in the real world of clinical practice. It facilitates the clinician in examining whether differences between a current and previous patient are relevant enough to influence treatment changes. According to Beutow and Kenealy (2000), it is not a weak alternative but 'can build on science by supporting or establishing answers to questions that are larger than science' (p.88) such as values and can bridge the intrinsic gap between research and the care of the individual patient (Tonelli, 2010). This implies the centrality of the clinician in decision making.

1.4.4. Patient preferences and values

'Patient engagement and patient decision-making are of course central to clinical practice'(Cayton 2004, p.1).

Therapy is not acontextual but occurs in what Rycroft-Malone et al. (2004b) describe as a complex, multi-faceted clinical environment, a large part of which is balanced on the individual patient. Patient perspectives are one of the three pillars supporting intervention decisions in the EBP model. Such a scaffold is necessary partly as Tonelli (2010) argues because research 'disembodies illness, intellectualising and abstracting' it as though separate from the individual who experiences it (p.387). As Edwards, Jones, Carr, Braunack-Mayer and Jensen (2004) comment, many clinical tasks require an understanding of the person as well as the disease.

This weighting on patient opinion is nothing new. For years, SLTs have been taught to consider their clients when making clinical decisions (Gilliam & Gilliam, 2006). However, integrating patient perspectives may not be as automatic as one would assume. While client factors do appear to be strong determinants in treatment choice as indicated by Joffe and Pring's (2008) SLTs, these tend to be more patient characteristics such as the child's age, severity of the disorder and cognitive abilities. Ylivisaker et al. (2002) highlight two patient-specific types of reasoning: patient-specific hypothesis testing, and; single subject experiments. These are not the same as patient preferences. Watts-Pappas, McLeod, McAllister and McKinnon (2008) suggest there may be a gap between beliefs and practice with beliefs about the worthiness of patient involvement not always reflecting practice. Clinicians may enable client and parent roles specifically with regard to the carrying out of therapy tasks. Iacono and Cameron (2009) found Australian SLTs while involving families in their children's intervention, were on the whole using a directive approach. Watt-Pappas et al. (2008) also found that although SLTs involved parents in service delivery, involvement in service planning was less frequent. These findings suggest clinicians may be more inclined to incorporate patients and families as therapy assistants or technicians than engage them as co-partners in the process. There is evidence argue Edwards et al. (2004) that engagement with the patient and family provokes clinicians to ask different kinds of questions that may results in a different treatment direction being engaged. The potential neglect of patient considerations may therefore result in different treatments and different outcomes.

Watts-Pappas et al. (2008) also found that the more experienced SLTs involved parents less in decisions, intimating that the accumulation of clinical experience may further negate patient input. Other factors which may contribute to the apparent inattention to patient opinion include the nature of SLT interventions. SLT on the whole is an arena where treatments are non-invasive, thus as Lum (2002) suggests, clients may rarely ask about the nature or proven value of treatments provided. Furthermore if as Kahmi (2006) points out that pragmatism is at work in clinical practice, it may be that practical factors such as treatment efficiency might explain decisions made about treatment, rather than treatment effectiveness or incorporation of patient preferences. Indeed, Rycroft-Malone et al. (2004a) believe that most clinicians become 'closet eclectics' because 'their clients have need this from them' (p.245).

There is no real disagreement as to the ethical and moral positions of centralising individuals preferences in clinical practice, however, as Rycroft-Malone et al. (2004b) argue, it continues to be the case that in reality little is known about the role that patients play. Neither is the notion of patient preferences so clear cut. It may be that some patients require their clinicians to operate an expert model, to know which treatment is best for them and make those decisions in their capacity as a specialist in their area. If so, clinicians may be responding naturally by not engaging patient perspectives. Occasionally, patients do demand specific therapies, particularly new ones or ones not provided in a service. In such cases clinicians are required, says Creaghead (1999), to balance the potential success of new treatment methods against the possibility of unrealised hopes rather than 'colluding' with patient preferences. It can be said that incorporating of patient preferences may provide clinicians and clients themselves with a dilemma. Beecham (2004) argues that although the ideal is the incorporation of patient preferences, it may not be as practically feasible as conceptually ideal.

Moreover, even post the addition of patient preferences into the definition of EBP, explicit information on exactly how to integrate client preferences is still relatively absent in the literature (Entwistle & O'Donnell, 2001). This is surprising Tonelli (2010) argues given the difficulties of assimilating patient perspectives. Isolated examples are evident. Entwistle and O'Donnell (2001) assert that the client's role is most critical in integrating the research evidence with client preferences. Farrell and Gilbert (1996) make a useful contribution in discussing two specific types of patient evidence, collective and individual involvement, collective involvement being about participation of groups or communities. Hideker, Jones, Imig and Villarruel (2009) discuss use of family paradigms to determine family values and preferences during family counselling which could be incorporated into SLTs practice to assist families in making informed decisions.

The gathering and incorporation of individuals' values, experiences, and preferences into evidence-based practice is thus a complex issue. Rycroft-Malone et al. (2004b) comment, that integrating evidence is most problematic particularly if the various sources do not fit together well, for example, the modest benefit of drugs vs. individuals' positive experiences of taking them. Therefore the blending of patient opinion with other sources of evidence into intervention decisions requires care and expertise. This lack of harmony may go towards explaining the relative neglect of this pillar and also be obvious in the neglect of qualitative research as evidence (Rappolt, 2003), which given the client-centred nature of practice is perhaps most pertinent to practice. Barker (2000), in commenting on 'caring' in an evidence-based culture, emphasises that good practice cannot be separated from the unpredictable ways in which individuals and their families respond to concepts of health and illness (Chambers, 2008). Thus, although theoretically supported, patient perspectives appear not to be practically promoted.

1.4.5. Adopting EBP

'Mere awareness of research is not sufficient for a profession that seeks truth and knowledge' (Lum, 2002, p.1).

The primary goal of EBP has been to reduce uncertainty in order to facilitate uniform decisions. Tonelli (2010) argues that it has favoured the results of research, thus undermining the importance of other kinds of knowledge. This may explain the consistent findings across barrier studies of EBP in SLT (e.g. Brener et al, 2003; Dunphy, 2009; Nail-Chiwetalu & Bernstein-Ratner, 2007; O'Connor & Pettigrew, 2009; Zipoli & Kennedy, 2005) and across multiple disciplines (e.g. Pollock, Legg, Langhorne & Sellars, 2000; Risahmawati et al., 2011) which show poor uptake of what is called EBP, but which is essentially research evidence. Such findings suggest a 'pervasive interdisciplinary problem' (Wilcox, Hadley & Bacon, 1998, p.11). Furthermore, Metcalfe et al. (2001) report that SLTs perceive significantly more barriers than their colleagues in physiotherapy and occupational therapy. Most importantly, clinicians appear unanimous. Copley and Allen (2009) in their qualitative study with occupational therapists for example, found that no participants articulated contrary opinion about the barriers to using research-generated evidence. There are also suggestions both within SLT and physiotherapy (McEvoy, Williams, Olds, Lewis & Petkov, 2011; Zipoli & Kennedy, 2005) of a transitory decline in the use of EBP in the first years of practice despite increases in confidence and knowledge. It may be as Than, Bidwill, Davison, Phibbs and Walker (2005) note, that 'incorporating it into clinical practice is easier said than done' (p.330). EBP therefore can be said not to have achieved the extent of acceptance that it set out to achieve among clinicians, this despite a high level of investment in research trials and dissemination through research articles (Walsh & Rundall, 2001). Miles et al. (2007) on the other hand, argue that real measures such as a working knowledge of terminology, use of practice guidelines and frequent consultations of the Cochrane database illustrate a degree of integration into practice. Nevertheless, EBP remains problematic and has as Pope (2003) says, been dogged by conceptual and practical problems.

SLTs most frequently cited barrier to use of research relates to the empirical evidence itself and includes: the volume of evidence (little or none); irrelevant evidence; and conflicting evidence (Mullen, 2005). SLTs essentially lack the evidence upon which to base treatment decisions (Law, Garret & Nye, 2004). Even when research evidence does exist, persuasive evidence can be problematic when evidence is inconclusive, inconsistent (Haynes, 2002) or of poor quality (Straus & McAlister, 2000). Findings are often equivocal (Bernstein-Ratner, 2006) leaving clinicians with no real guidance. This results as Burkhead, Sapienza and Rosenbek (2007) comment, in more questions than answers regarding how SLTS should most effectively approach intervention. Systematic reviews which are the amalgamation of results from therapy studies have been seen as a potential solution to these problems, but they are criticised for the absence of straightforward recommendations (Strauss & McAlister, 2000) often being equivocal themselves. Schlosser and Sigafoos (2009) use the term 'empty reviews' (p.1) and Pring (2004) calls them an 'assessment of all therapies and no therapies' (p.298). This no doubt contributes to clinician confusion. Part of the problem is that many studies do not even meet strict criteria for inclusion in systematic reviews (Pring, 2004) which means the effectiveness of therapies can neither be established nor disproved. This is not unique to SLT. El Dib, Atallah and Andriolo's (2005) evaluation of decision making in health care analysed a random sample of over 1,000 systematic reviews published in the Cochrane Library and found that half of reviews reported that the evidence did not support either benefit or harm. Thus, adhering to only validated treatments might lead to a restrictive list of treatments (Newsom & Hovanitz, 2005), what Bernstein-Ratner (2005) refers to as a "lesser evidence base" (p.164) and Fey (2006) calls a problem of critical mass. This results as Higgs et al. (2001) state, in the impossibility of limiting treatment selection to circumstances where only evidence exists. Moreover, Chapman and Sonneberg (2000) argue that this situation is unlikely to improve as research will never address more than a small fraction of the knowledge needed to support EBP. Neither does the use of clinical guidelines solve these issues Chapman and Sonneberg (2000) state, because they are subject to the same issues as research.

Like practical knowledge, empirical knowledge may also be subject to bias which may further serve to reduce the available evidence. Research may for example be motivated by funding issues. Private corporations funded approximately one third of all original manuscripts published in the largest two general medicine journals in America (Friedman & Richter, 2004) and authors with a conflict of interest were also 10-20 times less likely to present negative findings than those without (Tobler, 2004). It is also well understood that the negative cases are ignored and a proliferation of positive evidence is published when in fact negative outcomes are part of clinical practice. Bouffard and Reid (2012) comment that 'even carefully planned interventions may not produce the desired effect and lead to negative outcomes' (p.15).

Additionally, the reliability of some evidence can be called into question. McLean et al. (2007) state that even scientists occasionally do not 'play by the rules' (p.85). This can include the drawing of overgenerous conclusions (Westen, 2005) or what Greenhalgh (2012) calls 'abstracted generalisations' (p.96). Rubin and Parrish's (2007b) review of 138 outcome studies in social work showed 60% contained phrases that could be misconstrued or exploited as implying an inflated evidence based status. Steen (2011) in a review of retracted papers found an increase in retractions over a ten year period with one third of retracted papers having 'scientific mistakes'. He further found that journals often fail to notify the reader of such retractions. The state of research generated evidence is thus far from reliable.

It may also be naturally limited. Specifically, research may focus on investigations of individual and 'perhaps idiosyncratic therapies' (Pring, 2004, p.296) resulting in individual therapies generating large volumes of findings by single research teams (e.g. Lidcombe programme, LSVT). A consumer / researcher mismatch is clearly suggested for example, by Tallon et al.'s (2000) study on desired interventions for osteoarthritis which found interventions that dominated the published research were not those which most interested consumers. This means that the treatments used by clinicians are not typically the ones researched. Westen (2005) argues that we therefore cannot assume that therapies which are untested are less efficacious than those identified as empirically supported. This lack of clinical guidance provided by research Kahmi (2006) argues plays a role in the use of questionable therapies such as NSOMEs. Moreover, the evaluation of specific therapies may be, claim Joffe and Pring (2008), incompatible with the nature of clinical practice where eclecticism and pragmatism rule. Such eclecticism may result in issues around 'fidelity to the treatment protocol' (Hayhow, 2010, p.157) as demonstrated with the Lidcombe programme (Rosseau et al., 2002). Nelson, Steele and Mize (2006) note that firm protocols regarding attendance may not be realistic given the large number of clients who drop out of or attend therapy sporadically. Strict protocols may mean that individualisation is limited, elements such as spontaneity and creativity are discarded (Aldridge, 2003) and clinicians' judgements restricted (Mykhalovskiy & Weir, 2004). Kahmi (1999) argues that 'clinicians are not naive research consumers' (p.94), and they know that efficiency is not always the most important factor in treatment. Thus as Wilcox et al. (1998) states 'many validated approaches fail to meet real practice needs' (p.12).

Therefore it can be argued that the nature of the research base can be said to significantly contribute to poor uptake. It may also represent a rejection of scientific knowledge (Newbold et al., 2008) which may contribute to rationalisations of clinical practice as nonscientific. Poor uptake has also been associated with a perceived threat to clinician's autonomy (Armstrong, 2002) and clinician's resistance to change to new ideas (Walshe & Rundall., 2001). What is not often explicitly considered is whether the model itself is translationally challenged (Porta, 2004) and there may be, Pope (2003) argues, 'fundamental differences between the sciences encapsulated in

EBP' (p.273) and the nature of everyday practice. Professional practice is after all what Higgs et al. (2004) refer to as an inexact science. This naturally makes it incumbent on clinician to use practical knowledge. Additionally, Elman (2006) points out that certain populations of patients including those with severe problems or co-morbidities may be underrepresented in trials that have homogenous subject selection criteria. Reviews of journal content in physiotherapy (Robertson, 1995) and SLT for example (Justice, Nye, Schwartz, McGinty & Rivera, 2008; Koenig & Gunter, 2005) found only a small proportion of treatment articles relevant to therapies and to areas like developmental disability. There is no guarantee as Upshur (2002) comments that evidence is available at the time a clinical decision must be made.

Furthermore, intervention may not be so easily definable and thus researchable. Fey (1990) pointed to the many variables in treatment packages in the profession, saying it was not surprising that research is less well represented in the discipline. Roberts (2010) in attempting to group therapies in autism found almost impossible as programmes were composed of a number of techniques. Speyer et al. (2010) clearly demonstrates this in their dysphagia review. Hayhow (2010) concurs that 'complex' interventions are more difficult to evaluate because of the potential for problems in developing, identifying, documenting and reproducing the intervention. Hayhow (2010) questions whether we should be evaluating principles rather than therapies to reflect more accurately the nature of practice. This would appear supported by Branson and Demchak's (2009) systematic review of AAC therapies. They found that many different types of therapies resulted in communication improvements, and queried whether intervention can be effective when parents respond consistently and contingently to communication attempts, rather than perhaps a result the specific therapy utilised.

Clinicians' skills have often been said to contribute to uptake issues. Reilly (2004b) argues that existing clinicians do not have the back ground to use EBP, it being dependent on individual practitioner's skills such as statistical knowledge (Cohen, Stavri & Hersh, 2003), knowledge of research methods (Haynes, 2002) literature searching and critical appraisal (Straus, 2007). This tends to be confirmed in surveys (e.g. McCluskey, 2003; Metcalfe et al., 2001; Pennington, 2001). Pennington's SLTS reported that research reports were difficult to read and interpret. Terminology may also be problematic. Yousefi-Nooraie, Shakiba, Mortaz-Hedjri and Souroush's (2007) doctors and academics for example did not know the meaning of a number of regularly used terms (e.g. meta-analysis). Additionally, Upton and Upton's (2006) study appears to indicate worryingly low levels of understanding about EBP itself. While psychologists and physiotherapists from the sample rated their knowledge as high, individuals from other professions including SLT rated themselves as having a low level of knowledge. Only thirteen per cent of doctors have a good understanding of basic EBP skills (Risahmawati et al., 2011). Skill issues may be partly due to resource constraints. Clinicians particularly identify time (e.g. Pennington, 2001; Pollock et al., 2000) as a factor, although high staff turnover and staff shortages (Curtin & Jaramazovic, 2001) and organisational structure (Upton & Upton, 2006) are also noted. Despite the recurring theme of time, some authors (Gillam & Gillam, 2006) argue that EBP is not time heavy. Fey (2006) disagrees, likening it to ferreting out information. Bernstein-Ratner's (2006) own search produced 20,000 discipline-specific articles of relevance. This suggests that EBP may not accommodate what Holland (1998) refers to as the realities of the workplace, despite the good intentions of clinicians.

Bowen (2009) comments that while clinicians are mostly responsible for adopting EBP they have only had a small part in constructing it. This may have resulted in a model which while scientific, does not fit well with clinical practice, leaving aspirationally-scientific practitioners confused. It is also a model which has emphasized the most scientific pillar – research evidence (Schlosser & Sigafoos, 2009) - and neglected the other pillars. Rosseau (2009) goes so far as to state that it has 'supplanted the wisdom garnered…through the passage of time, relegating the individual clinical experience to the trash heap of progress' (p.6). The simplistic view of implementation (Dopson et al., 2003) may not have not helped its uptake.

1.5 DECISION MAKING

1.5.1. Understanding decision making

'The vehicle for the development of the knowledge base of the profession is clinical reasoning and not EBP' (Higgs, Jones, Edwards & Beeston, 2004, p.196).

Clinical reasoning refers to the thinking and decision-making processes that are used in clinical practice (Edwards et al., 2004). Independent and responsible decision making is regarded as one of the characteristics of an autonomous profession. Despite this, the literature on clinical reasoning in SLT suffers by comparison with its allied disciplines (McAllister & Rose, 2000). This results in limited knowledge regarding the decision making of SLTs when selecting interventions. Hoben, Varly and Cox (2007) however, acknowledge the global characteristics of health professions which means knowledge learned from other professions can be applied to SLT. Furthermore, there exists no simple prescription for choosing an intervention approach as many factors may play a part and vary from one clinician and one patient to the next. It is currently unclear what scaffolds support intervention decisions and the scientific nature of those scaffolds. For the purposes of this study, the focus can be broadly split into two sections; scientific and nonscientific thinking.

1.5.2. Scientific or valid thinking

'Too often science is presented as a disembodied collection of facts' (Sherman, 2009, p.35).

Sagan (1996) argues that science is not merely a body of knowledge but a way of thinking, arguing that the scientific method 'is far more important than the findings of science' (p.22). While scientific behaviours and actions are most typically associated with the use of research evidence, rational clinical decisions 'must be supported by considerations that extend beyond population evidence' (Ylivisaker et al., 2002, p.xxix). This is especially so given that the standardised circumstances of research-generated evidence are almost never achieved in clinical practice. Cronje & Fullan (2003) argue that individual and contextual factors are central to rational judgment. This includes the distinctiveness of each patient according to Hunter (1996), which prohibits any purely rule-based methods for selecting treatments. Thus, clinical reasoning may involve both deductive and inductive reasoning, being primarily deductive when based on empirically-based knowledge, and inductive when based on clinical experience (Doody, 2011).

Scientific thinking may be considered an umbrella term for the many labels used to describe and examine elements of this process including critical thinking, clinical judgement, clinical reasoning and logic (Appendix 1). Lum (2002) refers to valid thinking. Shermer (2001) defines it as ‘a set of cognitive and behavioural methods to describe and interpret observed phenomena…aimed at building a testable body of knowledge open to rejection or confirmation’ (p.98). The implication is that the scientific process is evident in an organised, structured approach rather than randomness and unsubstantiated guesswork (Kida, 2006). In this way, the concept of scientific thinking is similar to the production of research (Berkwits, 1998). Higgs et al. (2004) state that there are different ways of working rigorously. Thus scientific thinking can include behaviours such as testing and cognitive methods such as generating hypotheses (Shermer, 2001), questioning (Profetto-McGrath, 2005), argumentation (Jenicek, 2006), problem solving (Klahr, 2000) and a variety of other analytic behaviours such as interpretation, inference, explanation, monitoring and correcting one’s own reasoning (Facione, Facione & Giancarlo, 2000). As Gambrill (2005) states, a scientific approach to practice requires the use of a broad range of methods.

Packman and Attanasio (2004) provide a model upon which to understand scientific endeavour. They refer to the three domains of inquiry: theory, logic and empiricism. Each domain is concerned with specific issues: the theoretical domain with propositions; the logic domain with arguments contained in such propositions, and; the empirical domain with scientific observation and experimentation – evidence which might support or weaken a proposition. The last domain is external but the first two are internal to the clinician. Therefore any review of scientific thinking must acknowledge a character component, an intellectual commitment to acting scientifically (Brookfield, 1987; Ennis, 2000; Baker, 1996), that is, whether a clinician chooses to think in this way (Facione et al., 2000). Many clinicians demonstrate scientific practice when they document as standard the rationales for their goals and use measures to monitor outcomes. However, engagement through other behaviours can be said to represent a true commitment to the scientific method: a conscious effort to use treatments which are efficacious and to validate through their own practice ones that are not empirically supported. Characteristics which support scientific practice are said to include truth-seeking (Facione & Facione, 2007) rather than accepting, unchallenged other opinion (Jones & Brown, 1991), scepticism, openness (Kida, 2006) and motivation (King & Kitchner, 1994; O'Neill & Dluhy, 1997). Furthermore, such scientific practice requires awareness from clinicians of their own biases.

Typically, cognitive science models of clinical reasoning dominate our understanding of how clinicians operate. The hypothetico-deductive model of reasoning remains perhaps the most persistent model and describes the process whereby clinicians use cues from or about the patient, generate provisional hypotheses and confirm, negate or adapt these on an on-going basis as further patient information is obtained and interpreted. It is what Edwards et al. (2004) describe as a continual process of hypothesis creation and evaluation. It is a model which fits the scientific paradigm in that it aims using measurement to 'validate data acquired from the patient …in a reliable fashion' (Edwards et al., 2004, p.314). Schön (1983), the originator of the concept of reflective thinking, defined practice as a professional activity consisting of 'instrumental problem solving made rigorous by the application of scientific theory and technique' (p.21). In this way, clinical practice can be characterised as scientific. Evidence of unscientific thinking would suggest differently.

1.5.3. Unscientific or invalid thinking

'Wisdom comes from evidence and not from belief' (Coyle, 2011, p.113).

Unscientific practice may be best observed in the use of pseudoscientific and non-scientific therapies. However, a number of forms of non-rigorous thinking such as hunches, guesses, and ideas (Shermer, 2001), intuition and common sense (Aldridge, 2003) may also be seen to represent less than scientific practice. Kida (2006) identifies characteristics of pseudoscientific thinking including deliberation (or single mindedness), use of evidence in a biased manner and valuing beliefs rather than scepticism and openness. McLean et al. (2007) add credulity and cynicism. Therefore the quality of thinking (Di Vito-Thomas, 2000) is crucial to clinical practice. Defensible judgements state King and Kitchner (1994) are based on evidence and reasoning and not beliefs. Reasoning is required argues Kida (2006), to counteract our natural tendencies to err and avoid confirmation bias. It may be that clinician's use of therapies because they believe it works (Kahmi, 1999), fit this idea of non-scientific thinking.

Invalid thinking is problematic for a number of reasons according to Kida (2006), including a decrease in the ability to make well-informed decisions and the diversion of resources that could be spent on more productive activities. However, not all such forms of thinking may be invalid. Greenhalgh (2002) argues for example, that labels such as intuition may be misconstrued. She describes intuition as a valid decision making method characterised as a rapid, unconscious context-sensitive process, involving selective attention to small details and making sense of multiple, complex pieces of data. Rather than being unscientific she argues, it is creative and fundamental to hypothesis generation in science. The influence of anecdote on practice decisions is also seen as questionable but Gibbons (2009) argues that anecdote is the natural way for humans to reason. As Kida (2006) points out, humans prefer stories to statistics. Moreover, Gibbons (2009) argues that anecdote is an effective means of dealing with the constant deluge of information clinicians needs to process. Thus it is seen as natural, efficient and responsive to complex and dynamic systems. In the EBP model, such forms of knowledge and reasoning are considered lowly forms of evidence, being especially subject to bias and subjectivity.

Habitual or routine practice may also be constructed as evidence of lack of scientific engagement, thinking being 'vital to intelligent practice that is reflective rather than routine or reflexive' (Saylor, 1990, p.11). Facione and Facione (2008) argue that repeating previous care-delivery behaviours unreflectively is not a standard of practice clinicians should aspire to. Reasoning models which focus not so much on the process but more on the organization and accessibility of clinician stored knowledge might help explain elements of routine practice. These include illness scripts and pattern recognition (Higgs & Titchens, 2000) and suggest that knowledge stored in memory enables the clinician to recognise certain features of a case almost instantly, leading to the use of stored information in managing the case. Greenhalgh (2002) points out that this might also be interpreted as intuition. Moreover, contrary to the myth that experts think more logically than novices (Greenhalgh, 2002), operating routinely may be most associated with accumulated experience resulting in in less logical decision making (Boreham, 1988; Greenhalgh, 2002). Thus clinicians make countless judgments for which they cannot state the rules (O'Neill & Dluhy, 1997) and practice based on such tacit understandings might be deemed illogical, and result in what appears to be the routine application of treatments.

It may be that the reasoning which is inherent to practice is not the same as that which is valued in EBP. King et al.'s (2008) study of rehabilitation therapists showed the critical thinking scores of all groups including expert clinicians, were lower than what are considered to be strong scores. Jensen and Givens (1999) showed that rather than being highly scientific, nurse's clinical judgments more closely resembled practical reasoning (knowing how) than a more rational, theoretical approach. This stands in contrast to ideas that clinical judgement can only be successful if it is logical, quantitative, detached and statistical (Dowie & Elstein, 1988). Furthermore, Jensen and Givens (1999) comment found that many clinicians tend to be overconfident in their judgements and thus fall prey to basic errors in reasoning. Joffe and Pring's (2008) study demonstrated that four out of five SLTs were confident in their decisions. Unscientific thinking combined with individual's misplaced confidence in their own powers of judgement (Sutherland, 1992) may combine to make for poor decision making, or what Swinkels et al. (2002) call erroneous conclusions.

Clinicians can be fooled by therapies that are ineffective, even harmful (McLean et al., 2007) for a variety of reasons including beliefs (Beyerstein, 1997). Furthermore, a strong scientific knowledge base may not be enough to insulate a person against irrational beliefs (Shermer, 1997), but beliefs can be maintained by lack of scientific thinking such as ignoring or failing to seek contradictory evidence (Sutherland, 1992). Sutherland (1992) thus argues that decision making in therapy should be free of such influences especially because people believe in therapies because they feel good, are comfortable and consoling (Shermer, 1997) rather than being effective. Invalid thinking argues Sagan (1996), results in decisions based on faith, not logic and reason. This leads us to the question of whether the scaffolds used by clinicians in making treatment decisions reflect on scientific or non-scientific underpinnings.

1.5.4. Decision making scaffolds

'Selecting effective patient treatments in dysphagia is a thinking clinician's job' (Logemann, 2011, p.122).

The early decisions clinicians make regarding the provision of intervention are among the first and possibly the most important in a sequence of decisions made as part of a client's management (Roulstone, Peters, Glogowska & Enderby, 2008*).* However, there exists no model that ensures that an SLT will make the best clinical decisions (Kahmi, 2006b). Even with growth in the number of empirically supported treatments Jones et al. (2006) note that clinicians still operate under conditions of uncertainty. Thus health professionals frequently make decisions where there are no right and wrong solutions or actions, in the grey zones of practice (Schön, 1983). Despite this, Kahmi (1999) comments that clinicians have been educated to make informed decisions, although decision-making emerges as one of the least visible aspects of practice. Some potential scaffolds are discussed below.

1.5.4.1 Practice-based scaffolds

EBP barrier studies and reasoning research tells us that clinicians primarily use knowledge originating from clinical practice as evidence to guide clinical decision making (Law et al., 2004), whether it is the clinicians' own experience (e.g. Bennett et al, 2003) or the clinical experience of colleagues (e.g. Nail-Chiwetalu & Bernstein-Ratner, 2007). This applies not just to SLTs but to other health professionals (Areskoug-Josefsson, Kammerling, Sund-Levander, 2011; Dopson et al., 2003; Gabbay & LeMay, 2004). SLTs are more likely to be guided by clinical experience and the opinions of colleagues (and even old texts) than scientific sources (Bennett et al., 2003; O'Connor & Pettigrew, 2009). Interestingly, Mackenzie et al. (2010) found that while more experienced clinicians were more likely to be influenced by their own experience, the use of such reasoning by SLTs was used to validate both use and non-use of therapies. This reliance on personal experience may result in clinicians employing what is familiar and what they or their peers have seen to work (Kahmi, 1994).

So although a clinician's own experience is the most relied upon scaffold, the experience of colleagues is also a decision facilitator (Gabbay & LeMay, 2004; O'Connor & Pettigrew, 2009; Papadopoulos et al., 2012; Rose & Mackenzie, 2010). Such reliance may be partly explained by the concept of memes, originally developed by Dawkins (1976) as the selfish gene, later defined as a 'unit of cultural transmission' passed on particularly by imitation (Kahmi, 2004, p.105). Profession-specific examples include the use of terms such as language disorder vs. specific language impairment and the use of culturally-based therapies such as bolus modification in dysphagia. Confirmation of the strength of memes may be suggested from MacKenzie et al.'s (2010) study of practice in acquired dysarthria which indicated that the use of NSOMEs was not associated with years of experience. In Germany 85 drugs are prescribed for low blood pressure and there are high annual consultation rates regarding this condition. This contrasts to the UK where hardly anyone gets treated for low blood pressure and doctors in the US think it amounts to malpractice (Saunders, 2000).

Such memes Kahmi (2004) argues help shape the profession and may also explain the poor uptake of EBP. Stronge & Cahill (2012) found that non-EBP practising fieldwork educators in occupational therapy were important barriers to EBP use for students.

Memes also facilitate an understanding of why unproven practices are developed and maintained (Stephenson, 2009) as selection favours memes that are easy to understand, remember and communicate to others (Kahmi, 2004). It may be that collective opinions can blur the line between valid and invalid therapy approaches (Lum 2002) and group influences can lead to poor decision making. On the other hand, Cronje and Fullan (2003) point to the 'rationalising forces that comes from humans sharing their judgments collectively' (p.362). Therefore consensus may dictate what interventions are used (Lum, 2002; Roulstone, 2001; Tarvis, 2003). Additionally, according to Eraut (1994), the professional mind-set tends to be justificatory rather than self-critical, which can then be validated in a group environment and explain variations in regional practice. This may be especially in conditions of uncertainty where the most comfortable and safest position for a clinician is to do what others are doing (Eddy, 1988). The effect could be the adoption and maintenance of ineffective or pseudoscientific practice with popularity validating therapies (Laperchia, 1987) rather than science. Furthermore, such a cultural effect may lead to the inhibition of the questioning of practice identified by O'Connor and Pettigrew (2009).

1.5.4.2 Educational scaffolds

There is also evidence that in selecting therapies health professionals rely on knowledge acquired in university (Mackenzie et al., 2010; Turner & Whitfield, 1999) and from continuous education (e.g. Bennett et al., 2003; Turner & Whitfield, 1999). Training may serve to influence the use of less scientific practices such as Watson and Lof (2004) found for NSOMEs. Knupp et al (2009) found the same for one third of occupational therapists who were using CAMs. Moreover, four out of five clinicians identified lack of training as a reason for *not* using such therapies. Thus training is influential in decisions to both use and not use treatments. Furthermore, such training may not contribute scientific knowledge. Law and McColl (1989) showed continuing education to be by far the lowest contributor to theoretical knowledge than other sources suggesting training may lead to a 'fuzzy' understanding of therapies used (Basmajian, 1975). Stanley, Al-Shehri and Thomas (1993) also argue that such learning reinforces dependent learning, suggesting automated rather than autonomous practice. This can be seen as especially relevant in the context of a trend towards mandatory certification for selected therapies (e.g. LSVT, Listening Therapy, Hanen, and dysphagia). The situation may not be helped by a lack of active policing by professional organisations. The professional organisation role is considered essential in the context of a general media which is less than supportive of scientific practice. Singh and Ernst (2008) report on Ernst's analysis of four British broadsheets across eight days, finding that articles relating to alternative medicine were unanimously positive and articles relating to conventional medicine 60% critical.

1.5.4.3 Contextual scaffolds

Clinicians' treatment decisions may also be influenced by the consideration of contextual and patient factors (Miles, 2007). The clinical decisions health professionals are strongly influenced by the context in which they are made (Areskoug-Josefsson et al., 2011; Bucknall, 2000; Parahoo, 2000). Rose and Mackenzie's (2010) occupational therapists partly based their decision making on the availability of resources. It may be also be that specific client considerations scaffold treatment decisions although this may be more about patient characteristics than patient preferences (e.g. Joffe & Pring, 2008). There is however, some evidence to suggest that expertise may influence the use of patient perspectives. In a study of physiotherapists working with children with diplegia, Embrey, Guthrie, White and Dietz (1996) found experienced clinicians more patient-oriented than novices who were more activity-oriented. There are also suggestions from occupational therapy of a patient-centred focus in that field (Rose & Mackenzie, 2010; Knupp et al., 2009), although such rationalisation is broadly applied – to the use of both conventional and alternative treatments. There is little data in SLT to suggest that decisions are wholly or partly scaffolded on patient opinion as of yet. However it may be that patient considerations are represented by a functional approach to intervention (Kahmi, 1999; Fey & Johnson, 1998). Furthermore, King et al. (1998) in a study examining the effects of rehabilitation services for children with disabilities, provide evidence that focusing on functional goals is worthwhile in leading to improvements in children's function and indicating rationality in a functional approach. The 'because it worked' (Kahmi, 1999, p.93) attitude to explain treatment choices may, rather than reflecting a casual stance be explained by such pragmatic considerations.

1.5.4.4 Internal scaffolds

Additionally, internal clinician factors such as hope and belief may also have a role to play in the choice of therapies used, including the 'because it works' belief. Watson and Lof's (2004) study of SLTs use of NSOMEs shows the part belief plays in adoption and use of therapies. Over two thirds use oral-motor exercises because they believe they are a foundation for more complex motor movements necessary for speech production. Gee (1992) found that any method worked if the teachers believed in it and the parents supported it at home. The conclusion was that nonspecific factors such as enthusiasm, belief, advocacy and parent support were more important than the teaching methods. As Westen (2005) states, 'the problem is heightened by the fact that most treatments for most disorders tend to work when tested by investigators and conducted by therapists who believe in them' (p.168). Placebos are a case in point (Evans, 2003; Moerman, 2002).

1.5.4.5 Theory scaffold

So what of the more scientific scaffolds such as theory? Theory is one of the core pillars upon which practice can be scrutinised and by which clinicians can demonstrate their commitment to rational, scientific practice (Higgs et al., 2004). Friel-Patti (1994) calls theory fundamental for building effective and efficient intervention programmes. Understanding a treatment's theory facilitates a clinician to adapt a treatment to meet an individual's needs (Dodd, 2007) and Vandenbroucke (2002) warns that atheoretical therapies means clinicians should be on their guard. Many new methods have theories which are not well described, absent or inconsistent with existing theories (Creaghead, 1999) and many therapies for the same disorder (e.g. speech) are often theoretically incompatible resulting in confusion in the profession about which approach might best to use (Kahmi, 2006).

Few studies examine clinicians' understanding or use of theory in SLT. Theory investigations mainly emanate from the field of occupational theory where findings typically suggest low valuing and use of theory (Elliott, Velde & Wittman, 2002; O'Neal, Dickerson & Holbert, 2007; Wikeby, Lundgren-Pierre & Archenholtz, 2006). Joffe and Pring's (2008) SLTs appeared to demonstrate a lack of dependence on theory or theorising. However, practice may not be as atheoretical as implied. Use of NSOMEs is typically reported to be based on motor models (Watson & Lof 2004, 2008). Most clinicians have clear reasons for using bolus modification strategies - the prevention of liquid penetration or aspiration. A phenomenological study (Law et al., 2007) of SLT's underlying rationales for intervention with children with receptive language disorders identified clear underlying theoretical models such as skills acquisition, although only a third of SLTs in the study identified explicit theories. However, there may indeed be a disconnect between theory and practice. Sanchdev and McCurtin (unpublished) indicate discord between clinician's theoretical orientations and their treatment choices in fluency disorders which supports O'Neal et al.'s (2007) findings in occupational theory with clinicians favouring remedial theories (e.g. sensory integration and motor control) but using compensational (adaptive, staff training) interventions. The authors concluded that theory was not considered a useful decision making tool by clinicians. Perhaps clinicians find it impractical (Eraut, 1994) to distinguish theory and practice as separate entities (Murray et al., 2007). It may also be that clinicians value simple explanations with popular therapies having plausible theoretical explanations (Kahmi, 2004). Familiarity and comfort with a theory led Law and McColl's (1989) clinicians to integrate it into practice and complexity may lead to decline (Bernstein-Ratner, 2005) which might explain the decrease in use of operant or speech behaviour treatments for stuttering (Kahmi 1999). There are indications that scientific scaffolds such as critical thinking are positively correlated with years of experience (Kuiper & Pesult, 2007), the suggestion being the clinicians with more experience are more scientifically oriented in their decisions. O'Neal et al.'s (2007) findings for example, suggest that theory valuing has a developmental component such as longevity of practice and higher level academic qualifications. Part of this may be as Hoben et al.'s

(2007) study on clinical reasoning suggests that SLT novices demonstrate difficulty in conceptualising problems at a deep, abstract level.

Thus, decision making may not be simply constructed but composed of a number of forms of knowledge and evidence (Higgs et al., 2001), what Prutting et al. (1988) refer to as ‘many different hammers chipping away at the ontological stone’ (p.300). The notion of a ‘best solution’ argues Kemm (2006, p.319), ignores the complexity of the decision-making process which necessitates the clinician act in a pivotal thinking manner. It is timely, as Upshur (2007) puts it, to ask if SLT is fundamentally a thinking-based discipline.

1.6 THIS STUDY

> *‘We should ask ourselves if we are behaving scientifically’ (Newsom & Hovanitz 2005, p.40).*

Regarding interventions, Basmajian (1975) commented that ‘the science behind them is not as strong as the faith’ (p.608). This thesis aims to examine what underpins SLT intervention decisions and whether in fact, science plays a part in practice.
Fish and Coles (1998a) use the metaphor of the iceberg of professional practice, arguing that roughly one tenth of practice is visible, and as Roulstone (1997) advises we need to make explicit the thought processes of clinicians if we are to understand the reasons underlying clinical decisions and actions. Furthermore, as Richardson et al (2004) state, an evaluative approach to clinical practice can help ‘to actualise and build links between clinical practice and research which can provide a means for developing an evidence base of practice that is relevant to the skill and aspirations of individual professions’ (p.12).

The goal of this study is to explore the scaffolds clinicians use when making intervention decisions and place it in the context of EBP, non-scientific practice and the scientific origins of the profession, all of which mandate a critically-engaged clinician. The study aims are outlined at the beginning of the next chapter.

Chapter 2: Methodology & Methods

2.1 METHODOLOGY

2.1.1. Study aims

'If….decision making is to be improved, it must first be understood' (Chapman & Sonneberg, 2000, p.17).

The aim of this research was to examine decision making scaffolds in SLT clinical practice. To explore the topic two things needed to happen: an investigation of WHAT therapies and techniques were utilised by clinicians, and; the exploration of WHY clinicians choose the therapies they do, that is, what influences their decisions in this regard. Therefore the research questions are as follows:

What are the bases of SLT intervention choices?
Do intervention choices and reasoning reflect on practice in the profession as scientific?
What do decision making scaffolds say about the nature of clinical practice?

2.1.2. Mixed-method design

'There is no one indisputable method for determining the truth' (Mead, 2000, p.112).

Oppenheim (1996) advises that it is one of the key responsibilities of researchers to choose data generation and collection techniques which are likely to do justice to the research question. Mixed-method research is the combined use of quantitative and qualitative methods which facilitates the researcher in addressing both exploratory and confirmatory questions (Tashakkori & Teddlie, 2008). Therefore it is argued that use of a mixed-methods design will enable a more balanced perspective (Morse & Chung, 2003), a more complete understanding of the phenomenon (Tashakkori & Teddlie, 2008; Glogowska, 2011) by providing different perspectives (Rossman 1985), effectively neutralising the weaknesses (Tsui, 2001; Greene, Caracelli & Graham, 1989) that may be associated with the use of a single research method.

Essentially, quantitative research focuses on data breadth or insight, whereas qualitative methodologies focus on depth or illumination (Prothroe, Bower & Chew-Graham, 2007). Indeed, it may even be as Rossman (1985) suggests that a false dichotomy exists between these two types of methods.

Specifically, a mixed methods approach can:

- Facilitate complementarity and corroboration by measuring overlapping but different facets of a phenomenon (Greene et al., 1989; Tashakkori &Teddlie, 2008);
- Prompt new interpretations and suggest new areas for exploration; (Fielding, 2008);
- Highlight paradox, weak evidence and gaps in the argument rather than confirmation only (Fielding, 2008), and;
- Improve the accuracy of conclusions (Rossman, 1985) and strengthen the results yielded thus reducing the threat to validity and the chance of reaching false conclusions or wrong interpretations (Bryman, 2008; Hammersley, 2008). Rossman (1985) comments that ultimately combining methods in a single study is triangulation.

Mixed-method research is therefore a valid way to examine the questions posed by this study as the research questions are more likely to be comprehensively answered by a combination of data from these methods.

2.1.3. Deduction and induction

'Not wedded to any pre-existing theoretical framework' (Braun & Clarke, 2006, p.81).

This research can be considered both deductive and inductive. It is deductive in that it is driven by the research question focusing on science and the researcher's theoretical interest. Deductive research essentially tests theory against the data. However, the study is also inductive in that it will be correspondingly data driven, with theory emerging from the data.

The inductive elements of the research perhaps come closest to grounded theory than other methods of inquiry. Grounded theory is a general methodology which seeks to discover or generate theory from data (Hammer, 2011) and is 'considered an appropriate choice when a phenomenon has not been adequately explained' (Skeat and Perry, 2008, p.97). However, this study is not characterised by the iterative process of moving back and forth between empirical data and emerging analysis to the extent typified in the ground theory method (Bryant & Charmaz, 2007). Instead, it moves sequentially from literature to quantitative data to qualitative data to theory presentation.

According to Strauss and Corbin (1998), a theory inductively derived from the phenomenon it represents meets a number of central criteria: fit (theory fits data); understanding (theory is comprehensible to all involved in the study) and; generality (theory is applicable in variety of contexts). In tying both deductive and inductively obtained data, it is further intended that theory emerging will meet a ' representativeness' criteria, that is, it needs to be an accurate representation of the entire data set (Braun & Clarke, 2006).

Statistical estimation and testing will be employed for quantitative data and thematic analysis for the qualitative data in order to both test and develop theory. Thematic analysis will be both theory and data driven (Braun & Clarke, 2006). Thus, using deductive and inductive elements should facilitate progression from diversity to shapes in the data (Richards & Morse 2007).

2.1.4. Theoretical sampling

'The researcher's deliberate attempt to seek out sources of information that might generate theoretical leads, instead of trying to limit the influence of any specific variables' (Fourie, 2009, p.985).

Utilising both deductive and inductive methods may be a balancing act which will be facilitated by employing theoretical sampling. This refers to the purposeful use of knowledge to produce theoretical leads. This openness to influences beyond the narrow confines of the researcher's interest may be considered inductive. Theoretical leads were generated by reviewing the literature for the quantitative phase to sensitise the researcher to potential leads (Strauss & Corbin 1998), and utilising quantitative phase data for exploration in the qualitative phase.

2.1.5. Systematic analysis

'If qualitative research is to yield meaningful and useful results, it is imperative that the material under scrutiny is analysed in a methodological manner' (Attride-Stirling, 2001, p.386)

Statistics are typically thought of as objective and systematic. Qualitative methodologies can be Oppenheim (1996) comments, seen as less reliable, valid, objective and comparable. Thematic analysis will be utilised for the qualitative data in this study. Essentially, thematic analysis is pattern coding: 'a method for identifying, analysing and reporting patterns within data' (Braun & Clarke, 2006, p.79). This technique needs to reflect the same systematicity and objectivity typically associated with quantitative techniques in order to stand alongside quantitative methods as an equal albeit different partner.

While acknowledging that coding is an interpretive act and 'not a precise science' (Saldana, 2009, p.4), coding is fundamentally about arranging things in a systematic order (Saldana, 2009). In this way systematicity can be seen to be represented in both methodologies used in this research, being made further explicit by use of the principles of thematic networks. Thematic networks essentially 'systematises the extraction of lowest to highest order premises evident in the text' (Attride-Stirling, 2001, p.387).

2.1.6. A pragmatic approach

'Many researchers have begun to take a pragmatic approach in the selection of research methodology, choosing the methodology best suited to answering the research question rather than conforming to a methodological orthodoxy' (Glogowska, 2011, p.251).

Therefore this research might be best typified as pragmatically oriented, utilising various components and representing an eclectic approach to examining the research question. It is a mixed-methods exploratory/explanatory model, comprising both deductive and inductive elements. Thus, this research strives both to examine and develop theory across and between method phases. This notion of pliable use of paradigms fits with Braun & Clarke's (2006) argument regarding grounded theory; that there are different manifestations of the method.

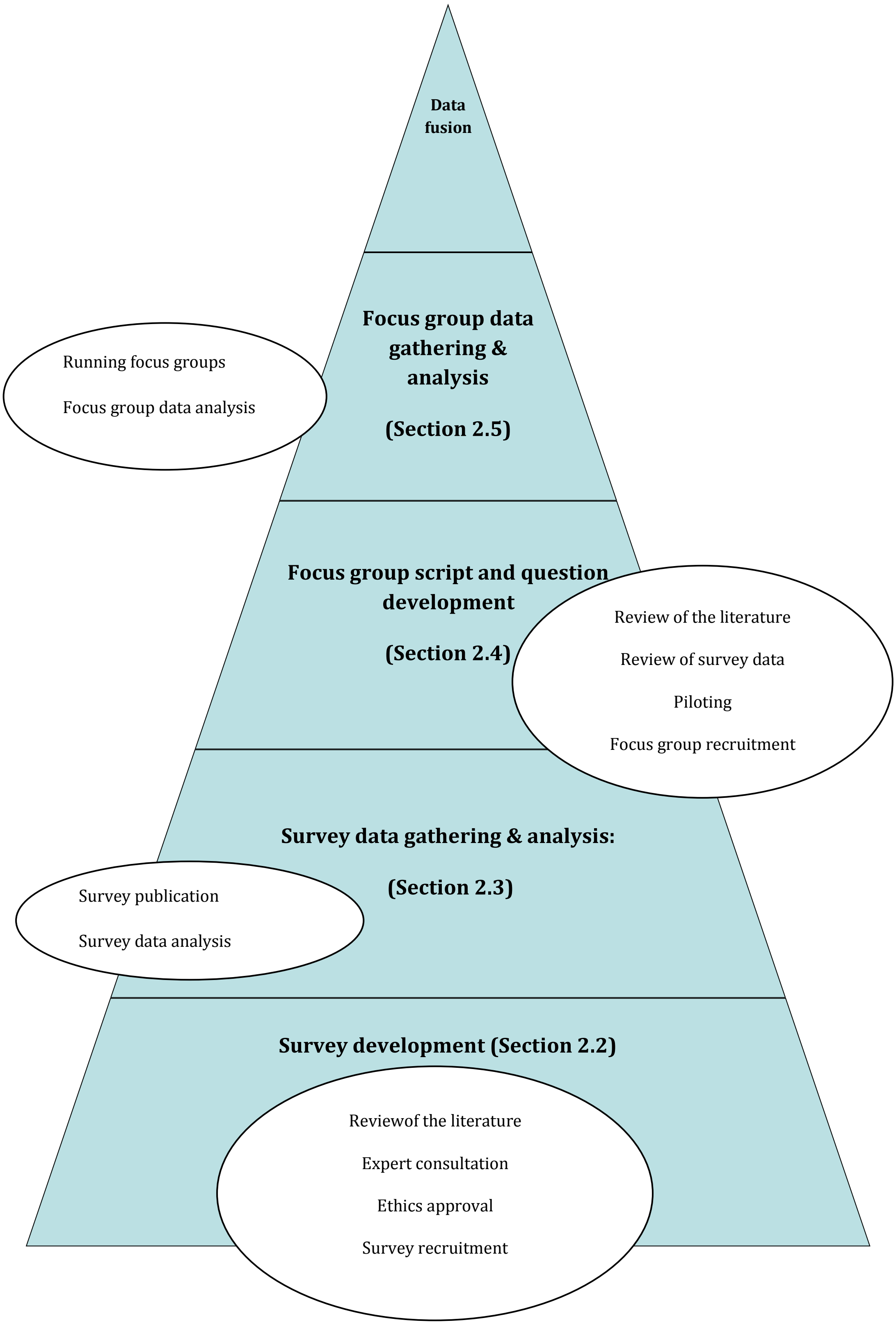
2.1.7. Sequential phases

'It can be challenging to integrate two sets of different forms of data and their results in a meaningful way' (Cresswell et al., 2008, p.72).

2.1.7.1 Overview

This study is characterised by two complimentary, sequential phases. Operationally, the quantitative phase preceded the qualitative phase thus moving from generic to specific data collection (Rossman, 1985). Use of a phased approach enables targeted data gathering, with phase one providing constructs for examination in phase two. Thus elaboration is used in order to explain the understanding obtained in the previous strand, (Tashakkori & Teddlie, 2008; Bryman, 2008), improving the validity of findings and leading to theory confirmation, negation or generation. Therefore, the design is as outlined in Figure 2.1.

Figure 2.1 Study phases



2.1.7.2 Quantitative phase: Survey design

'The analytic, relational survey is set up specifically to explore the associations between particular variables' (Oppenheim, 1992, p.21).

Phase one was survey based, utilising an electronic questionnaire to generate data. This phase focused on exploring the study questions and developing initial theories of practice. The survey design was informed by three main sources – a review of the literature, the study question and expert consultation.

A questionnaire was chosen because it is an objective way of gathering information which can cover widely dispersed populations (McColl et al, 2001) and minimise the risk of socially desirable responses. It has been suggested that participants respond more truthfully to sensitive questions by using this approach, and make more critical responses than in face-to-face interviews. There is however a lack of evidence to support this (McColl et al., 2001; Glogowska, 2011). Despite this, the potential to remove the social impact of groups is part of the reason the survey phase preceded the group phase – in order to provide meaningful data for deep exploration in the qualitative phase.

2.1.7.3 Qualitative phase: Group interviews

'Qualitative methods are a positive step towards deeper understanding of social phenomena and their dynamics' (Attride-Stirling, 2001, p.385).

Focus groups were chosen as the vehicle for the qualitative phase for a number of reasons: to obtain a range of opinions; to provide insight into the social not individual, and; to explore concurrence and divergence between settings but within the same profession. Focus groups are considered to be naturalistic which can reflect more reliably the true opinions of the group (Krueger & Casey, 2000) and therefore articulation of the collective view. This enables the researcher to learn or confirm not just the facts, but the meaning behind the facts.

Neergaard et al. (2009) advise that the limitations of such a methodology should be kept in mind. These include social norms and peer influences which may impact the expression of honest opinion. Furthermore, as Braun and Clarke (2006) note, in analysing group data some depth and complexity is necessarily lost. Nonetheless, such techniques provide a rich overall description, especially important in under researched areas of SLT (Braun & Clarke, 2006), and function to balance the reliance on statistical techniques. After all, as Oppenheim (1992) comments, 'human lives and human causality are not composed of layers of regression coefficients' (p.18).

2.2 SURVEY DEVELOPMENT PHASE

2.2.1 Overview of the survey

The survey aimed to identify the therapies and techniques used by SLTs in Ireland, and explore the bases of decision making regarding therapy selections. Two core elements influenced design and content:

a. Meaningfulness: It was important to ensure the survey was of interest to clinicians. This the survey focused on practical issues felt to be relevant to clinicians, and interest and ownership of the survey was developed in a number of ways. These included engagement of professional communities, advance notifications, use of a clear and simple survey title and a stated commitment to dissemination of results;
b. Ease of use: This was achieved through multiple means including use of an electronic survey; easy opt in through survey link, clear instructions and navigation, use of concise questions and clear language throughout and, simplifying responding behaviour by use of drop down boxes and closed questions.

2.2.2 Survey format

In designing the survey, two main options were considered: postal and electronic (web-based). Until recently, postal surveys have been the standard format utilised. However given advances in technology, the web-based survey format needed to be considered. Cost (Kaplowitz, Hadlock & Levine, 2004) and ease of access using a survey link are the main advantages of electronic surveys, especially with targeted populations. Additionally, survey data returned in an electronic format saves data inputting time and reduces potential errors. Electronic surveys also have faster response times and less interference or impacts on submission than postal surveys (Sheehan & Hoy, 1999; Yun & Trumbo, 2000). Potential issues include technical limitations, administration challenges and poor response rates resulting from reluctance or inability to use electronic formats (Andrews, Nonnecke & Preece, 2003). In addition, in contrast to paper formats, potential respondents can delete a survey link quickly.

A web-based survey was selected for many of the above reasons and also to reflect 21st century work styles. A supplementary paper option was offered to potential respondents on request. Mixed-mode surveys (the use of both postal and electronic survey formats) may improve response rates (Kaplowitz et al, 2004) but to use this reliably, researchers are advised to demonstrate equivalency and complementarity (Dillman, 2000). However, as Andrews et al. (2003) note, many paper-based surveys can be adapted to electronic format and vice versa as was done in this case. Only one respondent chose a paper option and this was reportedly due to technical difficulties.

2.2.3 Survey design

2.2.3.1 Survey components

The survey was split into four sections as per Table 2.1.

Table 2.1 Survey sections

Section	Title
Part 1	Demographics
Part 2	Therapies & techniques 1 (Disability)
Part 3	Therapies & techniques 2 (Dysphagia)
Part 4	Decision-making scaffolds

Although Oppenheim (1992) has recommended that demographic questions are placed at the end of the survey (mainly to convince respondents that the survey is genuine), the researcher felt placement of demographic questions initially might ease respondents into the survey. Additionally, Andrews et al. (2003) have defined the placement of personal data first, not last as a response rate quality criterion.

Respondents could, depending on their area of practice complete all sections or only two sections. Respondents working in disability and dysphagia could complete Parts 2 and 3 which related specifically to therapies used in those areas. All respondents could complete Part 1 and Part 4, both sections being generic rather than specific.

2.2.3.2 Survey navigation

Dillman & Bowler (2001) speaking of web surveys, suggest the need for specific instructions. Clear instructions were provided at pivotal points. For example*:*

> *'If you are a disability therapist go to Part 2, if you are a dysphagia therapist, go to Part 3, if you are neither, go to Part 4…'*

To convey a sense of where the respondent was in the process, the survey used time notes for example:

> *'This part will take about 2 minutes'*.

2.2.3.3 Survey formatting

One of Dillman & Bowler's (2001) principles for the design of web surveys is the use of colour so that figure-ground, consistency and read-ability are maintained and navigational flow is unimpeded. Therefore two simple but subtle colours were used to separate lines of text and questions from answers. Where possible single lines were used for each item or statement to ensure ease of use. In most cases this was achieved.

As inconsistent formatting increases attrition (Knapp & Heidingsfelder, 1999), uniform formatting was used throughout but in particular between Parts 2 and 3. Consistent formatting helps participants anticipate and does not require too much 'new' reading. Drop down menus were chosen as the main responding format to facilitate question placement, responding behaviour and decrease reliance on memory. Closed questions were utilised as attrition rates may increase when there are too many open ended questions (Crawford, Couper & Lamias, 2001). Only one open question (Question 23) was used, this being a final 'any other comments' box and this was optional. Randomness in presented options was used occasionally to ally the immediacy effect, for example when choosing preferred therapies (Questions 15 & 20).

2.2.3.4 Survey language

One of the main sources of survey error is measurement error resulting from inaccurate responses that stem from poor wording (Dillman & Bowler, 2001). Attempts were made to ensure questions and statements were comprehensible. Capital letters were used to highlight important words in certain questions e.g. *'NEVER-use'*, *'ALWAYS-use'* (Questions 14 & 19). The language used in the survey was deliberately non-ambiguous, simple, clear and technical including:

- Starter words such as *'first'* and *'now'*;
- Simple introductory phrases (Oppenheim, 1992) such as *'First , please advise how often you….'* to ensure knowledge of the required task;
- Clear instructions for each section were provided e.g. *'…by placing the number in the column opposite the item…',* and;
- Familiar, technical wording was used where possible.

Additionally, as attitudinal questions are more sensitive to wording (Oppenheim, 1992); special attention was paid to the wording in Part 4 to ensure lack of ambiguity. The guidelines of Pett, Lackey & Sullivan. (2003) were followed in this regard including:

- Declarative statements strongly worded without ambiguity;
- Each item expresses only one idea;
- Use positively and negatively worded items;
- Avoid jargon, use of negative to reverse wording of an item, exceptionally lengthy items, multiple negatives, double barrelled items, leading questions and value-lead universal words.

2.2.4 Response enhancement strategies

A number of strategies were adopted in order to positively impact response rates. These included the following**:**

- Ease of use, navigating respondents clearly from start to finish with a logical sequence of questions (a quality criteria for surveys outlined by Andrews et al, 2003);
- Minimisation of hard cognitive tasks including the demand for memory recall achieved mainly through the use of closed questions and set options;
- Making the survey visually appealing. This included arranging the survey elements so they fit on a page and the use of colour (Dillman & Bowler, 2000);
- Image use was reduced so as not to negatively impact on download time (Couper, Traugott & Lamias, 2001);
- Completion time was highlighted for each section. Andrews et al (2003) note that the perception of effort required to complete the survey may impact on response rates although survey length does not automatically correlate with the number of returns (Witmer, Coleman & Katzman, 1999; Crawford et al., 2001);
- Promotion of ownership. The information contained in the email contacts functioned to ensure respondents understood the research and relevance of the survey, and could believe in the usefulness of the questionnaire (Krosnick, 1999);
- Assurance of anonymity which has been identified as response rate quality criteria (Andrews et al, 2003). This is pivotal in the Irish context given the small number of SLTs;
- Single emails containing both invitation and survey are likely to cause high non response rates (Witmer et al., 1999; Sheehan & Hoy, 1999; Cho & La Rose, 1999). Thus, multistep invitations including advance notification and reminders were used;
- The respondent group was targeted via multiple avenues;
- Respondents were offered a hard copy return option, and;
- Piloting of the questionnaire to ensure the best possible survey design.

2.2.5 Survey section: Demographics

Demographic questions were designed to retrieve information which would enable relationships between respondent characteristics and other data to be analysed. Specific demographic questions were based on data retrieved subsequent to the review of the literature. For example, higher degree status has been found to reflect scientific reasoning (e.g. O'Neal et al., 2007; Lizarondo, Grimmer-Sommers & Kumar. 2011), therefore a question pertaining to degree status was included. The question on self-determination of grade reflects the limited grading structure in the Irish context and the need to reflect skill in an extended way.

In summary, ten demographic questions were utilised as per Table 2.2. Additional demographic questions were included about specialised experience at the beginning of Parts 2 and 3.

Table 2.2 Demographic questions

No.	Type of data	Detail
1	Survey source	Source from where respondent accessed survey link
2	Years of experience	Number of years respondent is practising as an SLT
3	Employment grade	Formal SLT grade
4	Self-determination of clinical grade	Self-determined level of expertise
5	Geographical region	Health region in which respondent works
6	Work setting	Primary work setting of respondent
7	Population	Main population with which respondent works
8	Population age	Main population age with which respondent works
9	Highest qualification	Highest professional qualification
10	Recency of highest qualification	Time since most recently acquired qualification
11/17	Years of specialised experience	Number of years respondent is practising as an SLT in specified area
12/18	Percentage of work time in specialised area	Time spent during working week in specialist area

2.2.6 Survey section: Therapies and techniques

2.2.6.1. Process of informing content

A structured process was undertaken to determine which areas of practice and which therapies and techniques would be selected for inclusion in the questionnaire for Parts 2 and 3. It was decided that inclusion of two areas of practice would facilitate the exploration of concurrences and contradictions between areas. The sequence of activities generating content information is outlined in Table 2.3.

Table 2.3 Process of informing content for Parts 2 and 3 of the survey

Stage	Detail
Consultation phase	Gathering of expert opinion
Generation of further therapies using database searches	Use of literature to supplement expert opinion
Defining items	Definition of items to be included

These stages functioned to:

- Inform the comprehensive identification of therapies used, or known about in current clinical practice;
- Ensure a breadth of data which reflected current practice;
- Enable the inclusion of a range of both scientific and non-scientific items;
- Define best terminology, and;
- Determine specific areas of practice to be targeted.

2.2.6.2 Consultation phase

The consultation phase involved the gathering of expert opinion regarding therapies used in specific areas of clinical practice. Representations from both clinical practice (specialists/experts) and academia were utilised to ensure comprehensiveness. The use of informed opinion has a number of advantages:

- The credibility and validity of the research is strengthened;
- High content validity is obtained through use of an expert and heterogeneous panel (Goodman, 1987);
- A wealth of experience informs the development of survey;
- Participants do not have to be brought together (Walker & Selfe, 1996), and;

- There is relative immediacy of contact.

The main disadvantage centred round the non-anonymous nature of the exercise as participants were recruited through purposive sampling, university websites and snowballing. However, as the data retrieved was not particularly sensitive this cannot be seen as a major concern. This method increased the chances of obtaining redundant data over multiple areas of practice which were not used in the survey phase.

Participants were contacted via email explaining the purpose of the exercise and attaching the Specialist Information Request (SIR) (Appendix 2) for completion. The request was designed to elicit four main pieces of data as per Table 2.4. The SIR was piloted on a convenience sample of two specialist clinicians and two academics. Two respondents made suggestions for changes which were accommodated.

Table 2.4 Specialist Information Request data

Information detail	Reason
Respondent background data	To ensure a range of respondents from academia and practice
Area of practice/specialism	To ensure coverage of areas of practice
Therapies and techniques	To elicit representative range of therapies used in clinical practice
Reasons for use of therapies	To facilitate collapsing and condensing of data

Potential respondents were plotted onto a table highlighting different areas of practice within the profession of which 20 were initially identified. A consensus threshold was not set although the aim was to achieve two respondents per area (preferably one academic and one clinician). It was predicted that some areas of practice would result in no responses given the small possible pool of respondents (e.g. there are no cognitive impairment academics in Ireland). A reminder email was sent at four weeks and gaps in data recruitment identified. Snowballing was employed to fill in gaps. Sampling continued over three rounds and three months in order to meet this goal. At this stage, sampling ceased.

Round 1 achieved returns from 30 individuals and covered 77.5% of areas of practice. At the beginning of Round 2 a number of areas of practice for which the researcher had not been successful in identifying any participants (e.g. head and neck oncology and hearing impairment) were removed. Reminders were sent to 23 non responders. In Round 3, reminders were sent to 12 non responders. Seven additional contributors were identified via snowballing to fill in gaps in data (e.g. acquired communication disorders, motor speech disorders). The total sample pool was 37, and the coverage rate was 62%.

A decision matrix was utilised to rationalise the reduction and reorganisation of the data obtained and included the following stages:
a) Combining respondents' data by area of response;
b) Reframing leading to combining of dysphagia items;
c) Removal of non-therapeutic and unclear items;
d) Condensing of duplicated items and development of clarity and specificity;
e) Tidy up of data;
f) Similarities and differences check;
g) Final condensing and volume considerations;
h) Final groupings for survey instrument;
i) Member checking, and;
j) Final review of content for inclusion, accuracy and specificity.
The process was evolutionary being defined by the data produced by respondents and the nature of the process itself. Areas of practice which clearly did not elicit sufficient content for survey purposes were eliminated. Review of the data after the initial phase identified some disorders which translated across a number of areas of practice. For example, dysphagia items were numerous across multiple areas or practice (e.g. Head & Neck oncology and physical disability). To better reflect this and ensure data was not lost in the process, data was reorganised under additional headings. It was thus clear that a number of areas of practice provided insufficient

data to permit future analysis (e.g. dysphonia and craniofacial disorders) and these were eliminated.

A number of options for survey inclusion were evident towards the end of the process: dysphagia, disability, developmental speech disorders, language delay/disorder, and fluency disorders. In this context, disability referred to global conditions impacting upon multiple areas of development, most specifically intellectual disability, physical disability and autism spectrum disorders. Disability and dysphagia were selected as these groupings:

- Opened up the possibility of comparing practitioners working in adult and paediatric settings and with different types of disability;
- Reflected higher recruitment potential given the development of both dysphagia and disability services in Ireland in recent years, and;
- Reflected the researcher's expertise best.

Once data were condensed and areas of practice selected, member checking took place in order to reduce any researcher bias and to further identify any omissions. Two members per area were utilised for member checking. Of the four requests made for member checking, two respondents fedback. One individual identified further therapies (disability) and these were included in the final list. At this stage the total number of therapy items identified for survey inclusion was 81 (35 in dysphagia and 46 in disability).

2.2.6.3 Generation of further therapies using searches

To ensure comprehensive coverage, database and journal searches focusing on the target areas of practice were then carried out covering the period 2000-2010. A number of trial keywords were used to establish best terms. Most searches yielded the same and highly generic articles reflecting the broadness of some terms. There was a high degree of redundant information retrieved. From these searches eight items were added to the disability therapies list and twenty to the dysphagia list yielding a total therapy list of 109 items.

At this stage the final lists were reviewed once more for specificity, clarity and duplication and a number of changes made resulting in 103 items remaining (52 in disability, 51 in dysphagia).

2.2.6.4 Defining items

In order to ensure accuracy and avoid retrieving incorrect data, all items were defined through respondent definitions, internet searches, professional texts etc. The researcher was forced to define a small number of items by nature of her own knowledge (e.g. MORE) for which no definitions were found. A number of amendments were made resulting from this exercise. For example, the item 'Tongue hold' was removed as it was found to be similar to the technique identified as the 'Masako Manoeuvre'. At this stage, 97 items remained for inclusion (52 in disability, 45 in dysphagia). These are represented in the final survey (Appendix 3). To ensure commonality of understanding in the final survey, respondents were directed to a link document through which they could check item definitions.

Therapies were then classified according to best fit with scientific standing using a rating scale developed (Appendix 4). This scale was necessary given the incompleteness of the evidence base in SLT. Based on this scale, it was deemed that the therapies included in the survey represented the scientific spectrum as per Table 2.5.

Table 2.5 Scientific nature of therapies included in survey

Scientific spectrum	Disability	Dysphagia
Scientific intervention	4	1
Probably scientific intervention	13	7
Neither scientific nor unscientific intervention	11	23
Probably unscientific intervention	9	9
Pseudoscientific intervention	4	1
Unknown	11	4

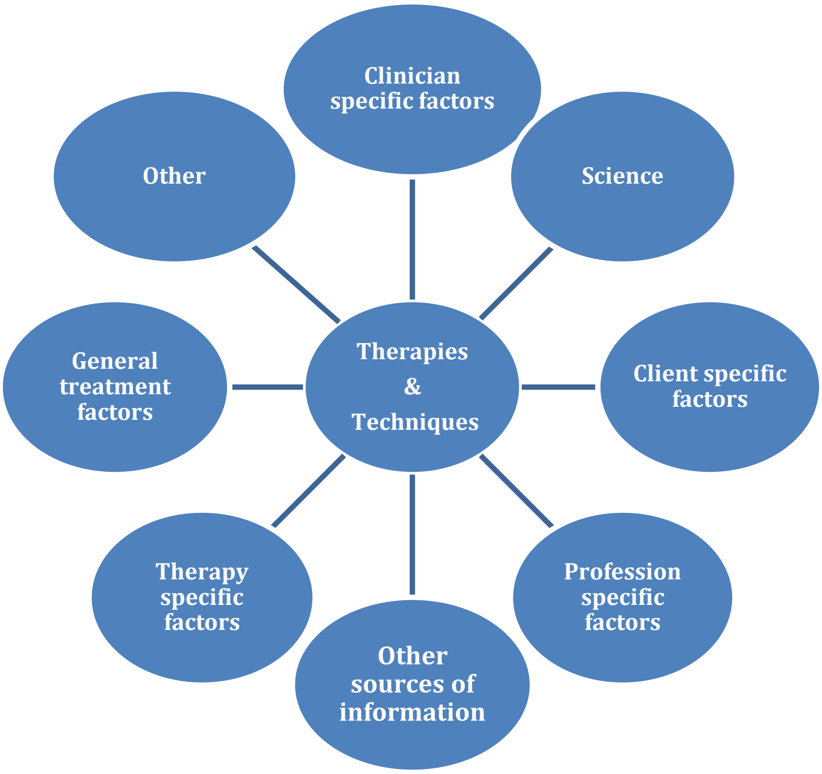
2.2.6.5 Use of therapies

Both frequency of use of therapies and rankings were obtained from respondents. Frequency of use (Questions 14 & 19) was based on a five point Likert scale (always-use, frequently-use, sometimes-use, rarely-use and never-use). This is a summated rating scale purporting to measure use. Scaling was utilised as the construct could not be measured directly (Pett et al., 2003). Rankings (Questions 15 & 20) were obtained by asking respondents to identify a minimum of one and maximum of ten preferred therapies.

2.2.7 Survey section: Reasons for use and non-use

For each therapy, respondents were also asked to select from a choice of reasons to indicate why they either use or do not use (Questions 14 & 19) that item. A number of potential categories (see Appendix 1 for definitions) for use and non-use were identified from the research question and the review of the literature (Figure 2.2).

Figure 2.2 Categories guiding selection of reasons for use options



A number of potential statements were generated based on these categories. For example, source of information statements were generated representing training, media, profession specific literature and research evidence. From the multiple statements generated, two statements were selected for each category. Therefore 16 potential reasons were selected for reasons for use and 16 for non-use (Appendix 5). Piloting was carried out on a convenience sample of two clinicians and there was no concern with the number of options. Multiple potential answers provided for a comprehensive range of reasons and ensured that most respondents had options for answering which reflects their individual reasoning. At the suggestion of a piloter, an additional item was added to non-use reasons: *'I don't know about this therapy'*. The possibility of an immediacy effect cannot be ignored given the volume of options and this was monitored for and disregarded given the nature of responding.

For convenience, the questions pertaining to reasoning were situated as columns across from each stimulus (therapy) item. Therefore, for each stimulus item, the respondent would first identify frequency of use and based on this answer, then identify reasons for non-use or use.

2.2.8 Survey section: Decision making scaffolds

To build on therapy specific reasoning, general statements not attributed to specific therapy items were included in Part 4 of the survey. A five point Likert scale was again utilised. A neutral value was included to give an option to respondents despite the potential it would be used as a 'go to' response, as Pett et al. (2003) point to the danger of non-completion if this option is not provided.

As the aim of this section was primarily to understand the general attitudes contributing to treatment choices, it was important to include statements that covered a wide variety of scaffolds, some of which interlinked. Based on respondents' data, scaffolds could be later accepted or rejected. Statement development and inclusion were influenced by the research question and the literature including surveys used in previous studies. Some surveys influenced specific statements. For example, some statements were lifted unchanged from original surveys given their meaningfulness to this research question, e.g. '*I chose treatments that are less complex to understand and implement'* (Grol & Grimshaw, 2003). The findings of studies also influenced content. For example, Joffe and Pring (2008) found clinicians were partly influenced by individual's age, language and cognitive abilities. These findings prompted statements regarding client suitability.

A number of statements were included in the initial pool. Using a decision matrix statements were then developed, modified for clarity or rejected and then regrouped based on the categories previously outlined (Figure 2.2). The reduction of data enabled the selection of the most relevant items. Use of a codebook – a systematic record of all decisions and how each statement was coded, facilitated the reduction of initial options in a logical and clear manner. Additionally, once the initial pool of statements was sufficiently reduced, a research colleague ranked and agreed the final statements. The number of statements included considered respondent fatigue and amenability to statistical analysis. A total of 56 statements were thus retained from an original 185. These were plotted against a five point Likert scale ranging from strongly agree to strongly disagree.

2.2.9 Comments

It has been reported that including a space for comments at the end of a series of attitudinal questions can double response rates (McColl et al, 2001) and this was done (Question 23). 37 respondents chose to utilise the comment box.

2.3. DATA GATHERING AND ANALYSIS FOR QUANTITATIVE PHASE

2.3.1 Piloting of the survey

The process of survey piloting involves making preparations for the fieldwork and analysis so that not much will go wrong and nothing will have been left out

(Oppenheim, 1992). Oppenheim (1992) advises that the pilot should deal primarily with the comprehensibility of questions. Typical respondents (Andrews et al., 2003) representing a convenience sample of seven clinicians were sent the survey electronically. Three completed the piloting of the survey: One individual completed the whole survey (Parts 1-4); one individual completed three sections (Parts 1, 3 & 4), and one individual completed two sections (Parts 1 & 4). It is acknowledged that this is a small sample for piloting purposes; however the researcher was wary of overusing the limited potential pool of respondents nationally.

Piloters were asked a specific set of questions and for their general comments. In addition to the survey, piloters also viewed the series of emails accompanying the survey. Minimal changes were suggested and these were incorporated.

2.3.2 Respondent sample

Dillman & Bowler (2001) note that a main source of survey error is coverage and sampling error. This survey was limited to SLTs practising in Ireland – a defined and relatively small group. However, accessing this group was problematic as there was no national register or employment statistics. The professional body estimates there about 750 SLTs in the country. While high response rates are desirable because they increase the precision of parameter estimates and reduce the risk of non-response bias (McColl et al., 2001), Cook, Heath and Thompson (2000) argue that response representativeness is more important than response rate. In order to achieve the highest possible distribution in this context and best representation, the potential pool was accessed in four ways as per Table 2.6.

Table 2.6 Accessing the sample

Source	Detail	Sample size	Estimated response rate
Practice Educators University Database (PEUD)	The database developed and used by the SLT department in the researcher's workplace. This represents SLTs who provide clinical placements to students.	N= 225.	22=90*
SLT Managers University Database (SMUD)	Professional SLT managers who lead SLT departments. Managers to forward web link to their staff.	N= 66 managers	Unknown
Special Interest Groups (SIGs)	SIGs attached to the IASLT. 12 SIGs were identified. Secretaries to forward web link to membership.	N= 589.	59-236
Irish Association of Speech & language Therapists (IASLT) website	As agreed with the organisation chair a link was posted on the IASLT website on the same date as the Data collection email was circulated.	N =417 practising clinicians	41-125
Total			111-446

**Based on a response rate for postal questionnaires of between 10-40% (Weisber, Krosnick & Bowen, 1996)*

A number of clean up measures were undertaken in order to ensure accuracy of the databases used. For the PEUD database a process updating was set in place. This occurred within 2 months preceding the Advance contact email (ACE). The SIG list provided by the professional body was three years old. The researcher updated this list by contacting SIG secretaries to request current information. In all cases except one, more up to date contacts were retrieved. Current secretaries were then contacted to request permission to use the secretary as a gatekeeper. All SIG secretaries agreed.

Despite the lack of a national register, this multi-pronged approach was felt to effectively address the issue of coverage. In ideal circumstances cross matching would have occurred to reduce duplicated contacts and estimate numbers more accurately. This was not possible given the use of gatekeepers.

2.3.3 Protocol

2.3.3.1. Ethics

Research ethics approval was applied for and granted through the University of Limerick Research Ethics Committee. Issues of access, consent, confidentiality, data retention and dissemination were addressed in the ethics application.

2.3.3.2 Advance Contact Email

The Advance contact email (ACE) (Appendix 6) functioned to prepare the target group for the survey and to develop interest. Yun & Trumbo (2000) advise that the researcher needs to establish credibility quickly through subject lines and opening statements therefore the ACE provided clear information including the survey title, an introduction to the researcher and information on access modes which indicates survey quality (Andrews et al., 2003). Assurance of anonymity was provided (Sheehan & Hoy, 1999). The ACE was forwarded by email two weeks before the survey link went live.

2.3.3.3 Data Collection Email

The Data collection emails (DCE) (Appendix 7) accompanied the survey link and functioned to both reiterate points made in the ACE (e.g. anonymity) and guide potential respondents in opening and navigating the survey. It included an estimate of completion time as a measure of convenience.

2.3.3.4 Survey Reminder Emails

The Survey reminder emails (SREs) functioned to remind potential respondents to complete and return the survey and advised of the closing date. The aim was to improve response rates. The SREs were kept simple so as not to annoy potential respondents and those who had already completed the survey. Dillman (2000) argues for three reminders, however while reminders increase the likelihood of responding (Sheehan & Hoy, 1999), they do not necessarily increase the likelihood of completion (Crawford et al., 2001). Two SREs were sent two and four weeks after the DCE. While a lengthier interval period is recommended (Lee, Taylor, Kielhofner & Fisher, 2008), long intervals may also contribute to respondents neglecting the survey. The survey was closed within six weeks of the DCE being sent.

2.3.4 Data analysis

2.3.4.1. Clean up, data checking and preparation

All data were exported from the web site and entered into SPPS V18 where clean-up of the data set was initiated. This included cases where only demographic information was completed and coding of missing data. A number of procedures were followed throughout to ensure accuracy of data and analysis e.g., random samples were double checked; numerical and written label matching was verified. At this stage a number of variables were manipulated and recoded into new variables to facilitate analyses.

2.3.4.2 Descriptive statistics and statistical tests

A number of statistical analyses were employed to best make use of the data. Descriptive statistics included frequency distributions, cross tabulations and measures of central tendency and spread.

2.3.4.3 Inferential statistical tests

Inferential techniques utilized included tests of significance (Pearson's chi squared test and Fisher's exact test) depending on the number of cases in the analysis. The differences in averages between groups were analysed using the t-test for two-group comparisons and ANOVAs for three-group comparisons where appropriate.

2.3.4.4 Multivariate methods: multidimensional scaling

Multidimensional scaling was utilised to analyse clusters of therapy use i.e. whether therapies fitted into meaningful groups. This requires no assumption about the underlying distributions of the data or about the level of measurement (Turner & Whitfield 1997). Multidimensional scaling calculates the coefficient of continuity and thus the proximity between data profiles and represents them as points in an n-dimensional space, whereby the closer the points, the more similar their profiles. Alternatively, the more distant the points are within the space, the more dissimilar their profiles. This technique also provides a measure of goodness of fit which is the extent to which the spatial representation represents the data.

2.4.4.5 Multivariate methods: factor analysis

As Pett et al. (2003) state, not all science is hypothesis testing – sometimes research is interested in the structure of a phenomenon. Factor analysis allows for structural analysis using responses from Part 4 of the survey. Factor analysis represents a complex array of structure analysing procedures used to identify interrelationships among a large set of observed variables, and then through data reduction, to group a smaller number of these variables into dimensions or factors that have common characteristics (Pett et al., 2003). This reduces the number of variables in the analysis (originally 56 statements), by using surrogate factors to represent a number of variables, that is, it simplifies the data set where appropriate. Identification of such factors can facilitate the naming, differentiation and highlighting of specific phenomenona. This is considered especially useful given the possible complexity and abstractness of decision making. Principal axis factoring followed by varimax rotation was the method used in this study. Pett et al.'s (2003) model for factor analysis was followed (identify the problem, generate the items, assess the adequacy of the correlation matrix, extract the initial factors, rotate the factors, refine the solution and interpret the findings).

Tests of matrices were employed (KMO and Bartlett's Test of Sphericity) initially to test whether the data would support a factor analysis in the first place and these suggest that it was worthwhile. Factor analysis is a technique that requires a large sample size for correlations to stabilize. On average there were 247 responses per statement representing a fair-good sample size (Comrey & Lee, 1992). A varimax (orthogonal) rotation with 100 iterations (for a converged solution) was employed as it produces ''reasonably simple structure in most situations'' (Floyd & Widaman, 1995, p.292). The scree plot of un-rotated factor eigenvalues (Safren et al, 2000) indicated anywhere between a four and 36 factor solution (using the latent root criterion or eigenone-value criterion eigenvalues >1). Both a 13 or 20 factor model were preferred and of these the 13 factor model appeared most suitable as it favoured fewer factors and explained over 51.5% of the variance of the data. Pett et al. (2003) advise with regard to measures of sampling adequacy that that all values for the factor score covariance matrix should be higher > .70. In the 13 factor solution, seven of the 13 factors meet this criterion. The original factors 11, 12 and 13 had low measures of sampling adequacy. Pett et al. (2003) recommend that if some items have scored less than .6 there may not be an underlying structure, to summarize relationships. Three of the 13 factor solution met this criterion. Factors 10 and 11 are single statements but represent clear constructs and so were used in analysis. Factors were labelled to interpret the factor dimensions.

Statements were considered to load on a factor if the factor score met or exceeded .30 (Comrey & Lee, 1992; Floyd & Widaman, 1995). Where items loaded onto multiple factors it was generally assigned to the factor with the highest loading score (Safren et al, 2000). Cronbachs alpha coefficient which measures the degree to which items 'hang together' (Pallant, 2007) was used on extracted factors to check reliability.

2.3.5 Reliability and validity

A number of methods throughout have been seen to respond to issues of reliability and validity. These include:

- The linking up with theory and evidence from the literature thus ensuring construct validity;
- The use of clinicians and colleagues at various stages including piloting, decision matrices and the consultation phase contributing to content validity which seeks to establish that the questions are a well-balanced sample of the domain to be measured;

- The use of decision matrices for the main sections of the survey (Sections 2, 3 and 4) ensured that the material utilised in the survey was arrived at through rigorous means;
- Piloting of the SIR and main survey, and;
- Data clean up and data checks

2.4 DEVELOPMENT OF FOCUS GROUP SCRIPT AND QUESTIONS

2.4.1 Overview of group interviews

'Focus group research involves organised discussion with a selected group of individuals to gain information about their views and experiences of a topic'. (Gibbs, 1997, p.1).

Focus groups were utilised to enlist the opinions of SLTs. This format was chosen as groups provide for a wide range views, multiple participants can facilitate a deeper consideration of issues to be discussed and groups may make participants feel less threatened than they might be in individual interviews. Viewpoints were gathered across a number of work settings, thus exploring concurrence and/or divergence between settings but within the same profession. Three work settings were targeted reflecting the primary contemporary work settings in Ireland: community care, hospital and voluntary organisation.

2.4.2 Script

A script (Appendix 8) was devised to ensure clear structure of the sessions and provide for a cohesive and consistent format. This included introduction and closing elements.

2.4.3 Stimulus questions

Participants were asked to facilitate the moderator in making sense of the constructs presented. Trigger questions, probes and summarising comments were used to facilitate discussions. The same format was maintained for all groups to provide for comparison between groups although naturally some variation in probes or the sequence of probes is inevitable. Emergent themes from previous group discussions were not incorporated into subsequent group discussions to maintain reliability.

Stimulus questions (Appendix 9) were intended to add depth to the survey data by focusing on the main emerging constructs and the primary research question. Three main questions were selected on the basis of survey data as per Table 2.7.

Table 2.7 Focus group question topics

Question	Topic
1	Client suitability
2	Clinical experience
3	Training
4	Science

Client suitability (Question 1) was the primary reason for using therapies and the second reason for not using therapies. Client issues were also reflected in Part 4 of the survey. *Clinical experience* (Question 2) was the second most commonly used reason for using therapies and highly reflected in Part 4 of the survey. *Not trained* (Question 3) was the primary reason for not using therapies and the issue of training was felt to be amenable to exposing the bases of practice decisions. A further question directly focused on the role of science (Question 4) in clinical practice which has been at the origin of this research. This question was placed last in the sequence in order not to bias discussions.

Questions were phrased using deliberately open wording to prevent researcher bias permeating the proceedings. To facilitate group discussion, minimise researcher bias and for transcription purposes, the moderator kept her own contributions to a minimum.

2.5 DATA GATHERING AND ANALYSIS FOR QUALITATIVE PHASE

2.5.1 Piloting

To obtain advice on wording and facilitate reflection, stimulus and probe questions were informally piloted on the researcher's work colleagues and discussed with the supervisory team. No changes were recommended. A formal pilot was arranged on a convenience sample represented by an SLT department in the geographical region of the researcher. This group was cancelled and rearranged by the gatekeeper on three occasions. This meant that piloting did not take place, as time ran out between the piloting timeframe and the prearranged focus groups.

2.5.2 Sample

Managers of SLT departments were targeted using the Practice Educators University Database (PEUD). A recruitment email and information sheet (Appendix 10) was distributed electronically. Managers were asked to discuss participation with their departments using the information sheet and contact the researcher within a month if they were willing to be involved. Selection was based on the first three volunteering respondent groups representing the following:

a. SLT department working in community care;
b. SLT department working in acute hospital services, and;
c. SLT department working in voluntary body.

Kreuger & Casey (2000) note the goal of focus groups is to fill room with a minimum of 1-12 participants that are similar as this similarity will improve the quality of the data. For this reason a minimum of seven participants was specified on the recruitment email.

Seven managers responded offering their department's participation in the following sequence:

1. Community care – HSE Dublin area

2. Community care – HSE Dublin area
3. Voluntary organisation – HSE South Area
4. Community care– HSE Dublin area
5. Acute hospital – HSE Dublin
6. Voluntary body – HSE Dublin
7. Community care – HSE Dublin

Groups 1, 3 and 5 were selected for participation based on the criteria with Group 2 acting as a backup.

2.5.3 Protocol

2.5.3.1. Location

Managers were offered a choice of location for groups. These were:

- Their own department;
- A place convenient to their work (e.g. hotel premises) or;
- The workplace of the researcher.

All gatekeepers opted to provide a room within their own work setting for the convenience of their team members.

2.5.3.2 Timing and sequence

Each group was given a maximum of 90 minutes. Groups varied in their use of the time. Group 1 took 75 minutes in total, Group 2, 60 minutes and group 3, 80 minutes. Sessions were organised as per Table 2.8.

Table 2.8 Focus group session plan

Time allocated	**Activity**
15 minutes	Warm up / Introduction of research and research Information sheet reading Consent form signing Demographic sheet completion Explanation of procedures
70 minutes	Stimulus questions (approximately 17-18 minutes per question - 4 questions)
5 minutes	Member checking form Thank you

2.5.3.3 Data recording

Two Marantz digital recorders (main and backup) were used to record the discussions. The moderation plan involved asking participants to state their name prior to each contribution to facilitate identification. The moderator kept a notepad to back up or contextualise comments. For example, if a participant did not identify their name. Alternatively, the moderator added a comment into the recording e.g. *'Thanks for that comment Katie, that was really interesting'*. In this way most utterances were attributed. Data was downloaded onto a computer within a day of the recording, backed up and then deleted from the recorder. The data was then transcribed and anonymised.

2.5.3.4 Managing participation

No limit was put on the number of group members as departments sizes vary countrywide and there was a limited pool from which to draw on in Ireland. Additionally, it was thought that natural dropout rates might impact on eventual group size. This resulted in larger than anticipated group sizes for Groups 1 and 3 (n= 23 and n = 16).

Efforts were made to be aware of and prevent domination of the group by individuals (Walker & Selfe, 1996). Such monitoring and facilitation is especially important in healthcare where there may be a strong hierarchy. Logistically it is not always practical or possible to ensure all participants contribute and there is a balance to be struck between enabling equal participation and coercion. Participants were provided with notepads for those who wished to either jot reminders to themselves during the discussion or, to provide the moderator with comments in writing after the group. No participants availed of this facility.

The researcher reflected on the running of each group in order to facilitate smoother running of subsequent groups and an understanding of potential influences on data.

2.5.4 Data analysis

2.5.4.1 Data transcription

Each group interview was transcribed verbatim from the digital recorder (Braun & Clarke, 2006), using a standard word processing programme. Nonverbal data was not included. Interjections, word and phrase repetitions and personal names were transcribed to provide as full a flavour as possible of the content. As advised by Anderson and Felsenfeld (2003), purely social or extraneous comments and redundant remarks were excluded.

Each transcribed session was checked against the recorded data to ensure accuracy and reliability of the transcribed data. Data was then anonymised using the 'find and replace' tool in word. The script was checked to ensure full anonymising had taken place and variation in spelling or names were addressed in this way. Spell check was employed to ensure anonimisation had not undone some regular words. Anonymised versions were used for analysis and the original transcriptions deleted.

2.5.4.2 Member checking

At this stage a summation of the data for each group was circulated by email for member checking. This was to ensure initial impressions of the data reflected participants interpretation of the discussions, that is, that summaries had face validity. Participants were also asked to add any details that they felt were not reflected in the researcher's summation.

Eleven members of Group 1, nine members of Group 2, and 13 members of Group 3 requested member checking. One participant provided feedback. This indicated that while a *'coherent summary of what we said'* was achieved, there was concern whether emphasis on *"clinicians know what works or what doesn't"* was reflective the group discussion. This concern about potential researcher bias was borne in mind during analysis.

2.5.4.3 Data immersion

To immerse the researcher in the data and improve reliability and accuracy of transcription, recordings were listened to in four stages:

1. Listen through without transcribing for immersion purposes;
2. Listen and initial transcription with playback where researcher was unsure, where comment was unintelligible or there was attribution issues;
3. Confirmation and correction of transcription via next listen through while reading transcription to check for accuracy, and;
4. Reading transcription while playing recording to ensure accuracy of transcription.

Most of the data was attributed and intelligible with minor gaps remaining.
Lines and page numbers were added to the scripts to enable identification of pieces of data during the analysis process. A randomly selected two-minute sample was listened to by a research colleague to check inter-rater reliability regarding data entry with an agreement rate of 92%. Disagreement was primarily for non-content words e.g. fillers and some unintelligible utterances. Agreement was reached by joint listening. Transcription was felt to be reflective of the discussion.

2.5.4.4 Thematic analysis

Coding is a method that enables organisation of similar data into categories because they share some characteristics. There are three basic elements to the process per Corbin & Strauss (1990): concepts, categories, and prioritisation. The essence of coding is categorisation which reflects progress towards the thematic, conceptual, and theoretical (Braun & Clarke, 2006). Themes were identified that were specific enough to be discrete and broad enough to encapsulate a set of ideas in numerous text segments. The development of themes was guided by Braun and Clarke's (2006) direction that a theme is meant to capture something important about the data in relation to the research question and, represent some level of patterned response or meaning within the data set.

Coding was analysed initially on a question by question basis, then across the groups. The data was worked through systematically giving full and equal attention to each data item. Braun and Clarke's (2006) recommendations were followed regarding coding to ensure important themes were not missed. These included coding for as many potential themes as possible and coding individual extracts into as many different themes as they fit into. Large margins were left on the side of each page to facilitate the making of notes, comments and initial descriptive coding.

Refinement and recoding in subsequent cycles facilitated connections that formed the basis of repeated patterns across the data set (Braun & Clarke, 2006). In this way preliminary codes were subsumed by other codes, relabelled or dropped altogether to eliminate redundancy and improve representation and accuracy. Thus coding progressed from salient to latent themes in order to reflect the progression from descriptive to meaningful interpretation.

Data was therefore coded and themed through eight evolutionary phases per Saldana (2009). Coding is a cyclical act and rarely is the first cycle of coding perfectly attempted (Saldana, 2009) and the process reflected this. During first order coding the researcher compared the number of codes between groups and noted more detailed and larger volumes of codes for Groups 2 and 3 than for Group 1. As a result the researcher revisited coding for Group 1 to reflect more detailed and consistent coding. The first and second stages were more or less replicated to ensure 'meticulous attention' (Saldana, 2009, p.10) to all pieces of data. This is reflected in the low reduction of codes between first and second order coding.
Thus the phases of coding were as per Table 2.9.

Table 2.9 Coding cycles

Phase	Function
1st order	Immersion and initial noding
2nd order	Start of reduction of codes
3rd order	Combining codes and naming codes
4th order	Sub codes development
5th order	Subtheme development
6th order	Main theme development across groups and questions
7th order	Super theme development
8th order	Meta theme establishment

Every attempt was made to ensure rigour in analysis while at the same time understanding that analysis is not a linear but a recursive process (Braun & Clarke, 2006). This recursive process is itself an indication of rigour in the search for meaning. During each phase a record of amendments or reattributions was maintained in order to ensure transparency and coherent themes (Braun & Clarke, 2006). Examples of dissonance were searched for to ensure solidity of themes and findings.

2.5.4.5 Theme representation: Mind maps and networks

Thematic networks aim 'to facilitate the structuring and depiction of themes' (Attride-Stirling, 2001, p.387). Networks are essentially an organisational principle (e.g. basic, organising and global themes) and a representational means, making explicit the procedures that may be employed in going from text to interpretation. Thus, theme extraction is systematised from lower to higher order premises with the development of categorisation and encapsulating principal metaphors. In thematic networks these levels are then represented as web like maps depicting the salient themes at each of the three levels, illustrating the relationship between them. For this study a modified networks approach using the principles of networks were employed but the levels of data were extended to reflect the eight levels of coding.

Thus the data can be viewed as a thematic map (Braun & Clarke, 2006) or thematic networks (Attride & Stirling, 2001). To enable plotting, mind maps were used which portray the sequence, expansion, reduction and content of coding (see Appendix 11 for sample) at each phase. These were colour coded so the allocation of codes and themes could be followed.

2.5.4.6. Reflective summaries

At each stage reflective summaries were undertaken to facilitate reflection and understanding of the data and ensure reliable theming.

2.5.5 Reliability and validity

Lincoln and Guba's (1985) approach for assessing quality in qualitative studies refers to the constructs of credibility, transferability, dependability and confirmability. Confirmability refers to the transparency of the research process which is detailed previously. Given the similarities of findings between groups there is little question that dependability (replication of findings in a similar context) and transferability (relevance of findings to another setting) are evident. The research is credible (do the findings make sense and are they believable) to the researcher and hopefully the reader.

A number of specific strategies were used to ensure rigour and representativeness including:

- Immersion of the researcher in the data prior to transcription and analysis;
- The researcher recorded each stage of the coding process with data clearly assigned or reassigned to codes at each stage;
- Mind maps were utilised to show the development of coding;
- To determine coding reliability per Anderson and Felsenfeld (2003) a research colleague was provided with all 12 thematic categories and 12 quotes randomly selected from each category by a third party. This colleague was asked to place each quote into the thematic category felt to be most appropriate. Inter rater agreement between the research and the reliability judge was 91% (i.e. 11 out of the 12 quotes were assigned to the same thematic category by both raters independently) confirming the face validity of coding;

- Member checking was utilised to confirm the validity of recorded data and tentative interpretations;
- Data that conflicted with emerging patterns were vigilantly searched for, documented, and analysed;
- Triangulating data from various work settings;
- The same question format was used between groups so there was limited variance in the main stimulus questions, and;
- Reflective summaries were carried out at each stage of coding

2.6 SELF-REFLECTION

To further stimulate critical self-reflection in the interpretative research process, a number of methods (reflective diary, memos to self, questions) were used to record procedures, methods, hunches, and approaches to analysis for subsequent review. These were maintained in a reflective diary in line with traditional models of conducting qualitative research. However, in this case, the reflective diary was utilised from the initial research stages and through both quantitative and qualitative phases. Use of such reflective tools ensured that the researcher was aware of the potential for bias but also open to other constructs emerging from the data order to ensure that the study outcomes were not a self-fulfilling prophecy.

Chapter 3: Survey Results

The results of the survey phase are provided below.

3.1 RESPONDENT DEMOGRAPHICS

This section presents the results of the characteristics of the sample.

3.1.1. Responses

Ireland has a small population of SLTs, the exact number being unknown. A response of 354 surveys with 271 of these useable represents a substantial figure for the Irish context. Nearly one quarter (23.4%) of starters exited the survey before completion. Most non-completers areas of practice (e.g. disability 33.7%) were appropriate to the survey content.

Of the useable responses, 92.5% (n=250) completed Part 1 (Demographics) and Part 4 (Decision scaffolds), 44.3% (n=119) completed Part 2 (Disability) and 42.8% (n=116) completed Part 3 (Dysphagia).

The Practice-Educator-University-Database (PEUD) resulted in half of all responses (46.9%). One-quarter (25.5%) of responses were obtained via SLT managers acting as gatekeepers. A further one-quarter (25.8%) emanated from profession-specific Special Interest Groups. The professional website resulted in least responses (1.8%).

3.1.2. Demographics

3.1.2.1 Overall demographics

Demographics (Table 3.1) are presented in reduced form to facilitate interpretation. For example, skill was reduced from five levels (novice, developing, experienced, specialist and expert) to three representative categories (emergent, experienced and expert).

Table 3.1 Respondent demographics

Demographics	**Disability**		**Dysphagia**		**Neither disability nor dysphagia**		**All**	
Respondents	N	%	N	%	N	%	N	%
Complete respondents	119	43.5	116	42.8	81	29.9		
Total							271	
Years working								
Early (0-4.11)	45	38.1	46	39.7	31	38.3	112	41.3
Middle (5-14.11)	44	37.3	47	40.5	36	44.4	106	39.1
Later (15+)	29	24.6	23	19.8	14	17.3	53	19.5
Total	118		116		81		271	
Grade								
Basic	37	31.4	28	24.1	26	32.0	84	31.0
Senior	58	49.2	65	56.0	41	50.6	140	51.7
Manager	16	13.5	16	13.8	3	3.7	24	8.9
Other	7	5.9	7	6.0	11	13.6	23	8.5
Total	118		116		81		271	
Skill								
Emerging	39	32.8	35	30.2	32	39.5	97	35.8
Experienced	59	49.6	63	54.3	37	45.7	132	48.7
Expert	21	17.6	18	15.5	12	14.8	42	15.5
Total	119		116		81		271	
HSE region								
Dublin Mid-Leinster	37	31.1	40	34.5	32	39.5	90	33.2
Dublin North-east	27	22.7	31	26.7	16	19.8	66	24.4
South Ireland	25	21.0	29	25.0	16	19.8	59	21.8
West Ireland	30	25.2	16	13.8	17	21.0	66	24.4
Total	119		116		81		271	
Work setting								
Community	27	22.9	30	25.9	61	75.3	114	42.0
Voluntary	67	56.8	33	28.4	3	3.7	71	26.2
Hospital / Rehabilitation	5	4.2	45	38.8	7	8.6	54	20.0
Other	*19*	*16.1*	*8*	*6.9*	*10*	12.3	32	11.8
Total	118		116		81		271	
Population								
Disability	77	65.3	33	28.4	7	8.6	105	38.7
Adult-acquired	5	4.2	46	39.7	2	2.5	67	24.7
Community paediatrics	29	24.6	11	9.5	57	70.4	90	33.2
Other	16	13.6	26	22.4	15	18.5	9	3.3
Total	118		116		81		271	
Population age								
Paediatric	92	77.3	39	33.6	73	90.1	177	65.3
Adult	25	21.0	77	66.4	6	7.4	90	33.2
Other	2	1.7	-		2	2.5	4	1.5
Total	119		116		81		271	
Highest qualification								
Professional only	93	78.2	86	74.1	62	76.5	210	77.5
More than professional	26	21.8	30	25.9	19	23.5	61	22.5
Total	119		116		81		271	
Years qualified								
Most-recently qualified	56	47.1	57	49.1	35	43.2	131	48.3
Mid-time qualified	45	37.8	45	38.8	39	48.1	109	40.2
Longest qualified	18	15.1	14	12.1	7	8.6	31	11.4
Total	119		116		81		271	
Specialised experience								
Least-special(0-4.11)	58	48.7	72	62.1	-	-	-	-
Mid-special(5-14.11)	43	36.1	36	31.0	-	-	-	-
Most-special(15+)	18	15.1	8	6.9	-	-	-	-
Total	119		116		-	-	-	-

Demographics	**Disability**		**Dysphagia**		**Neither disability nor dysphagia**		**All**	
	N	%	N	%				
Dedicated time								
Least-time (0-40%)	18	15.1	55	47.4	-	-	-	-
Medium-time (41-60%)	16	13.4	19	16.4	-	-	-	-
Most-time (61-100%)	85	71.4	42	36.2	-	-	-	-
Total	119		116		-	-	-	-

3.1.2.2 Experience

The demographics represent a young clinical sample with nearly half (41.3%) working less than five years since qualification and over two-thirds (68.6%) working under ten years. Basic and senior grades (n=244) represented 82.7% of the sample. Over a third (35.8%) of respondents considered themselves at an early stage of skill growth (emergent). Only 15.5% were experts and approximately one-fifth (18.5%) were working more than fifteen years. This is likely to reflect the Irish, professional and perhaps gender demographic. The less-experienced sample may also be reflected in degree status with 22.5% having undertaken additional qualifications. Those with less experience, less-specialised experience, lower grading and skills were significantly more likely to have a professional-only qualification ($p<0.001$), further qualifications being accumulated with additional experience. Highest-qualification is just below significance for population ($p=0.059$) with adult-acquired clinicians more likely to have obtained additional qualifications (36%). Those working longest in the areas of disability and dysphagia tended to be longer working generally, be higher graded, higher skilled and higher qualified ($p<0.0001$).

Nearly all (99%) SLTs in the early years of their careers were basic grades ($p<0.001$). Those in their middle years were most likely to be senior SLTs (63%) and managers were more likely (62.5%) to be in the later years of experience. The same pattern is seen for self-determined skill ($p<0.001$) as 82.3% of early-years SLTs classified themselves as emergent SLTs, over half of experienced SLTs (57.6%) have middling experience, and over two-thirds of expert SLTs (69%) had more than 15 years' experience. This suggests a correlation in the minds of respondents between expertise and length of service. Managers were the only group who reported their skill level lower than their grade describing themselves as experienced, perhaps reflecting their administrative component. More clinicians considered themselves to be specialists (n=34) than the actual number of specialists responding (n=10). Given the few specialist posts in the country, this is not surprising.

Variation in skill was also seen by region and work-setting (Table 3.2). For example, fewer West respondents considered themselves experienced SLTs. More respondents in the Dublin mid-Leinster region considered themselves emergent SLTs than in other regions. This is compatible with a higher number of basic grades in this region. There were significantly less expert SLTs and more emergent SLTs in community than other settings, thus community settings were more likely to represent less-skilled respondents. There were significantly more experts and managers in disability settings. Voluntary-setting respondents on the whole represented those with more experience, 41% being in SLTs in their later years. Similarly, specialised-experience for both disability and dysphagia was significant (p<0.001) for grade and skill but not dedicated time (percentage of work in an area), indicating that years of specialised experience influence grading most.

Table 3.2 Grade and self-determined skill of respondents

Demographic		**% Skill**			**% Grade**	
Region	**Emergent**	**Experienced**	**Expert**	**Basic**	**Senior**	**Manager**
Dublin mid-Leinster	35.1	31.8	33.3	35.7	32.9	29.2
West	21.6	16.7	31.0	19.0	19.3	20.8
Dublin North East	22.7	27.3	19.0	23.2	25.0	25.0
South	20.6	24.2	16.7	21.4	22.9	25.0
	p =0 .500			*p =0 .998*		
Work-setting						
Voluntary	26.4	29.1	40.0	27.6	25.8	65.2
Hospital & Rehabilitation	16.1	23.9	34.3	18.4	21.9	17.4
Community	57.5	47.0	25.7	53.9	52.3	17.4
	p=0.029			*p=0.003*		
Population						
Disability	31.6	39.6	50.0	30.0	36.6	75.0
Adult-acquired disorders	17.7	24.3	30.0	17.1	25.9	20.0
Community paediatric	50.6	36.0	20.0	52.9	37.5	5.0
	p = 0.049			*p=0.001*		

3.1.2.3 Work context

Slightly more respondents worked in the Dublin Mid-Leinster region, most likely reflecting the population distribution. Most respondents (42.0%) worked in community settings and along with those working in voluntary and hospital/rehabilitation settings, represented 88.1% of the overall sample. Although not significant, SLTs in the West were more likely to be community clinicians (61.4%). South (74.6%) and West (76.4%) SLTs were more likely to work with paediatric clients (p=0.055) and nearly one-third (31.7%) worked with community-paediatric clients. Adult clinicians were more likely to work with adult-acquired clients (p<0.001) in Dublin mid-Leinster (p=0.055) and hospital-rehabilitation settings (p=0.050). SLTs working with clients with intellectual disability represented one-quarter (25%) of the sample, while approximately one-sixth (16.6%) worked with clients with adult-acquired disabilities. Work-setting was significant for population (p<0.001) with voluntary respondents more likely to work with disability populations (95.2%), community respondents with community-paediatric populations (76.8%), and hospital-rehabilitation respondents with adult-acquired populations (97.1%) indicating clearly differing work environments. The pattern holds for population-age (p<0.001) with hospital-rehabilitation respondents most likely to work with adults (86.8%) and voluntary (77.9%) and community respondents (80.7%) with paediatric clients. Work setting was also significant for years of specialised dysphagia experience (p=0.011) with more community and voluntary respondents most likely to be in their early years, and hospital-rehabilitation respondents more likely to have above 5 years' experience. This identified respondents working with adult populations as having more experience.

The majority of respondents (66.8%) worked with paediatric clients. Underdeveloped elements of services are clearly represented by the categories of children under 2 years (n=5), adolescents (n=4), child & adolescent mental health (n=9) and physical disability (n=7). Intellectual disability and adult-acquired groups (p<0.0001) were likely to have more dedicated time in disability than community respondents, and adult clinicians more likely than paediatric clinicians (p<0.001). Respondents spending the most dedicated time tended to be experienced SLTs. A similar pattern is seen for dysphagia as for disability with hospital-rehabilitation settings ($p<0.001$) and adult clinicians ($p<0.001$) having more dedicated time. This suggests that those working with adult neurological populations are most likely to have more dedicated-dysphagia time.

3.1.2.4 Areas of practice

A total of 119 respondents completed the disability section. Over one-third (38.0%) had under five years' experience and three-quarters (75.4%) had under 15 years' experience. This represents a relatively young-experienced group similar to the broad demographic. While not significant, more respondents in the country regions of South and West (32%, 30%) had later-years' experience than their colleagues in Dublin mid-Leinster (18.9%) and Dublin north-east (17.9%). In total, 58.3% worked more than 80% of their time and 71.4% worked more than 61% of their time in disability representing considerable specialisation. Community settings account for 22.5% of disability clinicians while voluntary settings account for over half (55.8%). The intellectual-disability population represented the majority of the disability sample (56.7%). Similarly most disability respondents (77.3%) worked with paediatric clients. For skill, there were more experts in the West than the South (19%) and Dublin north-east (16.9%), a pattern repeated for the overall demographic.

A total of 116 respondents completed the dysphagia section and tended to be a slightly less-experienced group than their disability colleagues. Most dysphagia respondents (62%) were in their early years and there were less respondents with later-years' experience than in disability. Dysphagia respondents in the West (43.8%) are likely to have more than 15 years' experience. This contrasts with other regions where most respondents were in their early years. Dysphagia also had fewer respondents with most-dedicated time (36.2%). Nearly half (47.4%) of dysphagia respondents worked less than 40% of their time in this area, while only 8.3% worked more than 81% in dysphagia. A third (34.5%) worked in Dublin mid-Leinster and a quarter (26.7%) in Dublin north-east. Dublin regions therefore represent the majority of dysphagia respondents. Voluntary settings accounted for 28.4%, community settings 26%, and hospital-rehabilitation settings 38.8% of the dysphagia sample.

One-third (34.5%) of dysphagia respondents worked with adult-acquired clients, 22.4% with clients with intellectual disability, and 66.4% with adult populations. Dysphagia respondents therefore represent adult-based practice on the whole.

An additional group completed the statements-only section and are neither disability nor dysphagia clinicians. These respondents tended to be predominantly SLTs working in community settings with community-paediatric clients.

3.2 CHOICE OF THERAPIES

This section presents the results of respondents' choice of therapies in disability and dysphagia.

3.2.1. Therapy selections

3.2.1.1 Main therapy choices

For both dysphagia and disability there were a relatively small group of well-utilised therapies and clear favourites (Table 3.3). The scale representing five points of use (always, frequently, sometimes, rarely and never) has been reduced to three levels (always, sometimes and never) to reflect high and low-frequency use. The complete list of ratings can be found in Appendices 12 and 13.

Table 3.3 Most and least-used therapies in order of use

Area	Most-used (Top 5)	Least-used (Bottom 5)
Disability	Hanen	Conductive Education
	Lamh	Aided language modelling
	Communication boards/ books	Cranial Sacral therapy
	Derbyshire Language Scheme	Kidspiration/Inspiration
	Communication passports	Speechviewer
Dysphagia	Texture modification	Surface electromyography (SEMG)
	Thickening liquids	Vitalstim therapy
	Changes in position	Homeopathy
	Double Swallow	Deep pharyngeal neuromuscular stimulation (DPNS)
	Adapted /modified utensils	Intra-oral appliances/prostheses

Mean use (Table 3.4) indicates therapies are often combined with 2.35 the mean number of therapies always used (preferred options) in disability compared to 0.79 in dysphagia. The combined number of therapies always and frequently used can be said to represent the repertoires of clinicians.

Table 3.4 Mean number of therapies used

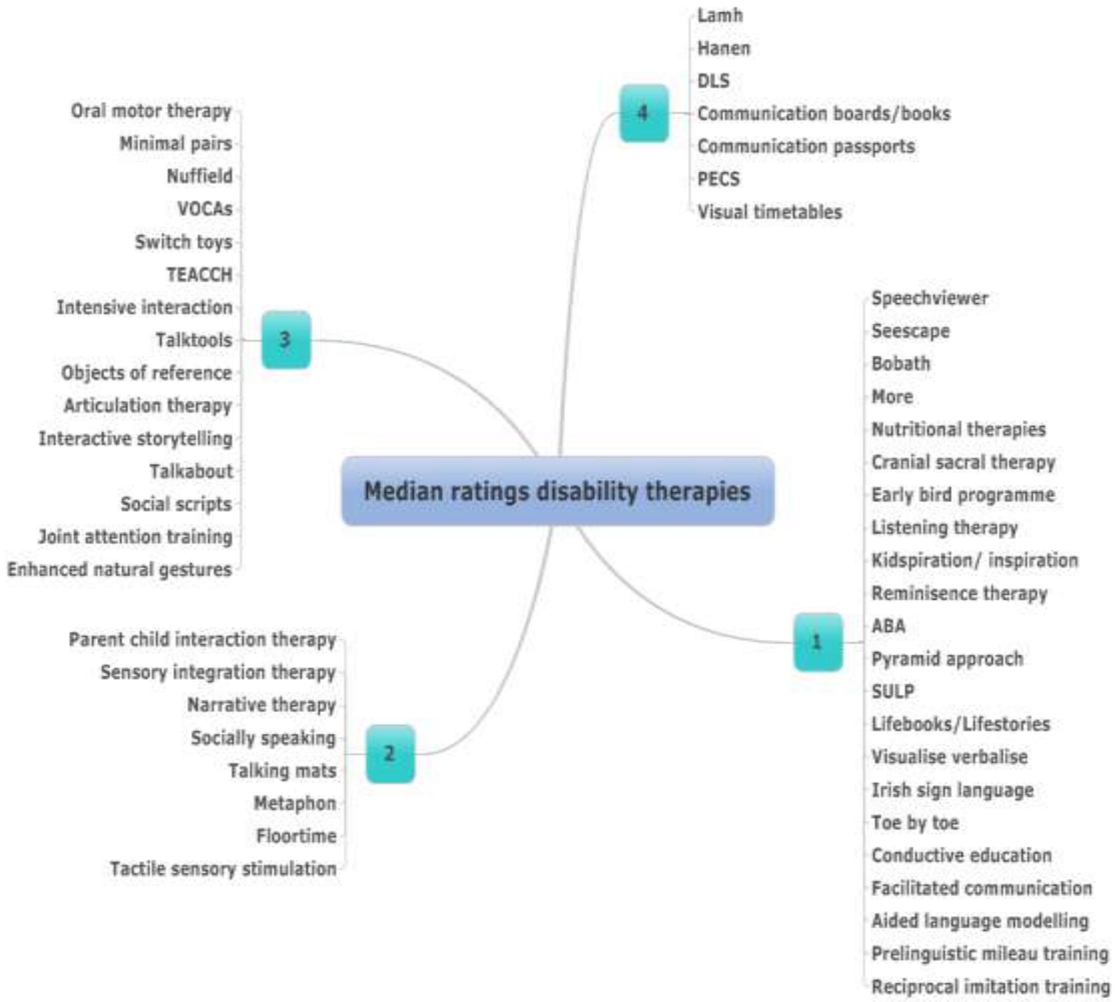
Frequency of use by area of practice	Mean number of therapies used	Standard deviation	Range
Disability			
Always	2.35	2.96	0-15
Frequently	8.25	4.37	1-23
Always plus frequently	10.57	5.41	2-30
Dysphagia			
Always	0.79	1.77	0-9
Frequently	7.61	4.01	0-23
Always plus frequently	8.53	4.54	0-23

3.2.1.2 Choice of disability therapies

At least half the sample always-use five main disability therapies. Hanen (76.7%) and Lamh (75%) are clear favourites being regularly used by three-quarters of disability respondents. This does not vary when ranking is employed although Lamh, an adapted signing system, is chosen by 98% of disability respondents. Nearly equal numbers choose Hanen (75%) which is an interaction and language programme, and Derbyshire (72%), a language programme. The only therapy to change significantly between use and ranking analyses is visual timetables. This ranks fourth in preference but was always-used by only 14% of respondents. The 'sometimes' rating explains this – it is a therapy used by most respondents but mostly on an occasional basis. The same applies to oral-motor therapy which over one-quarter (27.5%) of respondents always-use, but 70% of respondents use at least some of the time.

Use of therapies to reflect occasional use is represented by medians (Figure 3.1). This confirms the picture of a relatively small number of therapies dominating intervention choices (median 4). Additionally, it identifies therapies which are used but less frequently (median 3), and those which tend not to be used (medians 2 & 1).

Figure 3.1 Disability therapies used based on median ratings



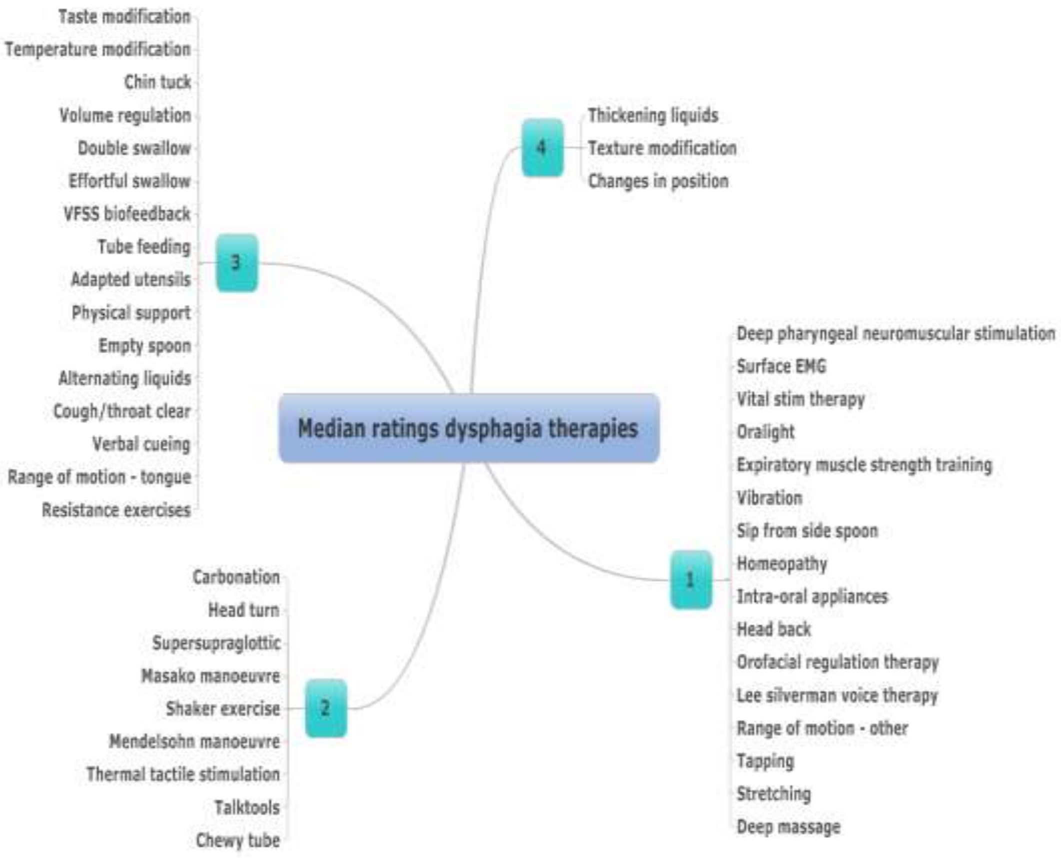
Thus, there were large numbers of never-used or under-used therapies. 30 therapies (57.5%) were rarely or never used by 50% or more of respondents and 16 therapies are never-used by at least three-quarters of respondents. Four of the ten least-used therapies represent pseudoscientific or non-scientific practices and most would not be considered profession-specific. (e.g. Cranial-sacral therapy). Three were technologically-based (e.g. Speechviewer) and one not discipline specific (reminiscence therapy). Of those therapies selected from a search of the literature, three were represented in the 16 least-used (e.g. Aided-language modelling).

3.2.1.3 Choice of dysphagia therapies

In dysphagia, three therapies are used most frequently. These are texture modification (80.0%), thickening liquids (76.6%) and changes in position (70.0%). Three-quarters of respondents selected all three most-used options. There was a clear gap between these three techniques and other therapies as indicated by frequency and median ratings. The next most-used therapies were double swallow (44.2%), adapted utensils (42.5%) and volume regulation (41.2%). Videofluroscopic swallow study biofeedback (VFSSB) was the only technological intervention favoured in the top ten. Use correlated with ranked interventions on the whole although chin tuck moved from 12th to 5th place when analysed by preferred options.

A total of 25 therapies are never-used by 50% or more of respondents and 13 by at least three-quarters of respondents. The least-used therapies (and with a median of 1) were Surface electromyography (SEMG), Vitalstim and Homeopathy, being never-used by 92.5% of all respondents. Three of the ten least-used were technological (e.g. intra-oral appliances); two were non-profession specific (e.g. Bobath) and four were neuromuscular approaches (e.g. Ora-light). Of the 20 least-used therapies, 50% can be considered neuromuscular treatments. The neuromuscular technique to rate highest was range of motion (ROM) exercises for the tongue in 12th place. Nearly half of clinicians (44%) chose one of the six swallow techniques as a preferred intervention.

Figure 3.2 Dysphagia therapies used based on median ratings



3.2.2. Therapy combinations

3.2.2.1 Approaches to treatment

In disability, half of the top-ten items were augmentative and alternative communication (AAC) therapies (e.g. communication passports). Switch toys may also be included in this category if used as single-message-voice-output devices. Hanen and Derbyshire represent language-oriented approaches. Two speech therapies (e.g. minimal pairs) were favoured. Of those rating a median of 4.0, five of the seven were AAC-based and two language-based, suggesting preferred approaches. When choice is analysed by groupings, AAC interventions rated highest (50.3%), followed by speech therapies (35.3%), oral-motor therapies (14.3%) and pseudoscientific therapies (9.0%). Those retrieved from the literature rate lowest (7.0%).

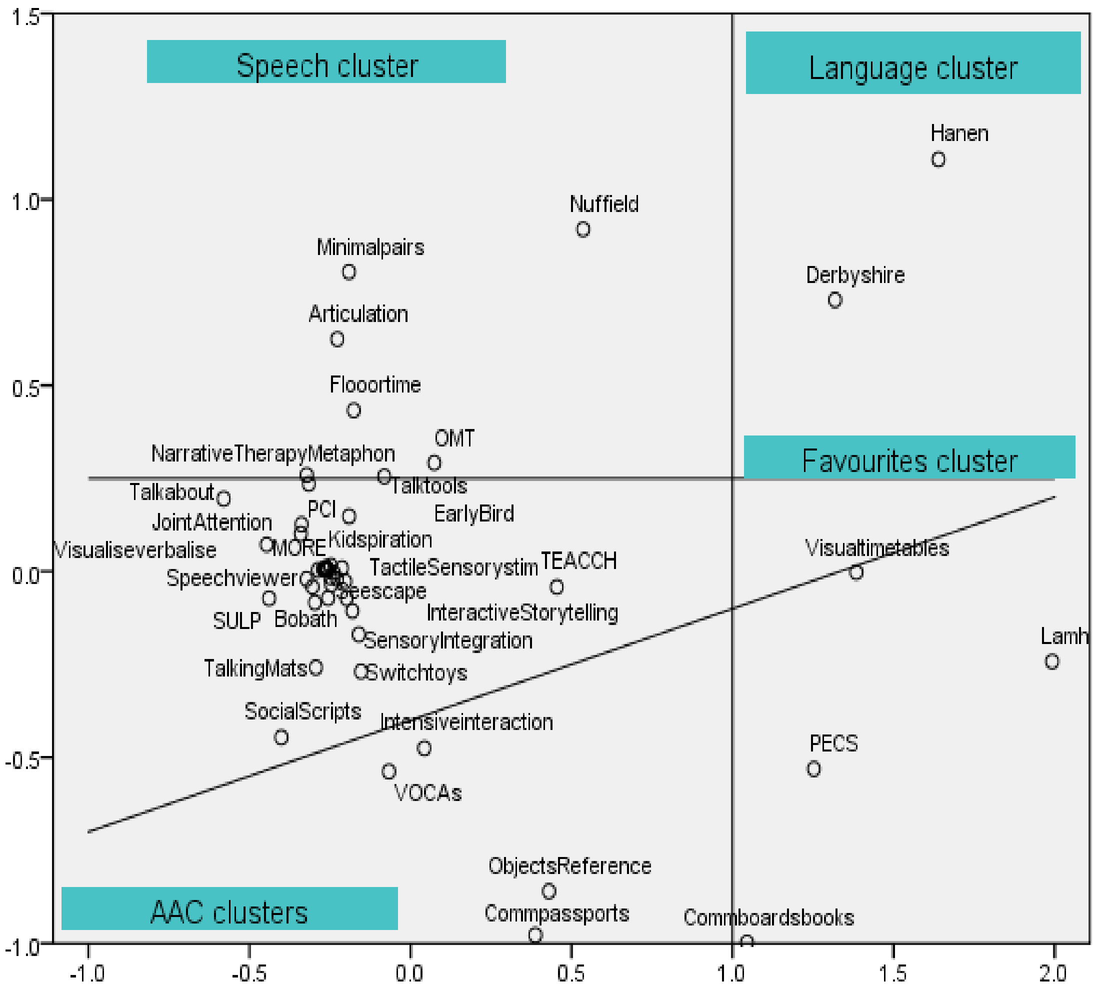
In dysphagia, nearly one third of the top-ten therapies can be categorised as bolus-modification techniques (e.g. volume regulation). One-fifth involved physical strategies (e.g. physical support) and 30% were technique driven (e.g. verbal cueing). Only one technique related directly to the swallow (double swallow). Two of the three rating a median of 4 were bolus-modification techniques. If choice is analysed by grouping, bolus-modification techniques rated highest (43.8%) being significantly impacted by the low numbers using carbonation (5.8%). Swallow therapies were second highest (31.6%) being considerably impacted by the high ratings of the non-rehabilitatory techniques of double and effortful swallows. Technique-based therapies rated third (31.6%) and postural fourth (26.7%). Neuromuscular techniques (8.4%) and physical agents such as SEMG (6.2%) rate lowest. Ten of the 17 therapies rating a median of 1 were neuromuscular techniques

3.2.2.2 Clusters of therapies

It can be postulated that treatment techniques are not used in isolation. Calculating the proximity between therapies to identify clusters was employed using the multivariate method of multidimensional scaling.

In disability, the most-used therapies (e.g. Hanen, PECs) clearly group loosely to the right of the space (Figure 3.3). A number of AAC therapies are grouped in the middle and bottom right of the space. These suggest therapies used together. However, these therapies are relatively distal from each other within their groupings which suggests while grouped, they may be used separately rather than in combination. Some therapies within clusters are also more proximal to each other than to other items in the cluster. For example, Hanen and Derbyshire are more proximal to each other than to other therapies in the cluster. This can be said to form a subdivision of that group.

Figure 3.3 Clustering of disability therapies

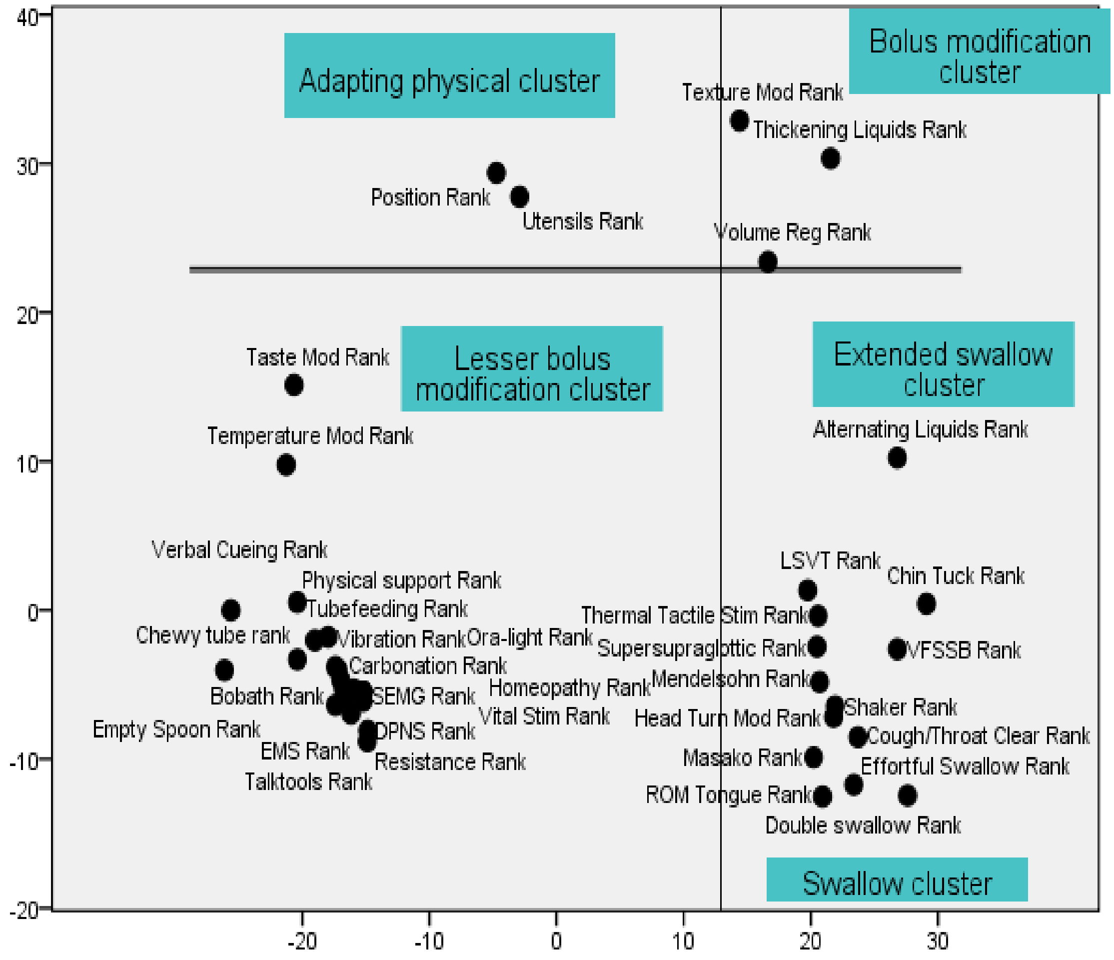


The AAC therapies can also be further subdivided into two clusters, one of which includes the therapy Intensive interaction. This subdivision may be related to population age. While neither adult nor paediatric clinicians differ in use of the AAC therapies to the upper-right of the cluster (e.g. PECS), adult clinicians use and choose the other therapies in the cluster significantly more including communication passports ($p<0.003$), communication boards / books ($p<0.001$), voice output communication aids ($p<0.017$) and objects of reference ($p<0.001$). This suggests a valid sub-cluster.

A speech cluster (e.g. Metaphon, articulation) is identifiable in the middle-top left of the space. Nuffield is loosely tied to this cluster but also distal, suggesting more isolated use. Analysis however, indicates that clinicians who always-use Nuffield are also more likely to always-use minimal pairs, and clinicians who never-use one are more likely to never-use the other ($p<0.001$). This suggests compatibility in use. The same is true for articulation and Nuffield ($p<0.001$). Metaphon, oral-motor therapy and Talktools are more closely positioned together suggesting differentiation of clinicians who use oral-motor therapies; however this is not borne out by analysis. For example, although those who always-use Nuffield are more likely to sometimes use Talktools ($p<0.001$), this group both always and sometimes-use oral-motor therapy ($p<0.001$). Overall, speech therapies tend to be clustered more tightly than in other clusters suggesting overlapping use. Finally, the lesser-used therapies are clustered fairly proximally to the middle and bottom left of the space as a large collection. This may point to a group defined by infrequent use.

In dysphagia, five therapies can be said to occupy space at the top of the chart (e.g. texture modification, adapted utensils). Within this cluster the bolus-modification techniques are most tightly clustered suggesting a bolus-modification cluster. Changes in position and adapted utensils are more proximal to each other and distal from other therapies within this cluster suggesting that they are used in combination with each other. Swallow techniques also form a tight grouping to the bottom and right of the space suggesting combined use of these therapies. Analysis shows that swallow techniques are more used by adult clinicians. A number of other therapies fit within this cluster by virtue of their proximity to these items including thermal-tactile stimulation and cough/throat clear. It can be postulated that clinicians use these therapies together with the swallow techniques to directly target the pharyngeal functions suggesting reliability of clustering. Chin tuck and VFSSB while slightly more distal to the cluster are more proximal to this group than any other indicating they also focus on swallow intervention. Taste and temperature modification form a small cluster in the left-mid space and although not frequently-used, this suggests they may be used in combination with each other but not necessarily other bolus-modification therapies from which they are distal. Lesser-used therapies as for disability, occupy the bottom left space being more proximal to each other and distal from other therapies.

Figure 3.4 Clustering of dysphagia therapies



Thus, the 52 disability and 45 dysphagia therapies can be reduced to a couple of clusters of intra-related items. This clustering also eliminates non-used therapies suggesting a maximum of 40 disability and 37 dysphagia therapies are utilised. It is thus reasonable to subdivide disability and dysphagia therapies into clusters (Appendix 14).

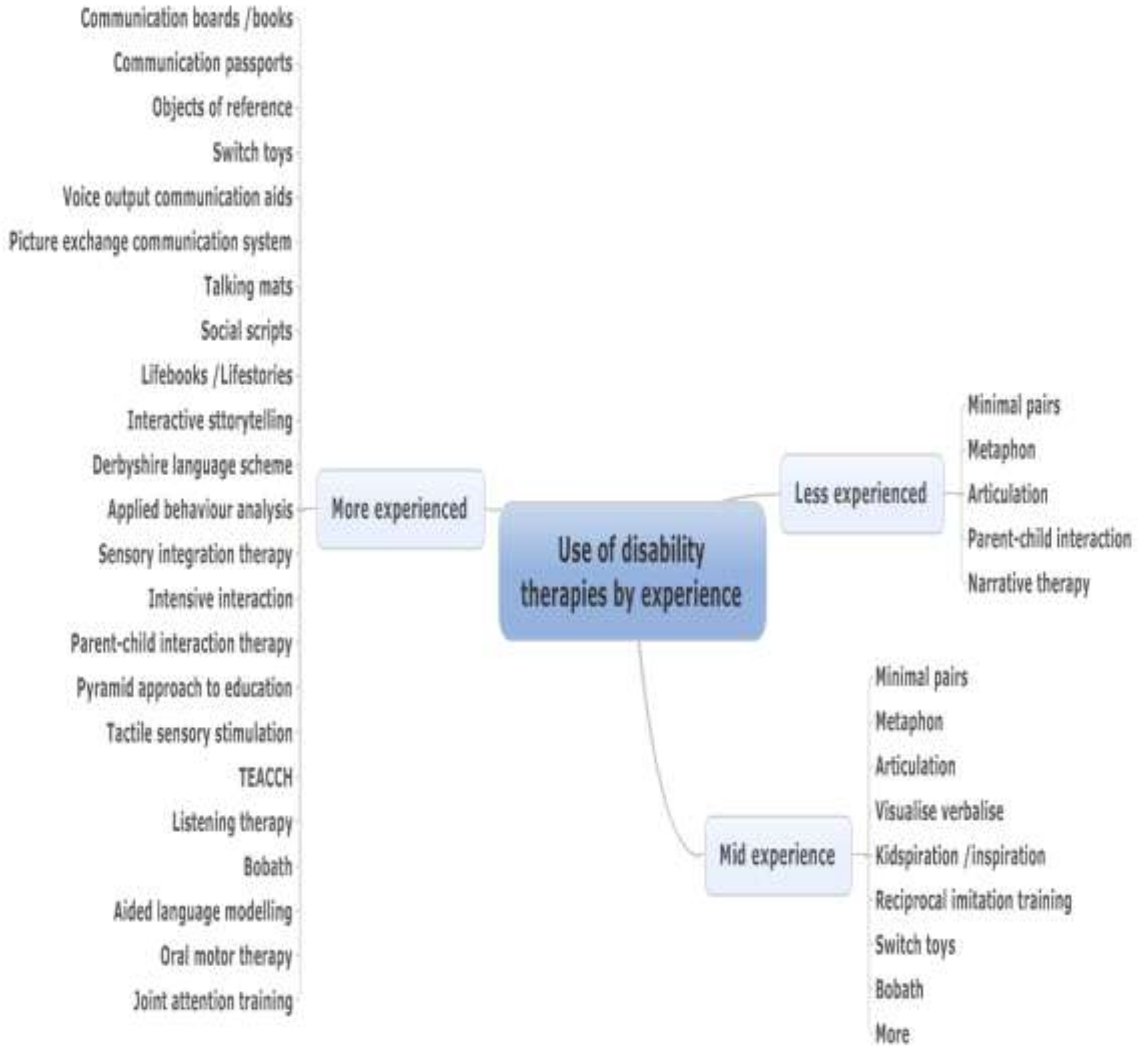
3.2.3. Therapy selections by demographics

3.2.3.1 Therapy selections by experiential demographics

Low cell counts in analysis of some therapy-demographic relationships (e.g. Kidspiration) reflected the degree to which respondents were using and not using individual therapies. Most therapies did not demonstrate a difference in use with experience. For disability, the main exception was communication boards/books which was significant for six experiential variables including specialised experience, skill and grade (Appendix 15). SLTs in the early years were least likely (52%) to use this therapy. Increasing use was seen with accumulated experience rising to over two-thirds (68%) of SLTs in their later years using it. The developmental pattern was further highlighted via the original groupings with 35.7% of SLTs with under 2 years' experience using this therapy, rising sequentially to 77% of clinicians with 25+years. The overall picture was one of increased use with increased experience regardless of how it is measured.

Dedicated time was the demographic which had most impact on the use of disability therapies generally (13 in total) and AAC therapies specifically, those with most time being most likely to always-use AAC therapies (Appendix 15). SLTs with most time were most strongly represented ($p<0.0001$) by voluntary organisation and intellectual-disability clinicians, and least by community-paediatric respondents. Those with most experience, more than a professional qualification, as well as senior SLTs and managers also chose more literature-based therapies. The original group of specialists were least likely to use literature-based therapies. The accumulation of therapies with experience is clearly represented in Figure 3.5.

Figure 3.5 Significant differences in disability therapy choices and use by experiential demographics



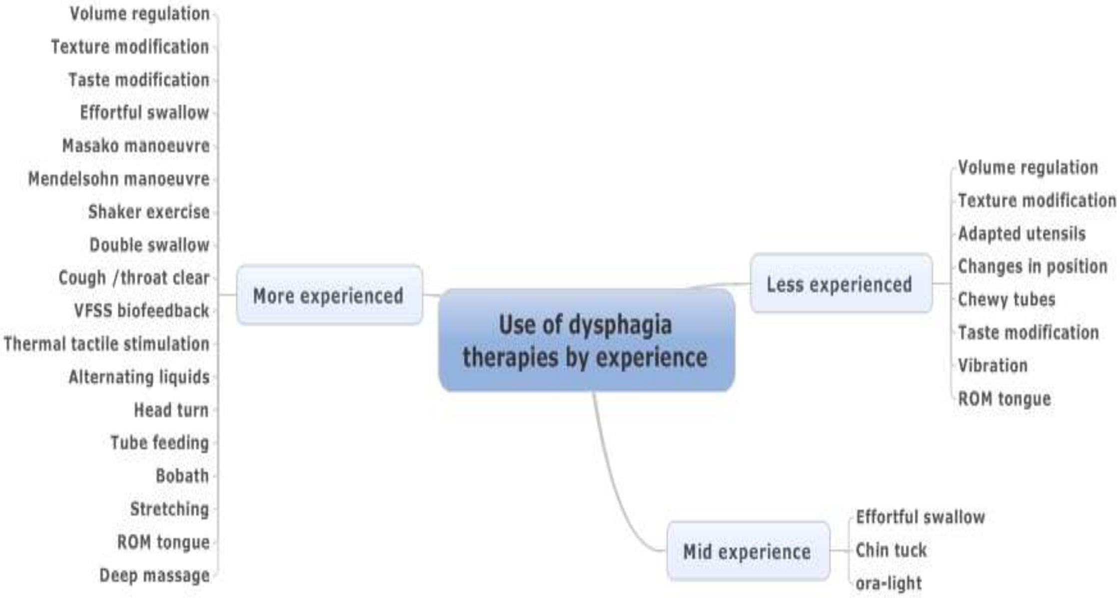
Less-experienced clinicians also showed clear differences for speech therapies. For example, there was an increasing trend towards never-use for articulation with experience (20.0%, 34.0%, and 44.4%). For specialised experience however, the middle group were least likely to use it.

For dysphagia, most therapies did not demonstrate a difference in use with experience. The exception was volume regulation which revealed the most differences and was chosen most by basic grades (p<0.006) who were 100% least experienced, but used most by the longest qualified (p<0.011) and most experienced (p<0.011). SLTs in their middle years showed a dip in use (52.1%, 23.9%, 65.2%) being most likely to sometimes-use and never-use this therapy. Contradictions were also apparent in some other bolus-modification therapies and tube feeding. While there was fairly even use of tube feeding, SLTs in their early-years were most likely (54.5%) to never-use this therapy with the middle group most likely (22.2%) not to never-use it. The most-experienced (p<0.035) and most-specialised SLTs (p<0.008) were most likely to choose tube feeding. However, respondents with a professional-only qualification were also more likely to always-use this therapy (23% vs. 17%) and to never-use it (43.9% vs. 23.1%). Given that years of experience and further qualification were related positively (p<0.0001) an explanation does not result from qualification status.

For dysphagia instrumentation, SLTs in their middle years were more likely (45.6%) to utilise VFSSB. This contrasts with 25.5% of SLTs in their early years and 22.7% in their later years. For the original groupings, specialists showed more choice of instrumentation therapies, with no usage for novices and a trend of increasing use with increasing experience except for expert SLTs who showed decreased use. This pattern of reduced usage in higher skills levels was replicated for neuromuscular treatments.

Swallow techniques appear to be used based on dedicated time with increased use with more time (Appendix 16). For example, use of the double swallow rose sequentially with increased time (31.4%, 44.4% and 65.8%). However, while the effortful swallow was most sometimes-used by those with most dedicated time and medium-specialised experience, those with most-specialised experience were most likely to never use it. Those with more dedicated time in dysphagia were most represented by the adult-acquired respondents (p<0.001) and adult settings (p<0.001) which suggests population criteria may explain this outcome especially as those with most dedicated time in dysphagia were equally represented by the various levels of experience. Significant therapies based on experience are shown in Figure 3.6.

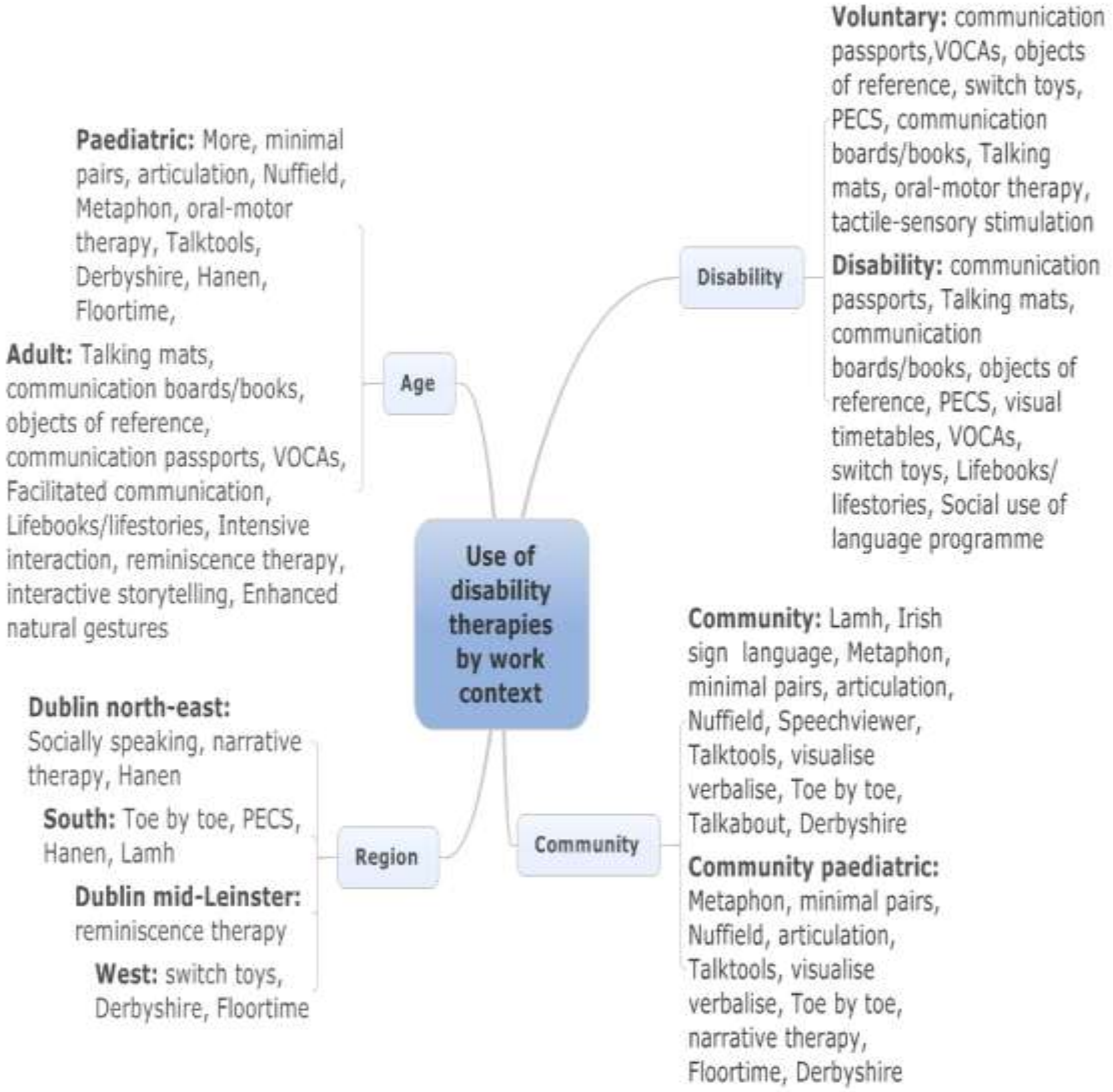
Figure 3.6 Significant differences in dysphagia therapy choices and use by experiential demographics



3.2.3.2 Therapy selections by work context

At a regional level, few effects were noted although West respondents were most likely to use the Derbyshire (82.7%) and Floortime (23.3%). Fewer differences were evident in dysphagia. Significant relationships increased when other work-context demographics were considered (Figures 3.7 and 3.8). Adult and voluntary-organisation clinicians and those working in intellectual disability were more likely to use AAC therapies. Visual timetables was the only AAC therapy to cross the population divide. Manual systems were used more by SLTs working in community settings. SLTs in community settings serving community-paediatric populations were more likely to use speech therapies. The only exceptions were oral-motor therapy and tactile-sensory stimulation which were used more by voluntary-organisation respondents. These therapies target function more than speech. The pattern of work setting and population demographics impacting on choice continued for other categories of therapies, for example, language-based therapies which are utilised more in community than non-community settings. Clear work-setting boundaries are indicated.

Figure 3.7 Significant differences in disability therapy choices and use by work-context demographics

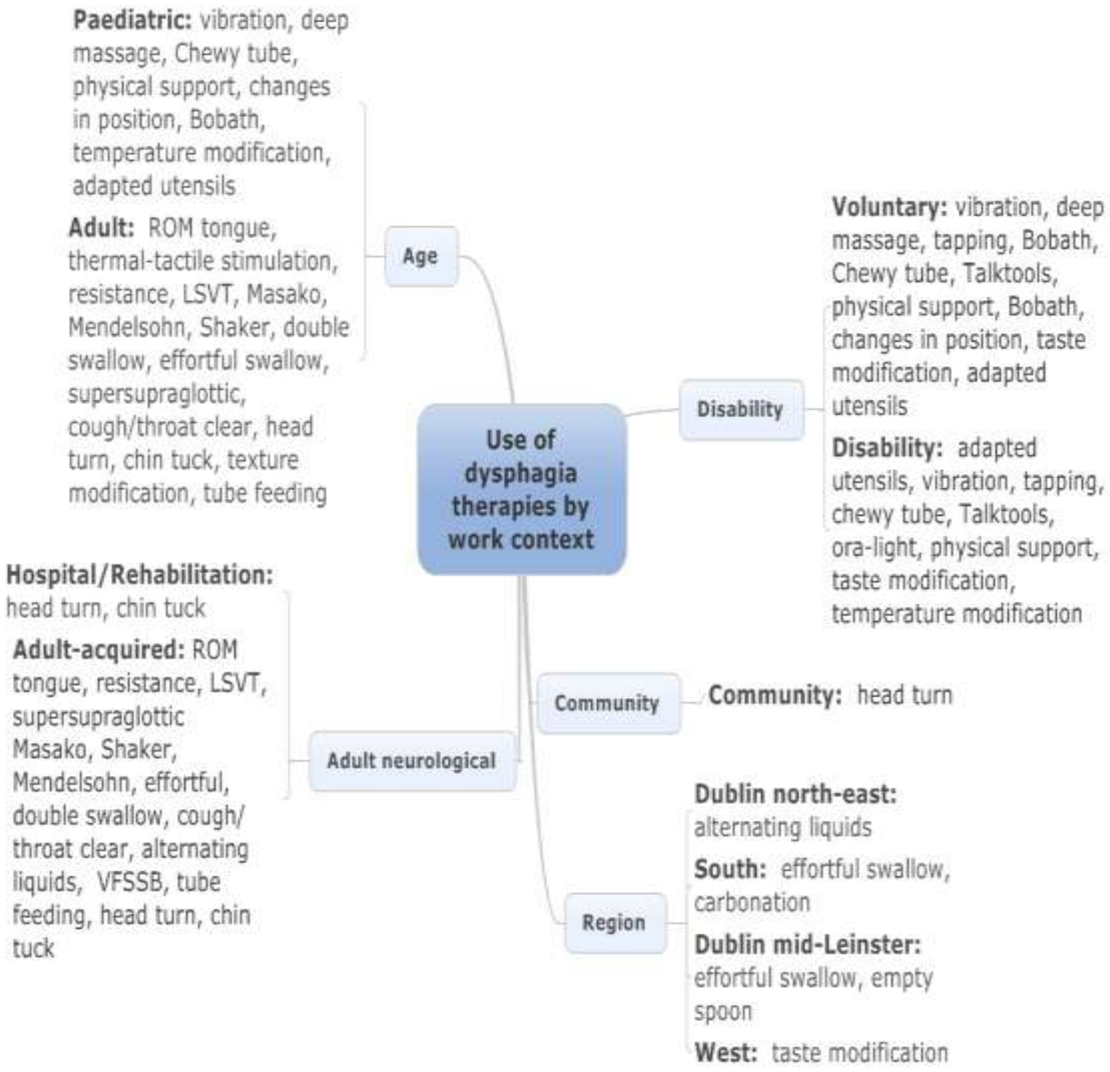


For dysphagia, respondents based in hospital-rehabilitation and community settings responded more similarly than those in voluntary organisations. The suggestion is of clearly utilised neuromuscular therapies based on work and population demographics. Neuromuscular therapies (e.g. stretching) were used infrequently by a small number of respondents. Only ROM-tongue and resistance had medians of 3.0 indicating isolated exercises may be valued. Dublin regions, mid-specialised, adult-acquired and adult clinicians were much more likely to use the various swallow techniques. Some of the usage differential was stark. For example, those with most-dedicated time (2.30/10), specialists (2.25), older-client (2.1), rehabilitation (1.75), adult-client (1.52) and community (1.27) clinicians ranked these therapies higher than those working in voluntary organisations (0.34/10) suggesting use is localised to adult-based services and non-transferable. This include dedicated time as adult-acquired clinicians were most likely to be working more time in the area ($p<.0001$) than their intellectual disability colleagues.

Adult-acquired and hospital-rehabilitation clinicians used the compensatory postures of head turn and chin tuck more than intellectual disability and voluntary organisation clinicians, although those in community settings showed most preference for head turn. Along with cough/throat clear, these techniques can be related to work on pharyngeal function which ties in with adult clinicians more frequent use of swallow techniques. Paediatric, intellectual-disability and voluntary clinicians were more likely to use the compensatory technique of physical support. The intellectual-disability group preferred Bobath and position changes as did the paediatric group.

Similar to previous findings, the paediatric, intellectual-disability and voluntary-organisation clinicians preferred or used more the bolus strategies of temperature modification and taste modification. These suggest specific age related uses of some minor and major bolus-modification therapies. Adult and adult-acquired clinicians also showed more use and or preference for VFSSB and tube feeding. Those working in voluntary organisations, with intellectual disability and in paediatrics were more likely to use adapted utensils. These indicate clear setting choices.

Figure 3.8 Significant differences in dysphagia therapy choices and use by work-context demographics



3.2.4. Summary

Clear differences in use and groups of use are evident by both experiential and work-context demographics. The suggestion is that choice of therapies is both relatively limited in term of volume and defined by the area of practice a clinician works in, with little transfer across those boundaries. More therapies were accumulated with increasing experience.

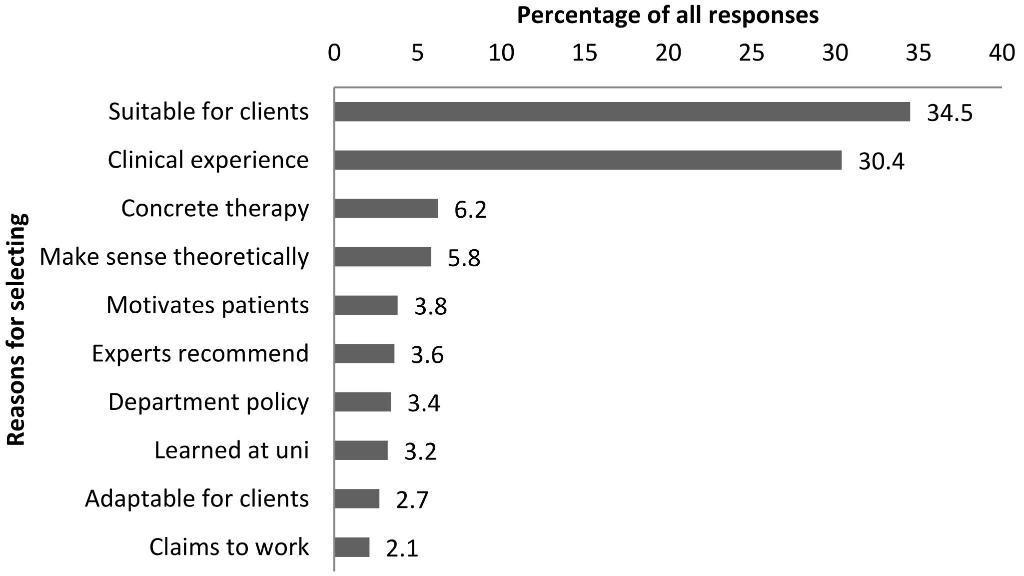
3.3 REASONS FOR SELECTING THERAPIES

Respondents were offered a number of potential reasons to explain their therapy choices which this section highlights.

3.3.1. Overall reasons for selecting therapies

Client suitability and clinical experience dominated as the main reasons interventions were used, these two reasons alone accounting for nearly two-thirds of all reasons given (Figure 3.9). The reason least used was '*it doesn't matter which treatment I use*' (0.1%).

Figure 3.9 Top ten overall reasons for selecting therapies



The pattern of reasons appeared fairly consistent between disability (n= 1621 responses) and dysphagia (n=1368 responses). Client suitability was the primary reason, although disability clinicians most cite this reason. Dysphagia clinicians showed slightly higher use of clinical experience and a slightly higher preference for the reasons of concreteness, theory and expertise. Disability clinicians preferred patient motivation. Clinical experience is the only non-significant reason between the groups among the main reasons (Table 3.5).

Table 3.5 Significant findings for selecting therapies by areas of practice

Main reasons for always use	**Disability** n	%	**Dysphagia** n	%	**p value**
Client suitability	695	42.9	435	31.8	<0.001
Clinical experience	426	26.3	387	28.2	0.219
Concreteness	65	4.0	150	11.0	<0.001
Theory as a guide	65	4.0	114	8.3	<0.001
Valuing of expertise	50	3.1	70	5.1	0.005
Patient motivation	96	5.9	27	2.0	<0.001

3.3.2. Reasons for using specific therapies

3.3.2.1 By area of practice

60% disability and 35.5% dysphagia therapies were predominately used for client suitability reasons (Appendix 17). AAC and bolus-modification therapies were characterised by this reason. Suitability was used to explain reasoning between AAC and non-AAC items, for example, between Hanen and Lamh (p=0.001) and Derbyshire and communication boards/books (p=0.002). It also explained a difference between the bolus-modification therapy of thickening liquids and the swallow technique of Shaker (p=.012).

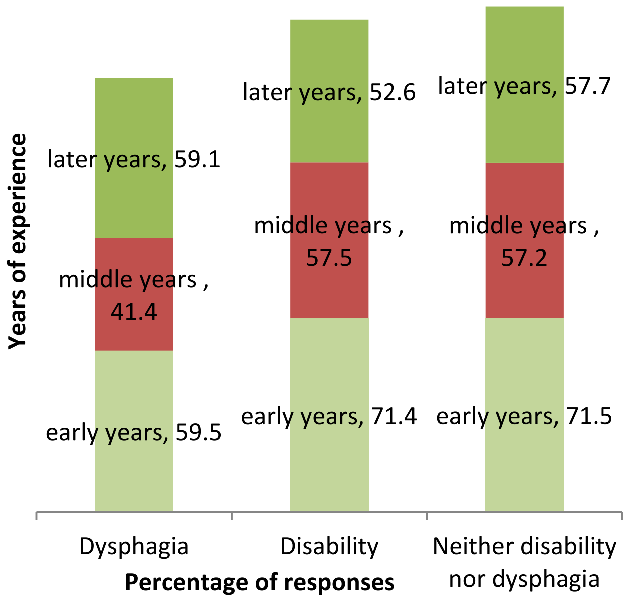
In disability, 17.3% of therapies were primarily explained by clinical experience compared to 31% in dysphagia. While experience did not tend to differentiate reasoning between therapies, it was on the whole used to support neuromuscular therapies, less-scientific practices in disability and lesser-used therapies in dysphagia. It also explained two favoured therapies in disability (Hanen and Derbyshire), although these therapies also showed high use of client suitability. These two main reasons accounted for 77% of the dominant reasoning for all therapies in disability and 66.7% in dysphagia.

A few other therapies showed a scattering of main reasons. In disability these involved claims of working, motivation and availability and mainly applied to technological or non-scientific options. The use of motivation for switch toys (35.8%) and reminiscence therapy (57.1%) suggests targeted reasoning. In dysphagia, minor reasons included theory (12.5%), claims of working (13.5%) and motivation (6.25%). Use of such reasoning may apply to specific categories of therapy. For example, the lesser-used swallow techniques (e.g. Shaker) were most used because they made sense theoretically. The technologically-based therapies (e.g. VFSSB) were used for reasons of concreteness. Some neuromuscular therapies (e.g. ROM-tongue and Vitalstim) also showed high use of the reason *'claims to work'*. However, these therapies had very low numbers of users – meaning they did not feature highly in the main reasons. Some therapies showed a near balance of both these main reasons although this combined reasoning was more evident in disability than dysphagia.

3.3.2.2 Reasons for use by experiential demographics

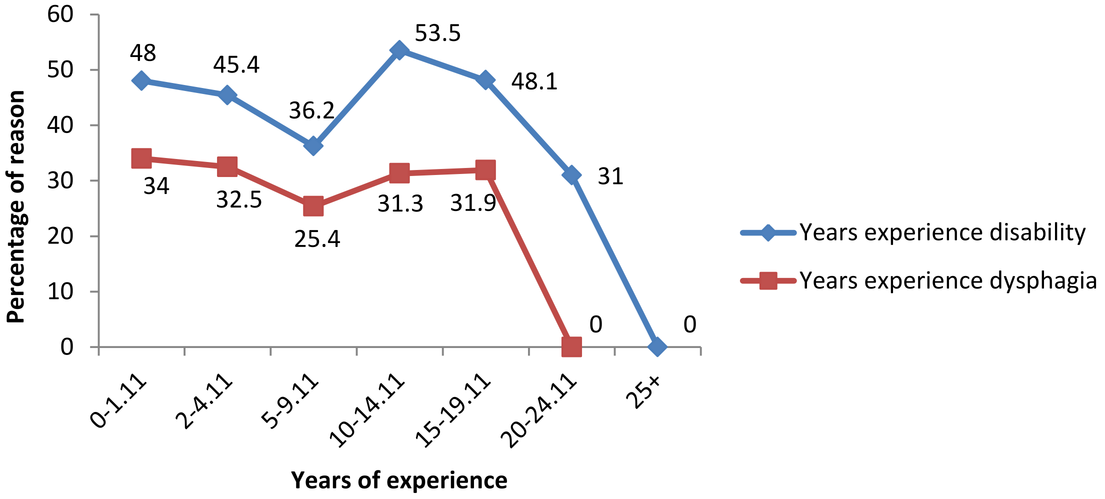
SLTs in their early years showed highest use of client suitability with little change in use of this reason between the middle and later years of experience. Dysphagia SLTs in their middle years showed a relative dip in use of this reason, being more inclined to use clinical experience than their disability colleagues.

Figure 3.10 Percentage of client suitability as a reason for always-use by years of experience and area of practice



When analysed by original groupings (Figure 3.11) a trend of reduced use of client suitability with increasing experience is suggested.

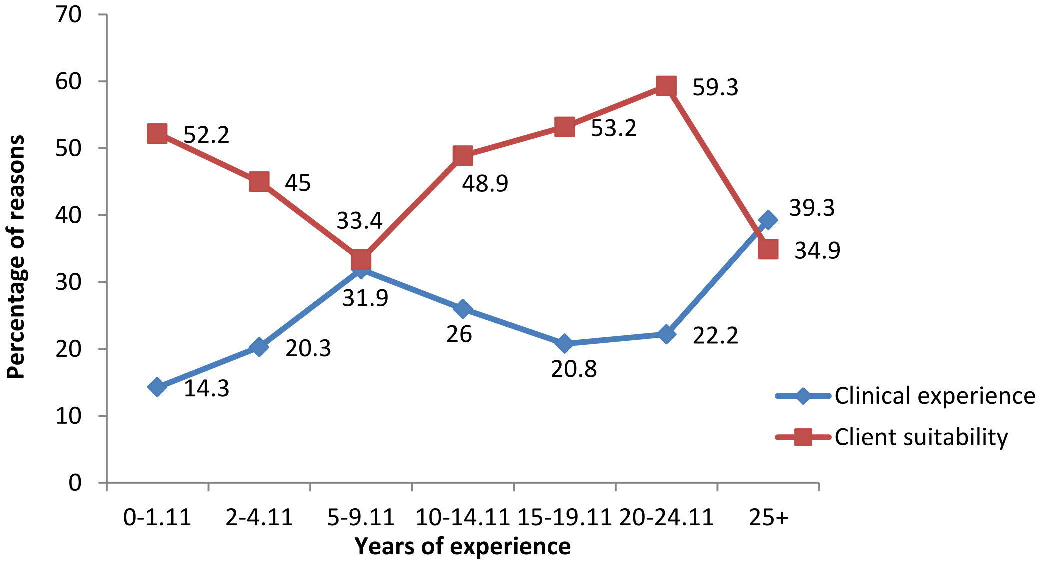
Figure 3.11 Percentage use of client suitability by original years of experience groupings and areas of practice



This pattern remained constant for other experiential variables including grade, qualification and skill. It changed only with dedicated time in disability (51.4%, 62.2%, and 63.5%) and dysphagia (48%, 48.4%, and 56.0%) where small upward trends were noted. The indications are that those with less experience and more dedicated time were more likely to cite client suitability.

Observing the original groupings for years' experience (Figure 3.12) and the two main reasons may provide some insight. There appeared to be an increasing reliance on clinical experience over time in the early years, followed by balance in the use of the two main reasons, followed by a return to favouring client suitability which again diminishes towards the later years. This pattern remained stable for general and specialised experience. Except for those periods where a balance is observed, there also appears to be an inverse arrangement within most groups e.g. groups favouring client suitability tend to have lowest relative rates for clinical experience.

Figure 3.12 Percentage use of two main always-use reasons by original years of experience groupings



3.3.2.3 Therapies of significance for experiential demographics

For the two main reasons a number of therapies were statistically significant (Appendix 18). Approximately 10% of all therapies were significant for years' experience, but not especially for specialised experience. 5% of therapies were significant for grade. On the whole fewer therapies were significant for dysphagia. Thickening liquids is a dysphagia therapy for which all groups cited suitability most rather than experience.

Those with less years' experience (as well as less-specialised experience and basic SLTs) were most likely to reference suitability for all significant therapies. These included oral-motor therapy (88.9%), Facilitated communication (100%), thickening liquids (86.9%) and texture modification (80.8%). The only exception was for AAC therapies for which both basic and senior SLTs tended to cite suitability confirming this reason as an important in the selection of AAC therapies. Those with most years' experience were most likely to reference clinical experience. This applied to oral-motor therapy (60.0%), Facilitated communication (100%), Intensive interaction (81.8%), thickening liquids (53.3%) and VFSSB (75.0%). An inverse arrangement based on experience was seen across a number of therapies including VFSSB, oral-motor therapy, thickening liquids and Facilitated communication. The least experienced predominately cited suitability and the most experienced clinical experience suggesting reasoning was related to experience rather than specific therapies. The exceptions to the general trend were for lesser-used therapies (e.g. carbonation), with the least-experienced SLTs citing experience most, and the most-experienced citing suitability most. The trend to use clinical experience more with experience was seen across a number of experiential variables including skill.

SLTs in their middle years were far more likely to reference clinical experience for 5% of therapies than those with less or more experience. Their similarity to other groups tends to be inconstant suggesting a time of change. For dysphagia therapies, emergent SLTs were most likely to cite experience similar to expert SLTs, and experienced SLTs were most likely to cite suitability. For all disability therapies, emerging SLTs were most likely to cite suitability and expert SLTs most likely to cite clinical experience. On the whole, the middle group of experienced clinicians were equally likely to cite the two main reasons.

3.3.2.4. Reasons for use by work-context demographics

In disability, all regions showed higher values for suitability (approximately 2:1) except for those in the West (53%: 47%). The indications are that those in the West may be a different demographic and though not significant, they were more likely to work in community settings. Analysis of minor reasons indicated some subtle differences between mainly original groupings. Hospital SLTs (17.6%), dysphagia SLTs (18.0%) and SLTs working with older clients (16.5%) showed a higher preference for concreteness.

3.3.2.5 Therapies of significance for work-context demographics

A great volume of individual therapies were significant for work context (Appendix 19), particularly for disability (21% compared to 4.4% for dysphagia). Seven (13.5%) disability therapies were significant for population. Community SLTs were more likely to cite experience and those in voluntary settings to cite suitability. In dysphagia, adult-setting respondents also cited client suitability more.

3.3.3. Summary

Client suitability was a dominant reason but less favoured with increasing experience. Disability clinicians showed a higher preference for suitability reasoning and a lower preference for experience reasoning. Clinical experience was used more with increasing experience. Indications are that community clinicians relied more on clinical experience as a reason than other groups. Of all variables, the work-setting demographic produced most differences in use of the two main reasons.

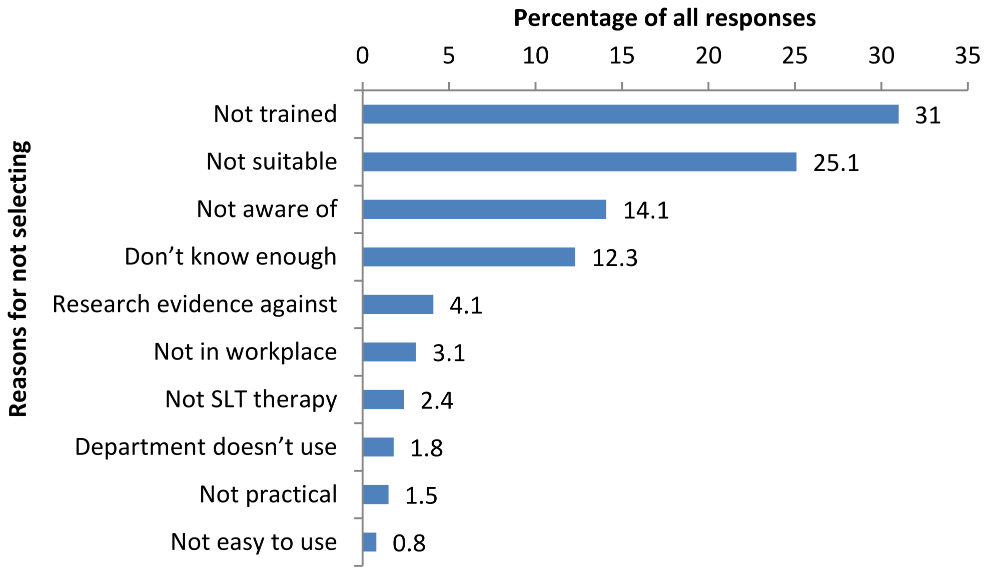
3.4 REASONS FOR NOT SELECTING THERAPIES

Respondents were offered a number of potential reasons to explain their reasons for not choosing therapies which this section highlights.

3.4.1. Overall reasons for not selecting therapies

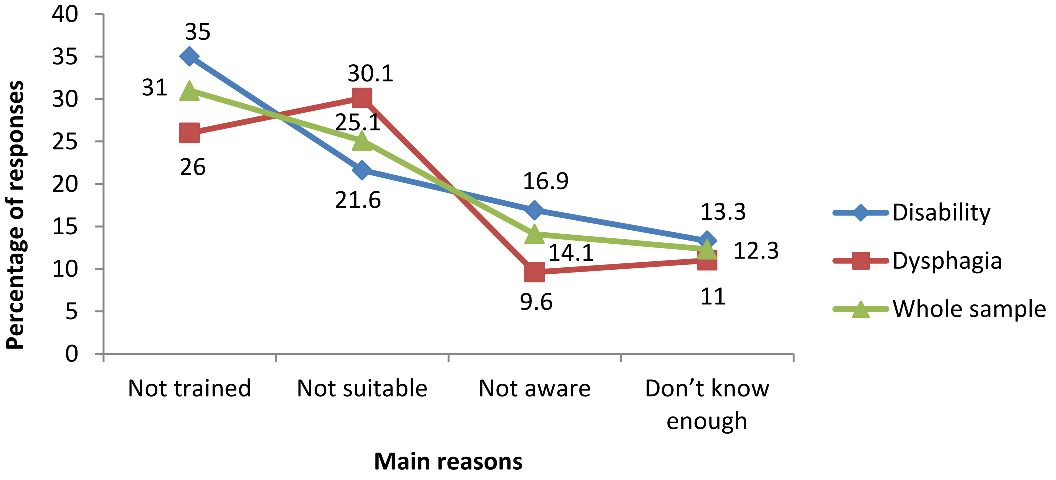
Dominant reasons (n = 5659 responses) for not selecting therapies were lack of training, lack of suitability, lack of awareness and *'Don't know enough'* (Figure 3.13). These accounted for 82.5% of all responses indicating a limited reasoning range. Knowledge-based reasons, representing three of the main reasons, accounted for over half (57.4%) of clinicians' decisions not to use a treatment. The least used reason was *'not engaging'* (0.20%).

Figure 3.13 Top ten reasons for not selecting therapies



Those working in disability (n= 3263) cited training most (Figure 3.14). When non-training knowledge reasons are combined, suitability as a reason for disability respondents dropped to third place. Dysphagia clinicians (n=2396) highest preferences was for lack of suitability and they placed a slightly higher value on lack of research evidence (5.1%:3.5%), this being the fifth reason overall.

Figure 3.14 Main reasons for not selecting therapies by area of practice



All differences between the two areas of practice are significant (Table 3.6).

Table 3.6 Differences in use of main reasons for not selecting therapies by area of practice

	Disability		**Dysphagia**		**p value**
	n	%	n	%	
Lack of training	1012	31.0	633	26.4	<0.0001
Lack of suitability	819	25.1	721	30.1	<0.0001
Lack of awareness	555	16.9	230	9.6	<0.0001
Don't know enough	434	13.3	264	11.0	0.010
Lack of knowledge*	861	26.4	494	20.6	<0.0001

**combines lack of awareness and don't know enough reasons*

3.4.2. Reasons for not selecting specific therapies

3.4.2.1 By area of practice

Some therapies were so heavily used that the sample for non-use was too small to generate any real meaning (e.g. thickening liquids n=3). Lack of training was primary for 42.3% of disability and 22.2% of dysphagia therapies (Appendix 20). In dysphagia, use of this reason was typically applied to neuromuscular therapies or technology targeting neuromuscular functions. For 38.5% of disability therapies, lack of suitability dominated, especially for AAC therapies. It accounted for 55.5% of dysphagia therapies, primarily swallow, bolus-modification and postural techniques. Knowledge-based reasons were cited most for 13.5% of disability therapies, rationalising all literature-based therapies. In dysphagia, it represented the most used reason for two neuromuscular therapies, two feeding techniques and one lesser-used bolus modification technique.

Negative research evidence mostly justified why oral-motor therapy (35.7%) and Talktools (45.1%) were not used in disability and why Talktools (24.2%) was not used in dysphagia. It was the second reason accounting for non-use of the pseudoscientific practice of Listening therapy (30.9%) although lack of training ranked first (46.4%). Lack of training also ranked first for other controversial treatments such as homeopathy (31.0%), sensory-integration therapy and Cranial-sacral therapy, with only one-fifth to one-quarter of respondents identifying them as non-SLT therapies.

Dysphagia SLTs referenced practical issues more, specifically availability for four therapies, primarily equipment-based therapies (e.g. VFSSB) although 30% of respondents in the utensil group also chose lack of suitability. Taste (27.6%) and temperature modification (36.4%), both rated primarily as *'not practical'*.

A few therapies in disability showed heavy combined reasoning but most had one dominant reason. Dysphagia therapies were more likely to show combined reasons and this reflected a variety of reasons. Some were cited for the two main reasons, (i.e. thermal-tactile stimulation, ROM-other and intraoral appliances). Non-use of adapted utensils was explained equally by both workplace availability and lack of suitability. Temperature modification was equally not practical and not suitable. Talktools was equally explained by lack of training, suitability and research. This may reflect more varied decisions making in dysphagia. Significance testing on lesser-used therapies suggests reasoning is different for different therapies (Table 3.7).

Table 3.7 Comparison of reasoning for not using lesser-used therapies

	Speech viewer / reminiscence therapy	**Listening therapy / Aided language modelling**	**SEMG /head back**	**DPNS / carbonation**
Lack of training				
Therapy 1	30.6	83.3	77.8	69.6
Therapy 2	26.8	20.0	4.6	8.0
p value	0.623	<0.0001	<0.0001	<0.0001
Lack of suitability				
Therapy 1	9.4	9.4	9.7	20.3
Therapy 2	44.3	7.1	86.2	24.0
p value	<0.0001	0.773	<0.0001	0.664
Lack of knowledge				
Therapy 1	60.0	16.7	12.5	10.1
Therapy 2	27.8	72.9	9.2	68.0
p value	<0.0001	<0.0001	0.594	<0.0001

Exploring reason for groups of therapies also helps elucidate decision making. For example, speech and AAC therapies were mostly not used because of lack of suitability. Behavioural therapies (e.g. TEACCH, applied behaviour analysis) evidenced a higher frequency of training reasoning (51.0%) than average (31.0%) even despite the absence of training programmes attached to some behavioural therapies. Training was also high for least-used, interaction-based, non and pseudoscientific therapies, and both discipline and non-discipline specific therapies.

For non-SLT, non-scientific therapies across both areas of practice, one would have expected to see reasoning such as not-SLT therapy and scientific responses dominating the response set. This was not the case. While 17.5% of respondents did identify that these therapies were in fact not SLT therapies, and while there was an increase in responses citing negative research evidence (17.5% vs. average 4.1%), training (37.0%) and knowledge-based (31.4%) reasons dominated. Scientific reasons themselves accounted for only one-fifth (19.8%) of all responses for pseudoscientific therapies.

3.4.2.2 Reasons for not selecting therapies by experiential demographics

For disability (n=3242 responses), there was an increasing trend to use lack of training with accumulated experience, a decreasing trend to use lack of knowledge, and a relatively unchanging use lack of suitability (Figure 3.15). The trends for dysphagia (n=2396 responses) are similar (Figure 3.16) except for middle group who show a dip in use of training and a small increase in suitability.

Figure 3.15 Use of the main reasons for not selecting disability therapies by experience

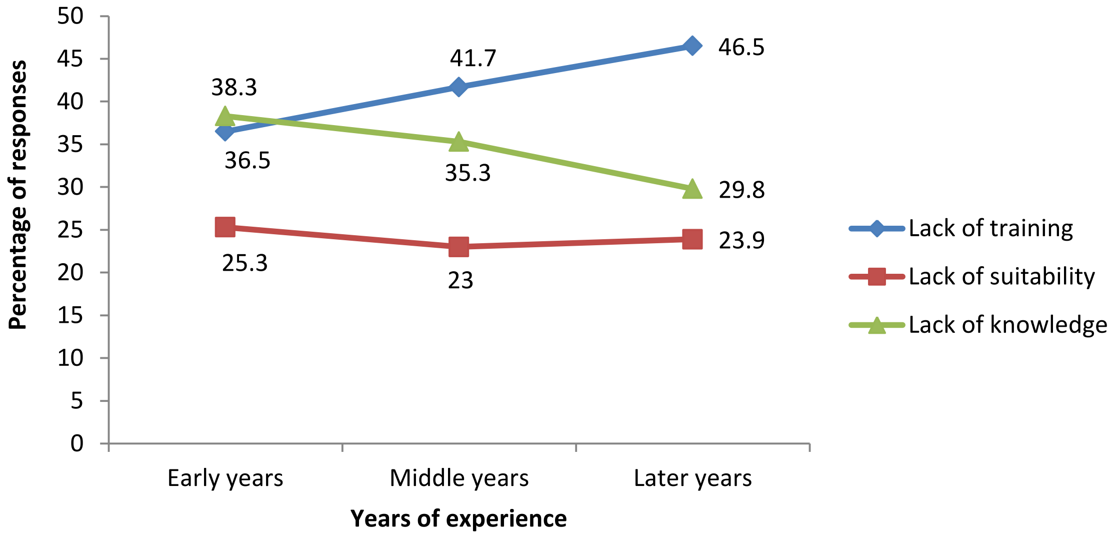
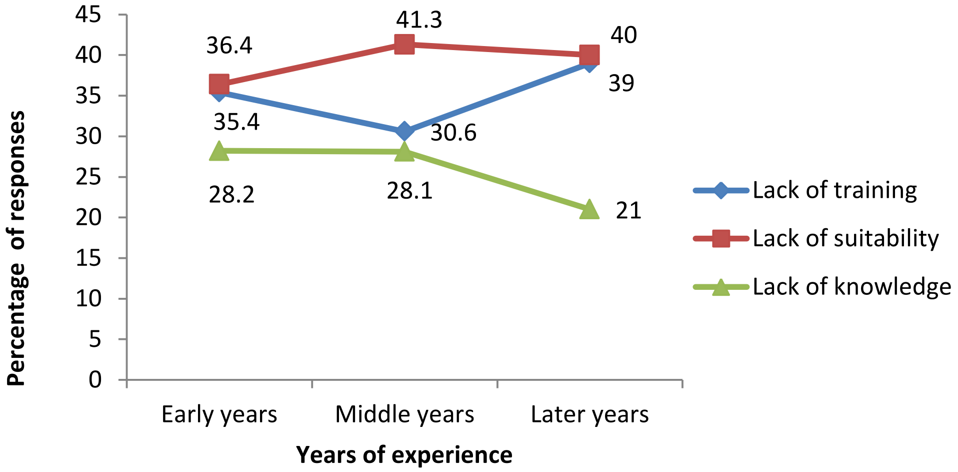


Figure 3.16 Use of the main reasons for not selecting dysphagia therapies by experience



For other experiential demographics the patterns remained the same. For example, while disability and dysphagia basic and senior SLTs showed a balance in use of lack of suitability, senior SLTs were slightly more likely to reference lack of training and basic SLTs to reference lack of knowledge. The two main knowledge-based reasons were used interchangeably between groups. Least experienced respondents tended to show less range between reasons.

3.4.2.3 Therapies of significance for non-use reasons by experiential demographics

For the three main reasons, a range of therapies were significant (Appendix 21). Trends observed previously tended to be maintained and most experiential demographics produced significant differences in reasoning. Years of experience (17.3% disability therapies, 8.9% dysphagia), skill (9.6% disability, 11.1% dysphagia), specialised experience (15.5% dysphagia), grade (9.6% disability) and years since highest qualification (11.5% disability) demonstrated most differences. Those with most experience in disability tended to cite lack of training more. Those with most experience in dysphagia cited lack of knowledge more. Individual therapies however, can reflect considered responding. Dysphagia experts cited lack of training most for Masako and tube feeding. For Irish sign language, expert SLTs were more likely to cite suitability than training (21.4%) in contrast to other groups (emergent SLTs 65.4%, experienced SLTs 55.5%). The shortest-qualified were most likely to cite training for never-using communication passports and conductive education. Overall there was a suggestion that lesser-used therapies yielded more significant differences in reasoning than popular therapies.

For minor reasons, specialist SLTs were most likely to cite lack of research evidence (8.7% vs. average 2.5%). Disability experts (3.9% vs. average 0.5%) and those with research-masters qualifications (7% vs. average 4%) were most likely to cite 'not scientific'. Diploma respondents were least likely to use a range of scientific reasons. For example, disability SLTs with diplomas were least likely to use '*the argument against is sound'* (0%), '*not scientific'* (0%) and lack of research evidence (1.7%). Dysphagia SLTs with diplomas were also least likely to use lack of research evidence (1.6% vs. average 5.1%) with increasing use shown with further qualifications.

3.4.2.4 Reasons for not selecting therapies by work-context demographics

There were minimal differences for work-setting in disability but in dysphagia, voluntary respondents were most likely to cite suitability and least likely to cite knowledge than other groups - this group is represented by more respondents with most experience. For disability, community-paediatric clinicians were more likely to cite training than their intellectual-disability counterparts (52%: 39.5%), tending to be composed of more basic SLTs (50:50) than their colleagues in intellectual disability (34:66). For dysphagia, adult-acquired clinicians were more likely to cite training (42.3%) and intellectual-disability clinicians more likely to cite suitability (56.2%) although both groups have more senior than basic SLTs (2:1). In disability, paediatric clinicians were more likely to cite training (42.5%: 33%) and less likely to cite suitability (20.8%:35.7%) than their adult colleagues. The reverse is true for dysphagia. Adult-clinicians tend to dominantly work in adult-acquired settings (74%) and intellectual-disability clinicians in paediatric settings ($p<0.0001$).

3.4.2.5 Therapies of significance for not selecting reasons by work-context demographics

A number of therapies are significant for work-context demographics (Appendix 22) with population and population-age evidencing the largest number of significant items. In disability, 27% of therapies were significant for population age, less so in dysphagia. In dysphagia, 13.3% of therapies were significant for population, less so in disability. Neuromuscular therapies comprised 40% of significant therapies for the population demographic and 66.7% for work-setting.

3.4.3. Summary

Being not suitable and not trained dominated reasoning suggesting a limited repertoire of reasons upon which to argue against using therapies. There are clear indications that accumulated experience resulted in more reasoning around training and less knowledge-based reasoning which were used more by less-experienced clinicians. Experience may result in slightly more use of scientific reasons although scientific reasons do not rate highly in reasoning provided by respondents. The variables of population and population age tend to differentiate reasoning most.

3.5 ATTITUDES UNDERLYING THERAPY CHOICES

In order to investigate general attitudes, respondents were asked to rate agreement with statements that reflected a range of potential decision-making supports. Approximately 91% of respondents replied to this section (average n=247), varying slightly for each statement.

3.5.1. Statement agreement

3.5.1.1 Statements with highest and lowest agreement

Table 3.8 outlines statement agreement for the whole sample and respective groups.

Table 3.8 Percentage statement agreement from highest to lowest

Statements	Whole sample %	Neither disability nor dysphagia %	Dysphagia %	Disability %
The individual nature of each client influences my choice of therapy or technique	96	95	95	98
Clinicians should provide rationales for the therapies & techniques they use	95	95	95	95
It is important that I am able to argue and defend my choice of therapies & techniques	95	95	95	95
I make efforts to keep up to date with developments in clinical practice	94	93	95	96
Specialist / expert clinicians are valuable sources of information when considering therapies & techniques	93	92	94	92
My decision to use a therapy or technique is influenced by my clinical experience	92	89	92	92
A therapy or technique should have clear goals that can be tested	91	91	89	89
I like exploring new treatment options	90	91	87	88
I use the therapies & techniques I do because they work	90	93	89	89
I prefer therapies & techniques which are person-centred	89	88	90	92
It is important that the therapies & techniques I use have a sound theoretical basis	87	84	89	91
Understanding why a treatment works is as important as understanding whether it works	87	81	91	89
I use therapies & techniques I learned from watching/working with other clinicians	85	86	87	82
I focus on the patient’s specific deficits and choose therapies & techniques based on this	79	80	82	70
A patient’s preferences and values influence my choice of therapies & techniques	77	68	77	85
I am confident about the therapies & techniques I use	76	75	78	82

Statements	Whole sample %	Neither disability nor dysphagia %	Dysphagia %	Disability %
I use therapies which I learned from doing specific training to learn that particular therapy or technique	76	77	78	72
The therapies & techniques I use are the standard of care in speech & language therapy	73	65	78	70
Once a treatment has research attached to it, I am more likely to believe it to be effective	72	69	74	69
I like therapies & techniques that can be used with a variety of fun games and activities	69	86	45	86
I read research regularly to keep updated on therapies & techniques	68	61	73	72
I prefer to use therapies & techniques which are more concrete than abstract for my patient's sake	66	62	70	69
I place a high value on the opinions of colleagues when deciding whether to use or stop using a therapy or technique	65	65	64	63
The therapies & techniques I use are the standard of care in my workplace	65	72	75	55
The easier a therapy or technique is to understand the more likely I am to use it	60	59	55	55
Science should be used to decide whether therapies & techniques work	58	59	57	57
I use therapies & techniques that are easy to implement	56	57	58	52
Speech & language therapists can waste time by the use of un-validated or non-scientific treatments	55	49	56	59
The patient must take responsibility for ensuring treatment success	53	74	41	42
I prefer to use hands-on therapies & techniques	52	56	50	46
Family preference influences my therapy & technique choices	49	42	44	59
I rely on clinical experts/specialists to help me make decisions about therapies & techniques	49	51	46	47
Clinical experience is the best guide to deciding what therapy or technique to use	48	46	51	46
Speech & language therapists can do harm by the use of un-validated or non-scientific treatments	47	31	58	52
I don't have enough time at work to spend reading and thinking about developing my treatment repertoire and therefore implement new therapies & techniques	45	50	43	40
It is difficult to convert research into clinical practice	42	38	42	44
I am limited in the therapies & techniques I use by what is available to me	39	29	52	34
I rely on speech & language therapy textbooks to inform my use of therapies & techniques	39	41	39	33
The placebo effect (any treatment once they are receiving treatment) is a factor in outcomes in speech & language therapy intervention	35	33	38	33
I tend to use a lot of therapies & techniques I learned in college	32	35	33	26
What the patient brings to therapy is more important than the therapy or technique	31	33	31	31
Speech & language therapy department policy determines my choice of treatments	27	28	27	21
I believe in my therapy & technique choices even if there is no research evidence to support them	24	31	24	18

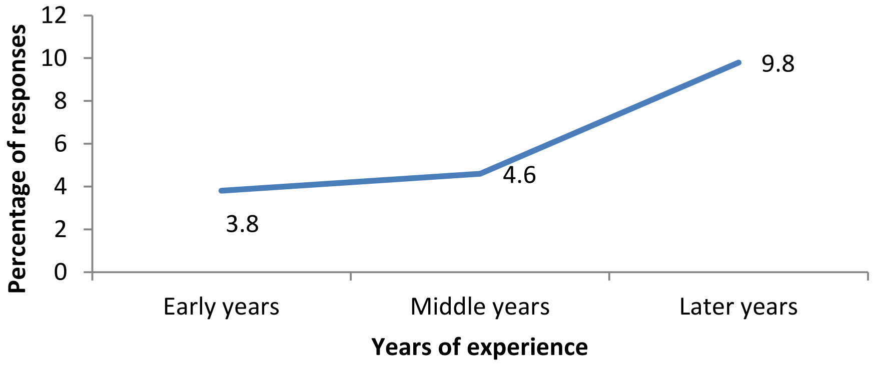
Statements	Whole sample %	Neither disability nor dysphagia %	Dysphagia %	Disability %
Once purchased, or learned I will use a therapy or technique to ensure good value	24	27	22	22
I tend to have a repertoire of favourite treatments which I use with most clients irrespective	19	18	20	17
I use therapies & techniques that I have read in the print media	18	15	22	19
The patient therapist relationship is what is important in treatment, not the therapy or technique used	16	10	14	25
I continue to use older textbooks to guide my use of therapies & techniques	15	18	13	14
I use the therapies & techniques I do because there are no other options available	13	5	25	6
I use alternative or complimentary practices in my work	9	16	6	7
If a therapy or technique is in use by the profession for a long time then it must be good	8	3	11	7
I rely more on commercial products than research in making treatment choices	5	6	2	5
Any treatment or technique will work if the therapist believes in it	4	3	3	6
I don't tend to adopt new therapies or techniques in clinical practice	4	4	5	4
Research evidence does not influence the therapies & techniques I use in clinical practice	3	13	7	3
I use therapies & techniques that I have seen/heard on the radio or TV	2	1	4	4

A large number of statements achieved high-agreement, 54% garnering agreement by at least half the respondents. The highest-agreed statements centred on patient issues, clinical experience, active practice and scientific constructs. Statements with low-agreement reject less-scientific and non-scientific scaffolds in addition to passive practice.

3.5.1.2 Statements about patients

The top-rated statement was related to the influence of the individual nature of the patient. Person-centeredness also rated in the top ten. Specific deficits and patient-preferences ranked 14th and 15th respectively. Thus, respondents highly agreed that patient factors were important in decision making and disagreement across experience groupings was uniformly low (Figure 3.17) with a trend toward more disagreement with more years working. This implies that more experienced decision-making may be slightly less scaffolded on patient factors. Furthermore, clinical patient data supersedes client preferences when making treatment choices.

Figure 3.17 Disagreement with patient statements by years of experience



A number of statements can be seen to differentiate the groups (Appendix 23). The trend is similar to that of the overall picture with the least experienced more likely to agree with the impact of patient variables and the more experienced least likely to agree. For example, SLTs in their early-years agreed more regarding specific deficits (p=0.028) and patient responsibility (p<0.001), as did basic SLTs (p=0.036). SLTs in their middle years agreed most that what the patient brings to therapy is important (p=0.033), and both agreed and disagreed on the influence of the family (p=0.048). Adult-acquired (p<0.0001) and hospital-rehabilitation respondents (p=0.007) agreed most regarding the influence of specific patient deficits, and disability SLTS agreed most regarding the influence of patient preferences (p=0.038)

3.5.1.3 Statements about science

Scientific statements rated highly with three ranking in the top ten (argue and defend choices, provision of rationales and having clear goals). While nearly three-quarters of respondents agreed on the value of research in informing practice decisions, nearly half concurred on the difficulty of converting research into practice. Respondents were least likely to agree that science should decide the direction of treatment, although this still rated a relatively high agreement rate (58%). On the whole respondents appeared to value scientific influences with one-quarter of all respondents strongly agreeing with these statements. The agreement rate showed little variation for years' experience.

The pattern remained the same for grade, regional and work-settings. There tended to be a sequential rise in agreement, perhaps most influenced by the research statement. For example, diploma respondents agreed with this statement to the tune of 80.4%. This rose sequentially to 100% for PhD respondents. Voice and physical disability respondents agreed most (average 94%) with this statement, while those working with in child mental health, fluency and acute-paediatrics agreed least (average 75%).

For individual statements, only one statement - *'read research regularly'* - was significantly different between groups with those with more experience tending to agree more. This was represented particularly by SLTs in their later years (p=0.003), managers (p=0.013), expert SLTs (p=0.013), later-years disability SLTs (p=0.048), most-dedicated time in disability (p=0.012) and those with more than a professional qualification (p=0.012). Disability (p<0.0001), voluntary (p=0.014) and adult (p=0.017) respondents also agreed most. SLTs in their middle years, senior SLTs, dysphagia SLTs with medium-dedicated time (p=0.002) and community-paediatric SLTs agreed least.

Respondents also tended to reject belief-based practices and less-scientific sources. As a group (n = 1239), the non-scientific statements (use alternative therapies, rely on commercial products, believe in even if no evidence, don't use research, use because they work) showed high disagreement (56%). Conversely, they also produced relatively high agreement (39.4%). Agreement was lowest for the original groupings of 20-24.11 years (15%), but highest for those in their middle years of 10-14.11 years and 15-19.11 years (30%, 32.2%). Disagreement was highest for voice (80%), physical disability (70%) and PhD (73.3%) respondents, and least for child mental health (35%) and diploma (47%) respondents. This suggests less valuing of non-scientific factors with higher qualification and in specific areas of practice.

A number of exemplar scientific and non-scientific statements were compared against choice of a pseudoscientific therapy (Facilitated communication), non-scientific therapy (Talktools) and conventional and highly favoured therapy (Hanen) in disability. For dysphagia, a favoured therapy (thickening liquids), swallow therapy (Masako) and neuromuscular therapy (thermal-tactile stimulation) were compared against the research statement using Pearson's chi square test of significance. Agreements rates between and within these therapies do not appear to be effected by therapy choices (Appendix 24) although Facilitated communication was just below significance (p=0.051) for the statement *'I use conventional and alternative therapies in work'.*

3.5.1.4 Statements about clinical experience

Statements regarding clinical experience ranked thrice in the top ten. Additionally in ninth place was what can be deemed an experiential statement: '*I use the treatments I do because they work'*. A further experiential statement, '*watching working with other clinicians'* ranked 13th. In contrast, less than half of respondents relied on experts. Basic SLTs were also most likely to agree with experience statements (77.6%) and specialists least likely (66%). This changes when the single statement relating to their own experience is analysed with specialists agreeing highly (100%). These patterns are replicated for clinical skill. There was a high starting point for the valuing of clinical experience overall.

Furthermore, three-quarters of the overall sample stated that they were confident in their therapeutic choices. Independent sample t-tests indicated that those who were most confident are managers (p=0.038), the experienced and expert SLTs (p=0.036), later-years disability clinicians (p=0.025), and SLTs with the most dedicated time in disability (p=0.002). Confidence ratings were not affected by the choice of therapy. For example, 75% of respondents who used the pseudoscientific therapies of Facilitated communication and Listening therapy agreed that they are confident. This compared to 80.2% of those who don't use these therapies. High confidence ratings do not apparently translate to beliefs, with only 24% of respondents believing in their selections if not supported by research.

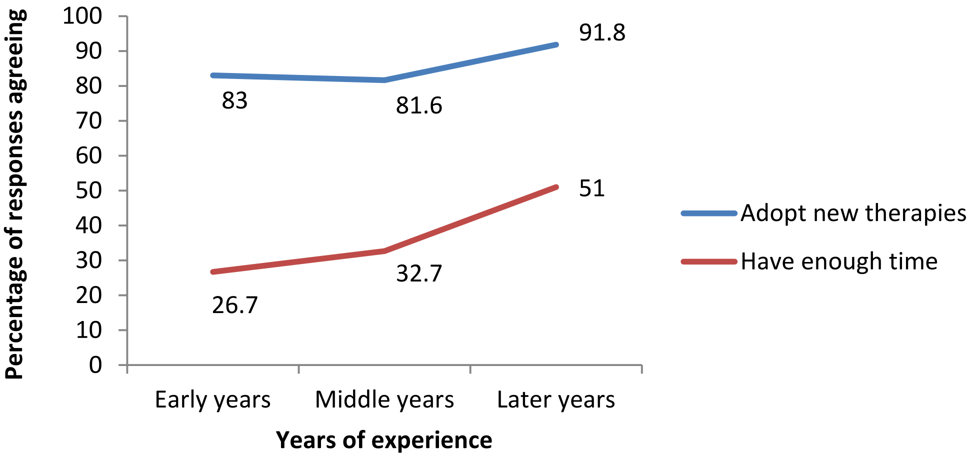
There is an increasing reliance on autonomy with experience. While SLTs in their early-years agreed most that clinical experience is the best guide (p=0.003), senior SLTs were most likely to agree that they use the therapies they do because they work (p=0.048) and SLTs in their middle years disagreed most with placing a high value on colleague opinion (p=0.001). Furthermore, later-years (p=0.019) and longest-qualified SLTs (p=0.014) were most influenced by their own experience. No work-context demographics were significant.

3.5.1.5 Statements about active and passive practice

Respondents ranked keeping up to date and exploring new options in the top ten reasons. When combined, these can be said to represent the construct of active practice (excluding research engagement). Additionally, only 19% of respondents agreed that they had a repertoire of favourite treatments.

Over half (53.5%) of the 15 lowest-agreement statements represented passive practice with respondents rejecting long-time practices and older influences in particular. SLTs in their early years agreed most with these statements such as not having enough time (p=0.003) and difficulties converting research (p=0.001). Those with more than a professional qualification disagreed most. The adult-acquired group were most affected by availability (p=0.007). For the statement regarding time, those with most experience were most likely to disagree (p=0.022), there being an increasing trend towards more active practice with years of experience. This suggests time may be a factor in active practice rather than years of experience. Specialist SLTs (65%), expert SLTs (93.8%) and managers (83.3%) were also most likely to disagree with passive statements.

Figure 3.18 Percentage agreements with selected active statements by years of experience



3.5.1.6 Statements about sources of information

Respondents were mostly influenced by profession-specific sources and rated colleagues and specific training highest in this category. While department policy did not determine practice (27% agreement), respondents reported that the interventions they use are the standard of care in their workplace (65%) and profession (73%). Only 3% agreed that research did not influence their decisions.

Respondents disagreed that non-professional sources (TV/radio, print-media, commercial products and CAMs) influenced them. They also rejected more than accepted older sources of information (old textbooks and old practices). There were no differences between those choosing and not choosing preferred therapies for exemplar profession-specific statements.

Demographics did not differentiate respondents on the four core statements representing less-scientific sources. The exception was for reliance on commercial products with those with more than a professional qualification and adult-acquired clinicians disagreeing most that they relied on them. There were obvious differences for profession-specific sources. For example, those with only a professional qualification were more likely to be influenced by watching-working with other clinicians (p=0.005). Early-years (p=0.005) and basic SLTs (p=0.004) agreed that they are most influenced by college learning. SLTs in their middle years were most likely to both agree and disagree (p=0.011) that they relied on experts. They also most disagreed they relied on college learning (p=0.005). The group with more than a professional qualification were also significant across a number of statements. For example, they most disagreed with college learning (p=0.030), textbooks (p=0.048), commercial products and that research does not influence them (p=0.006).

3.5.1.7 Therapy-specific statements

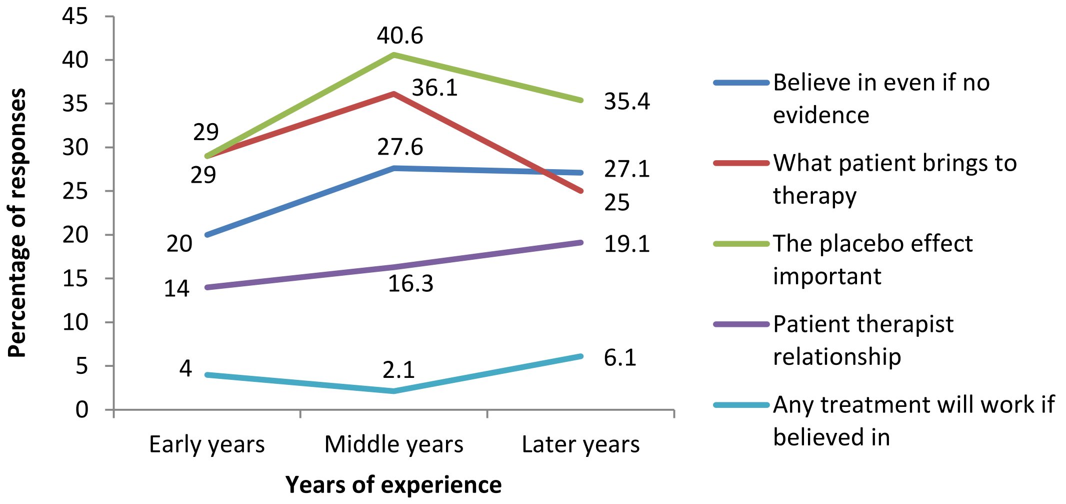
Over half of respondents agreed that ease of use is important when using a therapy and preferred therapies which are hands-on, dysphagia clinicians being more inclined to use these types of reasons. Over two-thirds of clinicians preferred therapies that can be used through a variety of fun games and activities and concrete therapies. A high proportion also opted for person-centeredness in a therapy.

Those with only a professional qualification were more likely to agree that they like easy to understand (p<0.0001) and easy to implement (p=0.002) therapies which can be used with a variety of activities (p=0.036). A variety of demographics representing paediatric, voluntary and disability respondents also most agreed with this last statement. Those with more experience and working in adult-acquired settings disagreed most with therapy-specific features influencing choices.

3.5.1.8 Extra-therapeutic statements

The influences of extra-therapeutic factors were rejected, including the therapeutic-alliance and a clinician's belief in a treatment effecting outcome. Most clinicians were neutral for example, about the patient-therapist relationship. Equal numbers agreed and disagreed regarding the placebo effect, (35% and 30.9%). Neither did agreement with these statements appear to be impacted by years' experience (Figure 3.19) although minor variations are observed in the middle years.

Figure 3.19 Extra-therapeutic statement agreement by years of experience



Paediatric clinicians disagreed most with the placebo effect (p=0.009) as did dysphagia SLTs with medium-dedicated time (p=0.004). Paediatric (p=0.008) and disability (p=0.048) respondents also disagreed most with the therapeutic alliance. SLTs in their early years agreed least that what the patient brings to therapy (p=0.033) impacts outcome, those in their middle years agreed most. SLTs with more than a professional qualification also disagreed (p=0.026) with this as they did about belief in therapy choices without supporting evidence (p<0.001), to which the longest qualified agreed most (p=0.048). Community-paediatric clinicians most agreed that any therapy will work if the therapist believes in it (p=0.038) while disability respondents agreed least (p=0.002).

3.5.1.9 Statements about practical issues

Respondents were not overly influenced by resource or practical issues. Equal numbers agreed and disagreed that they were limited by availability and slightly more than not suggested they have insufficient time to develop their treatment repertoire. More disagreed than not that once purchased they will use a therapy. Practicality is most reflected when more respondents than not agreed that it was difficult to convert research into practice despite reporting that it influenced their decision to use a treatment, being more likely to believe in an empirically validated therapy and reading research regularly. The demographics indicate that those with less experience and those in adult-acquired and community-paediatric settings were most constrained by practical issues (Appendix 25). Those with least experience and represented by a variety of demographics (e.g. basic SLTs p<0.0001) were most constrained by time. Adult (p=0.012), adult-acquired (p=0.019) and dysphagia clinicians in their early years (p=0.034) agreed most that they are limited by availability. Community-paediatric (p=0.004) and community (p=0.012) respondents used a therapy once purchased more than other groups.

3.5.1.10 Statements reflecting neutrality

A number of statements achieved high neutrality. These represent a variety of constructs although three of these items relate to extra-therapeutic factors. Over a third of respondents were neutral about the harm-potential of therapies. The most-experienced (p=0.042), adult-acquired (p<0.001) and hospital-rehabilitation SLTs (p=0.0001) in addition to those working medium-dedicated time in dysphagia (p<0.0001) agreed most with the potential for causing harm. Emergent SLTs (p=0.009), paediatric respondents (p=0.002) and those with more than a professional qualification (p=0.006) were most likely to disagree. Disability SLTs in their middle years were more concerned with the potential to waste time (p=0.019) being the only demographic to agree with this statement. Those with more than professional qualification group again disagreed (p=0.016).

3.5.1.11 Statements differentiating areas of practice

Disability and dysphagia respondents are not necessarily separate samples, with 16.5% (n=45) of the overall sample practicing in both disability and dysphagia. Despite this, they evidence a number of differences (of greater than 5%). Dysphagia clinicians are far more likely to agree about the influence of specific-patient deficits (82% vs. 70%) and workplace effects such as standards of care in the workplace (75% vs. 55%) being limited by availability (52% vs. 34%) and lack of options (25% vs. 6%). Disability clinicians are far more likely to agree on fun activities (86% vs. 45%), the patient-therapist relationship (25% vs. 14%), client preferences (85% vs. 77%) and family influences (59% vs. 44%). When the three groups are compared using the Pearson chi-squared test, the patterns hold (Appendix 26). Patient statements tend to differentiate respondent groups, but scientific and clinical-experience statements are obvious by their relative absence in signalling differences.

3.5.1.12 Summary

Some differences are evidenced based on years of experience. Patient influences may dominate more for less-experienced clinicians. However, the high agreement rates overall for patient statements concur with earlier data that patient issues are important in decision-making, and these are more stable for disability than dysphagia respondents throughout the years. Less-experienced SLTs also agreed most that clinical experience was the best guide and relied on the experience of colleagues and college learning. They also valued concreteness, reference workplace issues and have difficulties translating research more.

The group in the middle years of their careers and represented by a variety of demographics, showed a move away from those sources more valued by their less-experienced colleagues and a move towards self-reliance. Those respondents with most experience disagreed with many of those statements including patient-centred ones. Of all experience variables, qualification status is highly interesting with twenty-one statements showing differences. This group are represented by high agreement with scientific statements

Work-context issues are most differentiated on population and work setting. Regional influences do not impact, the only difference centred on having insufficient time to develop practice. Although not significant (p=0.074), the majority of West respondents (61.4%) are community-based which may help understand this finding as community respondents were most likely to agree with this. The community group appear impacted by practice constraints. For example, in line with their lack of time, community-paediatric clinicians were most likely to state that research doesn’t influence them and least likely to read research although they were also least likely to disagree that therapists’ beliefs effect outcome. They were also most likely to use a therapy once purchased and if easy to implement. They were most influenced by department policy and have least time to develop options.

Adult-acquired clinicians also demonstrated workplace issues. While they were most likely to disagree with reliance on commercial products, they were most likely to agree that once purchased they will use a therapy. It therefore follows that they use therapies because there are no other options available and are limited by availability. Availability also impacts adult clinicians who also agreed most with long-time use. Adult clinicians were conversely also more likely to read research regularly. Adult–acquired respondents were also most influenced by the standard of care in the workplace and the harm potential of treatments as were the hospital-rehabilitation group. Adult–acquired respondents were most likely to have dysphagia caseloads ($p<0.0001$), a considerable 92%, followed by respondents in voluntary (39.3%) and community settings (12.8%), and this reflects the relative agreement with this statement.

Voluntary and disability clinicians were least impacted by workplace issues. For example, voluntary respondents most disagreed regarding having insufficient time to develop practice, and disability respondents were less limited by availability, once purchased must use and easy to implement therapies. However, they also preferred fun activities, as did community respondents. The voluntary group were most likely to disagree that any treatment would work based on belief and long-time use, and agreed most regarding reading research along with their disability counterparts.

Voluntary and disability respondents were most likely to believe in a range of patient statements such as patient-centeredness, the therapeutic alliance and patient preferences. Community and paediatric respondents agreed most regarding patient responsibility, whereas the hospital-rehabilitation group agreed most regarding the influence of specific-patient deficits as did their adult-acquired counterparts.

Altogether, respondents suggest in principle an appreciation of scientific thinking in practice, as well as their own clinical experience, active practice and patient characteristics. The latter two concur with that evidenced in earlier data but there is also some dissonance evident. Valuing of research is demonstrated more by those with more experience, particularly in the later years and with higher qualifications.

There is also the emerging suggestion that there is a change in values of SLTs in their middle years, particularly regarding clinical experience.

3.5.2. Factors underlying decision making

3.5.2.1 Factor analysis

Principal Axis Factoring was used to explore the 56 dimensions to uncover statements assumed to participate in common underlying factors. A 13 factor model (Table 3.10) was selected to represent the data. Each factor was composed of selected statements (Appendix 27).

Table 3.9 13 dimension output for rotated-solution factor analysis

Factor	Factor label
1	Uncomplicated practice
2	Scientific practice
3	Ethical-scientific practice
4	Pragmatic practice
5	External influences
6	Clinician-client belief dyad
7	Speech and language therapy culture
8	Not so scientific sources
9	Clinical experience
10	Research belief
11	College learning
12	Patient as person
13	Specific training

3.5.2.2 Extracted factors and demographics

Exploration of levels of agreement with extracted factors was undertaken using one-way between-groups analysis of variance or independent-samples t-test depending on the number of conditions in each analysis. Significant findings for demographics are highlighted (Appendix 28).

Those with more than a professional qualification are evident in their rejection of many statements in Factor 1 (Uncomplicated practice) compared to those with a professional qualification only ($t(246) = -5.0$, $p= .000$). Community-paediatric respondents valued the influences of research least ($F\ (2,197) = 13.5$, $p =.000$).

Agreement by this group with other statements in Factor 1 suggests this may be practically constrained. Those with more experience represented by a number of demographics evidenced more valuing of research and research is the only statement in Factor 2 (Scientific practice) which showed a difference between groups. The overriding suggestion is that less experience is correlated with less-complex practice and this may also be associated with community settings. This lack of complexity is also seen in attitudes to the harm potential of therapies with emergent SLTs agreeing least with this (F (2,244) = 7.8, p =.001) as seen in Factor 3 (Ethical-scientific practice). Factor 4 (Pragmatic practice) indicates that those with more than a professional qualification were least likely to be constrained by such issues (t(246) = -5.0, p= .000) whereas those working with adult populations (t(242) = -4.6, p= .000) with adult-acquired populations (F (2,197) = 3.1, p =.045) were most likely to be thus constrained. Those with more than a professional qualification (t(246) = -5.0, p= .000) were also least amenable to external influences such as those represented by Factor 5, while those with least experience again represented by various demographics such as years of experience (F (2,244) = 11.7, p =.000) were most likely. Disparity was seen in Factor 6 (Client-clinician belief dyad). Adult-acquired clinicians were less likely to believe in the therapeutic alliance, those with more than a professional qualification least likely to value what the patient brings, and paediatric clinicians least likely to agree with placebo effect. This variability suggests this factor may in fact represent a discordant construct although the results of individual statements concur with previous data on patient statements and both paediatric and adult clinicians (t(242) = -2.2, p= .029) and those differing in qualification status differ for this factor (t(245) = -3.0, p= .003). For Factor 9 (Clinical experience), senior SLTs were most likely to value therapies 'because they work' and differed from basic SLTS (F (2,224) = 3.3, p =.036). Factor 11 (College learning) indicates that those with less experience were most influenced by college and this cannot be seen as surprising.

3.5.2.3 Extracted factors and respondent's choices of therapies

Using the same statistical tests as previously and respondent's choice of therapies, a limited number of therapies were found to be significant for the extracted factors

(Appendix 29). These tended to be the preferred disability and dysphagia therapies in addition to some oral-motor therapies in disability and more complex therapies in dysphagia. Communication boards/books (Factors 1: *F* (2,99) = 7.3, *p* =.001, Factor 2: *F* (2,99) = 4.5, *p* =.014, Factor 12: *F* (2,99) = 3.5, *p* =.035, and Factor 13: *F* (2,100) = 3.7, *p* =.028) and the bolus-modification therapies of thickening liquids (Factors 2: *F* (2, 99) = 3.463, *p* =.035, Factor 3: *F* (2, 98) = 3.413, *p* =.037 and Factor 6: *F* (2, 99) = 3.073, *p* =.050) and texture modification (Factors 2: *t* (-2.326) = 16.645, *p*= .033, Factor 4: *t* (-2.486) = 16.645, *p*= .015 and Factor 6: *t* (2.209) = 100, *p*= .029) are the only therapies to differentiate across a number of factors. Respondents using these items appeared to consider themselves to be more scientific and for bolus-modification techniques, more ethically scientific. Interestingly, texture modification which is differentiated by the pragmatic Factor 4 may thus be a pragmatic choice. Choice of communication boards (*F* (2,99) = 7.3, *p* =.001) and articulation therapy (*F* (2,96) = 7.1, *p* =.001) is differentiated by Factor 1 (Uncomplicated practice). Use of articulation is clearly correlated with reliance of commercial products, fun activities and less time to develop practice. Those working least time in the area of disability were more likely to always-use articulation (52.6%) and are more likely to work in community settings (p<0.001). However, those working mid-time were also more likely to work in community settings. Respondents using the favoured double swallow techniques were significantly influenced not by textbooks but by expertise for Factor 5 (*F* (2, 99) = 5.827, *p* =.018). Factor 9 (Clinical experience) differentiated Hanen users and non-users (*F* (2,98) = 5.3, *p* =.006) although it is not clear which direction this takes. Those using the non-scientific therapies of oral-motor therapy (*F* (2, 100) = 6.1, *p* =.003) and Talktools (*F* (2, 99) = 4.7, *p* =.012) were more likely to value non-scientific sources (Factor 8). Communication boards/ books (*F* (2,99) = 3.5, *p* =.035) were differentiated for Factor 12 (Patient as person) and while the direction is unclear, it may be that those using this therapy are more functionally inclined and therefore more likely to value person-centeredness. Finally a number of therapies (Lamh: *F* (2,100) = 5.0, *p* =.008, PECS: *F* (2,99) = 3.2, *p* =.045, communication boards/books: *F* (2,100) = 3.7, *p* =.028, VFSSB: *F* (2, 96) = 3.064, *p* =.032 , tube feeding: F (2, 96) = .232, p =.042) were significant for Factor 13 (Specific training) although all except one of these does not have a programme of training attached.

3.5.2.4 Extracted factors summary

Extracted factors produce further understandings and can be said to enhance our knowledge of decision-making. There is an indication that use of favourite therapies may be linked to perceptions of scientific, ethical, pragmatic and uncomplicated practice. Use of some non-scientific options is clearly linked to non-scientific influences. Furthermore training still dominates as a factor, perhaps for more apparently complex interventions but certainly not for ones requiring certified training. Less-experienced practice may be less complex and more experienced practice may be more complex. Reading research is the only statement to differentiate among respondent groups in the scientific factor, suggesting clinicians still equate science with research.

3.5.3. Summary

Analysis of statements indicates a number of clear things. The first is a clear dissonance between aspiration or believed values and practice as represented by data from various elements of the survey. The influences on treatment choices appear restricted to a few constructs. Science does not feature predominately although those with more experience including higher qualification and those using favoured therapies clearly define themselves as more scientific. Dysphagia clinicians appear more practically oriented. Disability clinicians may not change their patient values as they accrue experience in contrast to other groups who may become less patient oriented. Specific training is influential but perhaps only for complex and skill-specific therapies.

3.6 CHAPTER SUMMARY

Clinical practice is defined somewhat narrowly by clinicians. This is represented in terms of the relatively limited range of preferred interventions used, and the limited reasoning regarding treatment choices. These centrally relate to clinician (autonomous clinical experience) and client (patient-deficits) pivots and include knowledge-based reasoning specifically when choosing not to use therapies. There also appears to be a disconnect between what is practiced and what is preached. Clinicians claim to value science, but scientific reasons including research evidence are not explicated when reasoning is specifically targeted. Changes in reasoning with experience are suggested: SLTs in their early-years appear focused on developing skills and are highly pivoted on colleagues' experience; those in their middle years are stabilising those skills and becoming highly autonomous therapists, and; clinicians in their later-years are more responsive to external effects and influences specifically research.

Chapter 4: Discussion of survey findings

4.1 INTRODUCTION

Findings from the survey must be viewed in the context of the demographics that provided the data. The vast majority of the sample responded via the practice-educator database. Given their contribution to student education, it is probable that they represent a group which are interested in practice issues. Additionally, the relatively young sample, even if representative of the broader profession, may have implications for understanding more experienced decision making. Disability findings may also be affected by the dominance of intellectual-disability clinicians in the sample. However, the data may also have told the same story whatever the constitution of the respondent group. The findings will be considered under a number of synthesised discussion points.

4.2 NARROW RATHER THAN BROAD

The findings suggest that clinical practice is relatively constrained, the implication being that it may be less complex than typically constructed. Alternatively, simplification may result from a need to effectively manage a complex activity. The contraction of practice as implied by this data is discussed below.

4.2.1. Limited therapies

For both dysphagia and disability, there are a relatively small number of highly-used and preferred therapies. If one assumes the survey options were representative of a broad range of possibilities, then this implies that clinical practice is more confined than might have been anticipated. However, it also reflects findings from other studies (e.g. Joffe & Pring, 2008). The group of core therapies is augmented by further therapies which are less frequently exploited. Furthermore, dysphagia practice is more restricted than disability. Indeed, analysis was often restricted by the high and low numbers using certain techniques, thus contributing to the perception of reduced options. As a result of the limited number of potentially useful interventions, there are large numbers un-used and under-used therapies. This includes literature-based therapies and reflects on the poor influence of research on practice, agreeing with previous studies such as Turner and Whitfield (1999) who found the use of journal literature virtually absent as a basis for selecting techniques in physiotherapy. Practice may therefore be reduced to a couple of clusters of related but mostly individually-utilised techniques.

Additionally, most therapies did not demonstrate a difference in frequency of use with increasing years of experience. This promotes a picture of a culture of interventions, perhaps supporting Kahmi's (2004) argument regarding the cultural transmission of interventions. Clear individual favourites and favoured categories were observed, and it appears that the combination of favourite therapies meets the majority of the intervention needs. Disability SLTs for example, can target language, interaction and AAC if using the core options. Technologically-based items fare badly in both areas of practice, a finding corroborated by Behrman's (2005) study of voice therapists. This can be seen as worrying in a 21st century profession, especially as ratings for such interventions correlate with those of pseudoscientific therapies. Disability practice on the whole can be defined as an AAC endeavour, and dysphagia as a bolus modification endeavour.

4.2.2. Limited reasons

While it is unlikely that there is a single rationale to explain why intervention choices are made, the dominance of a few core reasons for therapy choices is compelling. Therapy selection is effectively scaffolded upon client suitability and clinical experience. The dominance of practical evidence as a decision scaffold is not a unique finding and mirrors both discipline-specific (e.g. Mackenzie et al., 2010) and allied discipline (e.g. Papadopoulos et al., 2012) evidence. However, it confirms the notion that clinicians are persuaded by practical evidence in making treatment decisions. Client characteristics explain decision making similar to that seen in Joffe and Pring's (2008) study, and client suitability is also dominant in deciding not to use a treatment. This indicates that it fundamentally supports clinical decisions. Knowledge-based reasons including training also explain lack of use, accounting for a dominant 57% of all reasons not to use a treatment. Knowledge was referenced by disability clinicians more than dysphagia clinicians, a finding which can be explained by the mandatory training required for dysphagia practice. It may also explain the higher use of suitability by dysphagia respondents for not selecting therapies. This would suggest that once knowledge is obtained, suitability as a reason becomes more central. Thus practical knowledge and client characteristics are at the forefront in both treatment selection and non-selection. Therefore, the immediate clinical context – the client and the clinician – supports decision making almost to the exclusion of other factors, accounting for nearly 90% of all therapies in disability and over 70% in dysphagia. Clinicans on the whole reject other pivots such as practical, scientific and personal reasons.

Clinical experience is not differentiated between the groups indicating it is a nuclear decision scaffold. Furthermore, the two main reasons are not dramatically affected by the nature of individual therapies or groups of therapies. This picture is further enhanced by the use of these core reasons for pseudoscientific and less-scientific practices as well as conventional therapies. Lack of training is also over-used to explain therapy non-use where training is not required and appears as an important pivot in other studies (e.g. Turner & Whitfield, 1999). Therefore, it can be reliably stated that case evidence, practical evidence and specific knowledge override practically all other potential reasons, and that both clinical experience and client suitability largely interact to scaffold therapy choices.

4.2.3. Limited definition of practice

A picture of a highly harmonised group is emerging and further enhanced by explication of attitudes. Patient issues, clinical experience, active practice and scientific concepts all produce highest agreement among the sample, with the former two concurring with reasons for use. Furthermore, SLTs appear to have a narrowly defined interpretation of intervention. Respondents do not value the importance of therapy-specific factors. They reject or are neutral about the influences of extra-therapeutic variables such as the therapeutic-alliance and the placebo effect. The lack of appreciation of extra-therapeutic factors is in conflict with research in the psychological literature which indicates a bearing on treatment outcome (Hubble et al., 1999). Moreover, there is little difference between demographics with respect to these factors. Combined with previous observations, this leads one to the conclusion that clinicians see their own individual skills as THE central factor in decision making, and hold extra-therapeutic, therapy-specific and patient influences (rather than patient pathologies) in less regard than internal clinician factors.

4.2.4. Non-transferability

There are also indications of clear boundaries, with a lack of transferability of therapies between populations served and disciplines. SLTs see a clear differentiation between therapies which are profession-based, and those which are either broad-based or not originating within the profession. This implies discipline-specific preferences and non-arbitrary borders. An exemplar is manual sign systems. Three-quarters of disability respondents use the adapted signing system Lamh, but less than two per cent use its parent, Irish Sign Language. This division is also seen in behaviourally-based therapies. Nearly one-half of clinicians use PECS which has a clear communication function, as opposed to less than seven per cent who use applied behavioural analysis. This unsurprisingly extends not only to alternative treatments such as homeopathy, but also to therapies originating in the allied health disciplines, such as conductive education, Bobath and reminiscence therapy. Additionally, within categories of therapy there are clearly defined useable items. In dysphagia, the neuromuscular technique to rate highest is ROM-tongue and this differentiates itself from other neuromuscular techniques as it is both SLT-specific and task-specific. The suggestion is that such divisions are not random.

Categories of therapies provoke further suggestions of confined practice, in this case across client groups. In disability for example, less-specialised clinicians favour speech therapies, more-specialised clinicians favour AAC approaches, as do clinicians working in voluntary organisations and with individuals with intellectual disabilities. Differences in usage can be glaring. For communication passports for example, two in three intellectual-disability respondents use it compared to one in twenty community clinicians. The manual therapies Lamh and ISL are the only AAC item to be chosen by significantly more of the community group. Thus, therapies can be classed according to populations. AAC can be categorised as a disability intervention, specifically an adult-disability intervention. Speech and language therapies are mostly community based. Disability clinicians use the neuromuscular therapies of oral-motor therapy and tactile-sensory stimulation most. Swallow therapies are specific to adult-acquired disorders. Differences in use are again large. The shaker exercise for example, is used by one in twenty intellectual-disability SLTs compared to one in two adult-acquired clinicians. Differences in use therefore, appear pivoted upon the populations served and the work settings inhabited with large numbers of therapies significantly differentiated by work setting and population. There is very little overspill from one population to another with the exception of some dominant therapies. The picture emerging is of highly-defined practice, being primarily demarcated by population features.

4.2.5. Potential attributions for uncovered limitations

The explanation for such apparent limitations may not be as simple as the limitations themselves. A few conjectures are offered for consideration.

4.2.5.1 The culture

Many of the dominant therapies can be classed as traditional speech and language therapies, uninfluenced by interventions originating outside the discipline or client-group. Such a restricted range of highly-used and valued therapies is bound to influence the practice of the group, especially less-experienced members of the group. This is particularly so when the data shows that less-experienced clinicians are most influenced by their colleagues, also indicated in other studies (e.g. Nail-Chiwetalu &

Bernstein-Ratner, 2007) and across disciplines (e.g. Gabbay & LeMay, 2004). This points to the weight of the group influence. The cultural effect does not extend to regional variations although the size of the country in this study would militate against any such findings. Furthermore, there are clear suggestions that this limited repertoire is relatively uninfluenced by external factors such as research evidence, concurring with previous studies (e.g. Mullen, 2005), further enabling the dominance of internal workplace influences. Even internal constraints such as treatment availability are far less impactful than might be expected.

Subcultures within the culture are also suggested. Adult and adult-acquired clinicians for example, were most limited by availability and lack of options, the suggestion being that SLTs working predominately with adult populations are most influenced by practical issues. This corresponds to data originating from studies of nurses working in acute settings (e.g. Parahoo, 2000). Associated with this is adult-acquired SLT's preference for more concrete therapies, implying a highly pragmatic orientation in this subgroup, a type of cultural effect which might mean problems for clinicians inhabiting the same workplace but not of a similar attitude. Indeed, this lean toward practicality may influence the use of specific therapies. For example, those who use texture modification report themselves significantly more limited by availability and lack of options. This indicates some regularly used therapies may result from practical constraints within a workplace context. It also suggests that different groups may explain their reasoning in a similar way raising notions of groupthink. This suggestion of the influence of culture is undermined by lack of use of the reason *'the department doesn't use it'.* However, two-thirds of respondents do feel that the interventions they use are the standard of care in their workplace

Culture may also be represented in the approach to treatment, for example, client-centeredness. Dysphagia SLTs for example, do not feel patient responsibility is as important as other respondents, and adult clinicians agree least with patient-centred statements but most with specific patient deficits, suggesting a tendency towards the consultative/expert model in this area of practice. Disability clinicians on the other hand are most likely to be centrally concerned with patient values, show a higher preference for suitability as a reason than the general respondent pool, and feel themselves to be more client-centred. This suggests that disability respondents, as a group, are most influenced by client factors generally and may operate more social models of practice. This indicates that the area a clinician works in (or elects to work in) may be pivotal to the values they hold, suggesting a specific cultural-effect within workplaces. This in turn may have implications for how scientific practice or knowledge is valued in different work contexts.

4.2.5.2 A training effect

The acquisition of knowledge is a primary reason for not using therapies being similar to findings from other studies where health professionals reference training in decisions to use treatments (e.g. Bennett et al., 2003). Regional differences indicate a training effect when selecting therapies. Over four-fifths of disability SLTs in the West use Derbyshire, being more likely to use this therapy than other regions. This group are also most likely to the less-used Floortime therapy. Given that the training for both these interventions is organised from that region, a training effect is clearly implicated. This is also seen in other regions. Disability respondents in the South opt for Lamh more significantly than other regions and this is where the headquarters for that training is based. So the use of specific therapies may be related to training opportunities available or provided locally. Therapies which are more generic and do not require specific training e.g. communication boards/books show no effect for region. There are fewer differences for training in dysphagia most likely due to the mandatory general training attached to this area of practice.

Lack of training as an explanation tends to primarily explain non-use of technological and training-based programmes. However, this reason is over-used to explain choices where training is not required, that is, general SLT therapies such as AAC therapies and for pseudoscientific items where one might expect scientific reasons to be more in evidence. This indicates that training is highly important in decision making, with clinicians unlikely to use therapies for which they have not received training. It may be that therapies which require specific or new skills or are considered more complex or less discipline specific are unlikely to be utilised without specific training. This indicates that training is constructed as a broader concept than attending a course, and may also reference on the job training. It also infers that clinicians value knowledge acquisition and practical experience with a therapy prior to using it, training perhaps acting as a base point from which to make judgements about a therapy. Furthermore, Dublin-region respondents show a more dominant use of this reason than their rural counterparts perhaps reflecting more reliance on training where perhaps there are more training opportunities. It may be that such a focus on training results in passivity or deferment.

Neither does the reference to training dissipate with experience. Respondents working in disability in the later years of their career are more likely to cite lack of training. Additionally, despite their general training, dysphagia experts also cite it most for individual therapies. There is a stepped use of this reason from dysphagia-novice to expert which may reflect periods of stabilising of skills before new training is required. The suggestion is, that the further away from original training a clinician moves, the more training is a decision-maker. Additionally, it emphasises the on-going importance to clinicians of knowledge acquisition. Training is also highest in disability for those spending very least time in this area of practice (<20%). This is logical as spending less time implies less skill development. Training appears to be a dominant force even with high levels of accumulated experience.

4.2.5.3 A compensatory approach

The overall suggestion is one of a functional orientation reflecting previous work (e.g. Papadopoulos et al., 2012) across disciplines. Both areas of practice tend to reflect compensatory rather than rehabilitation approaches to patient management. In disability, this is predominantly represented by AAC. Hanen and Derbyshire, the other favoured therapies reflect language and interaction-oriented approaches, but may together with the AAC therapies, represent a lean towards environmental methods in disability. Speech-based items which are the next dominant grouping may indicate an inclination to rehabilitatory techniques. However, these are mostly used in community settings with clients who are possibly less disabled.

In dysphagia, the top ten selections can be categorised as bolus modification, physical strategies and a number are technique driven. Most are compensatory. The only swallow technique to find a place in the top ten is a compensatory technique. In fact, rehabilitatory-swallow exercises were not well favoured with the two compensatory-swallow techniques rating highest. As a group of techniques, only neuromuscular therapies and technologically-based interventions were rated lower. A culture of compensation can be seen within both areas of practice.

Kahmi (1999) proposes that therapists are pragmatic – more behaviourally oriented than theoretically bound. The data presented here suggests an appreciation for functionality. It is highly interesting that clinical choices reflect a relative absence of rehabilitatory therapies. Perhaps this is pragmatism, but is pragmatism wisely targeted? This question is absolutely integral to understanding why clinicians do what they do.

4.3 LESS THAN MORE SCIENTIFIC

The emerging picture is that the scaffolds supporting practice decisions with regard to treatment choices are not overtly rooted in scientific reasoning: this is now explored further.

4.3.1. Research evidence

The notion of a limited repertoire of treatments implies that research evidence may not be a useful scaffold. It did not differentiate the favoured from the least-favoured therapies. This undervaluing of research cannot be unexpected as this finding is replicated across multiple studies (e.g. Zipoli & Kennedy, 2005) and consistently over twenty years (McCurtin, 2012). In disability, literature-based therapies highlight this point, being underused primarily for knowledge-based reasons. Even non-scientific and pseudoscientific-therapies rated higher and some clearly contraindicated practices are employed. Oral-motor therapy for example, has been hotly debated in the professional literature and suffers from poor evidence (Lass & Pannbacker, 2008) and problems with task specificity. It is however, used by over two-thirds of disability clinicians at least on an occasional basis. Neither did experience differentiate use. Scaling data indicates that oral-motor tools are incorporated into speech work concurring with previous studies (e.g. Mackenzie et al., 2010). The suggestion is that clinicians are not scientifically-responsive practitioners, that they have valid reasons for using less than credible therapies, or that such therapies are part of the profession's intervention culture. For example, ROM-tongue which has not been well researched but possesses negative evidence (e.g. Teasell, Foley, Martino, Bogley & Speechley, 2006) may be part of the adult-neurological culture.

While there is evidence of clinicians using some therapies with supporting evidence (e.g. Hanen) most techniques they employ are not supported by high level evidence. AAC for example, has theoretical support and is well-researched. However, the large evidence base is mostly reliant on single-case designs (although this might appeal to client-centric clinicians) and absent in some cases, for example, communication passports (Sherlock, 2008) and visual timetables (Schneider & Goldstein, 2010). However, the theory behind such therapies appears sound and such interventions are also easy to operationalize. It can be suggested that AAC choices pivot not so much on the evidence but on the functional and concrete appeal of AAC work. Given the lack of clear scientific undertones to preferred items generally, the latter must be considered.

Dysphagia clinicians are beset by similar issues. They show relatively high use of some physical techniques for example, and while logically based they are not well served by examination in the literature on the whole (e.g. Burkhead, Sapienza & Rosenbek, 2007). The highly favoured therapy of thickening liquids is represented by a contradictory evidence base which is limited to adult-neurological populations in particular (e.g. Foley, Teasell, Salter, Kruger & Martino, 2008). So the literature for dysphagia therapies suffers from much the same problems as in disability. Moreover, nearly half of respondents agreed on the difficulty of converting research into practice concurring with previous barrier studies (e.g. Pennington, 2001). Thus the evidence base does not appear to provide clinicians with a wealth of firm grounding upon which to make decisions even when therapies are researched, there also appearing to be a disconnect between what clinicians do and what researchers study (McCurtin & Roddam, 2012). However, even if what was practiced was also studied, clinicians it appears would not be wholly influenced by research. While negative evidence accounts for some reasoning in non-scientific and pseudoscientific practices and it can be postulated that the low use of pseudoscientific and non-scientific therapies may be somewhat accounted for by this, research evidence is not the first point of judging a therapy. Practice whether scientific or not scientific, is primarily validated by other scaffolds such as experience, suggesting a reason why literature may not impact on some clinicians choices. Experienced clinicians across a number of demographics however, seem to both use literature-based therapies more and value scientific scaffolds to a larger degree, implying increased scientific practice with experience.

4.3.2. Evidence of scientific thinking

There is consistently low use of scientific reasoning to explain therapy choices and this is noticeable even for blatantly pseudoscientific treatments. While scientific reasoning is higher for these items, it still only accounts for only one-fifth of responses. It can be said therefore, that clinicians do not use scientific reasons to explain their decision making, for even the most non-scientific of therapies.

Subtle differences in scientific reasoning are observed. Compared to disability SLTs, dysphagia respondents demonstrated twice the preference for theory to explain use. This related specifically to swallow techniques indicating that categories of items may have singular or dominant pivots. Training in dysphagia typically emphasises the mechanisms of action for swallow therapies and perhaps the training rather than the theory is influential. It may also be explained in that suitability as a reason is less utilised than for disability practice, meaning a wider range of reasons are employed by dysphagia SLTs. Use of theory remains minimal however, and this concurs with studies both within and outside the profession (e.g. Law et al., 2007). This may support Kahmi's (1999) assertions that unlike research, practice is not theory bound and imply that therapy choices may potentially be devoid of theoretical underpinnings. Without theory, states VanDeusen Fox (1981), a discipline is about technique and technology. It might be expected that experts would make most use of theory but this is also not evident, and there is a decreasing reliance on theory by disability clinicians with increased self-determined skill. This points to increased autonomous decision making with accumulated experience, although such reasoning may be integrated into expert reasoning and not readily explicated.

Despite scientific reasoning being in short supply, there are indications that those using favoured therapies believe themselves to be operating scientifically in both disability and dysphagia. For example, those who use bolus-modification therapies are more likely to significantly agree with use of theory, rationales, making efforts to keep up to date and reading research. The indications are that this group feel more scientific, and so must feel these therapies are scientifically grounded despite the contradictory literature. This is not to say treatment decisions are not based on logic, even if not explicated. It is interesting for example, that ROM-tongue is the highest rated neuromuscular technique in dysphagia. This can be considered an SLT-specific treatment which is more task-specific than generic treatments such as vibration. It implies considered rationales. Most dysphagia clinicians are working with adult-acquired populations where there is a window for recovery of function. Disability clinicians who use oral-motor therapy more are mostly represented by paediatric and intellectual-disability populations where there are clear developmental and neurological overtones. Community-paediatric respondents most use this therapy however, perhaps understanding there is a critical time when such interventions might work. Thus choices might be more considered than the data suggests.

The valuing of science was evident in attitudes rather than practice with three statements ranking in the top ten and low-agreement statements appear to reject non-scientific thinking in practice. However, those who use less scientific practices (i.e. oral-motor therapy and Talktools) were significantly more likely to be influenced by non-scientific and non-professional sources as well as older sources, indicating a connection between less-scientific practice and non-scientific influences. Furthermore, the appreciation of scientific behaviours reflect far less on conventional constructions of science, that is, research, than on scientific behaviours and actions such as argumentation. The least valued scientific statement directly references science - perhaps the conventional scientific constructs of research and science are not appealing, unlike scientific behaviours.

More experienced clinicians across a number of variables and factors show higher value for science and less for non-science, probably related to an established skill base and perhaps confidence. Time may be a factor in this reflecting on findings from multiple studies across the health professions (e.g. Upton & Upton, 2006). More experienced clinicians (based on years and skill) disagree significantly more that they don't have enough time to develop practice implicating time in the ability to be scientific. Scientific valuing is less apparent in community respondents. A more likely interpretation is that this group are more practically constrained by both time and resources which the data indicates. Scientific practice thus appears to be impacted upon by practicalities. However, those with most qualifications tend to be significantly more scientific, concurring with Lizarondo et al.'s (2011) systematic review findings which found education degree correlated with research use. The question to be asked therefore is whether more experience, specifically further qualifications sway clinicians toward science, or do those who pursue such qualification have a scientific nature anyway? The findings from qualification also provoke an additional suggestion. If those with higher degrees are more scientific, perhaps those in academia who produce the evidence that is meant to guide clinicians have essentially different values to those who practice. Additionally, although the numbers of respondents were low and no real meaning can be thus extrapolated, voice and physical disability SLTs tended to be most scientific and those working in child mental health least. The suggestion is that the area of work might influence values or that clinicians elect to work in areas that concur with their values.

Such values may in fact influence therapy choices. While not many therapies were significant for the non-scientific and scientific extracted factors, those therapies that were may shed a light on practice. For example, articulation, a traditional speech therapy is currently less favoured in the literature, phonetic approaches being less preferred than phonological ones. It was however, the dominant model of intervention in speech disorders until the 1990s. A currently unpublished thesis (Pyne, Maxwell & McCurtin, unpublished) shows it continues to be one of the favoured therapies for developmental speech disorders in Ireland. It is significant only for the non-scientific factor, and those using it opt for simpler options, are more influenced by the fun element and commercial products, and clearly indicate they have less time to develop their practice. This suggests specific influences may operate in choosing a specific therapy; in this case it may be that articulation is an easier option. It is also more used by those in the early years of their career which may imply that the early years are typified by less complicated therapy options than in the later years.

In all, respondents are more likely to cite workplace availability than refer to a therapy's scientific merits explicitly, which begs a return to the question about whether SLT is a scientific profession.

4.3.3. Other EBP pillars

What emerges is that the immediate clinical context – the client and the clinician – is pivotal almost to the exclusion of other factors. A good deal of reasoning can be said to centrally revolve around clinical experience. This is reflected in other studies. Mackenzie et al., (2010) for example, in evaluating dysarthria management, found that SLTs using NSOMEs cited evidence from their own practice as important in this treatment choice, with the more experienced clinicians most influenced by this scaffold. Data from this study concurs. Furthermore, experience is used to validate a range of questionable and unscientific practices, and used in combination with suitability to support conventional, less-used and non-scientific therapies. The dominant reliance on practical evidence to explain use of neuromuscular therapies in both dysphagia and disability practice suggests little room for other scaffolds to support decisions. Moreover, experience as a guide rises sequentially through the years. Senior SLTs for example, are significantly more likely to use therapies because they work, also found to be a strong determiner is other studies (e.g. Watson & Lof, 2004). This indicates the 'because it works' argument is likely to derive from experience although reliance on experience starts at a high level, with four out of five respondents relying on it even from even the early years of their careers. Additionally, it is the only main reason for use not to differ between dysphagia and disability respondents indicating an SLT wide, culturally strong practice pivot. Experience may in fact help define the profession. Cementing this, reliance on experience is evident even for those who value scientific scaffolds. Those with doctorates for example while valuing scientific reasoning, also believe unreservedly their own experience.

The concept of suitability may also be said to reflect the clinicians own skills. This is implied when it is considered that patient and family preferences are poorly represented, mainly in reasons for use but also in attitudes. Few responses overall relate to client preferences which compares poorly to the use of patient-specific or pathological characteristics. While, the top rated statement was related to the influence of the individual nature of the patient and this corresponds to dominant therapy reasoning, this may be interpreted to mean patient data rather than patient preferences. It is probable that clinical patient data supersedes preferences suggesting expert type models of practice. It may also indicate that integrating patient values is not a pragmatic exercise, or considered operationally valid. Thus, of all the EBP pillars, clinical experience can be said to be the only one directly explicated in therapy choices as opposed to attitudinal statements, suggesting that EBP is not practically applied, and that scientific thinking has not been directly illuminated when practice was examined.

4.4 CLINICAL LIFESPAN

Changes to SLTs' reasoning throughout the years of experience is indicated. This cannot be radically unexpected although it must be interpreted in light of the continued dominance of core reasons and values throughout the career lifespan. In other words, while changes are suggested, a profession-specific effect is still obvious and extended data are warranted to strengthen the proposed idea of a lifespan.

4.4.1. Early accumulation and stabilisation

The beginning years of practice appear to differentiate themselves in a number of ways. It may be that newer clinicians are developing core skills. Clear therapy preferences were evident and are especially important in the light of the limited repertoires observed. Those in the early-career years in disability for example, tended to use the therapies of Hanen and parent-child interaction more (though they may not rank them as highly as other groups). In dysphagia, early-career SLTs tended to use texture modification more. These are treatments which can be considered core therapies, involving basic skills required by newer clinicians. Thus, this group may be learning new therapies and using them more frequently than other groups, but may not necessarily rank them as favourites. Use may instead reflect recent training and a more limited range of options. Less-complex practice was also seen with this group, SLTs in their early years reported they have most difficulties translating research but valued concreteness and fun activities more, especially in disability.

This group also differed in that they show higher use of the reason client suitability than those in the middle or later years of their career, the trend being for less use of suitability as a reason with increasing experience. For example, nearly three-quarters of all basic SLTs cited client suitability compared to between a half and two-thirds of senior SLTs. This least-experienced group as measured by a number of demographics were most likely to reference suitability for all significant therapies, including the less-scientific practices of oral-motor therapy and Facilitated communication, and the more traditional bolus-modification techniques. This is the opposite of the most-experienced group who cited experience most for these items. This dependence on suitability may in fact result from a greater reliance on patient-specific deficits to guide management. Respondents in the early years of their careers and dysphagia respondents with least time were more likely to agree that specific patient-deficits influence therapy choices. SLTs in the later years of their careers were more likely to disagree. Least-experienced SLTs across a number of demographics also agreed more regarding the importance of patient, patient responsibility and patient preferences although the values of disability clinicians remain relatively unchanged with increasing experience. The implication is that patient issues such as preferences and deficits become less depended on with the accumulation of experience and perhaps less compatible with experience. This would concur with the picture of the autonomous clinician developing over time.

However in the absence of experience those in the early years in disability are more likely to cite suitability than their dysphagia colleagues which implicates training in use of this reason. This implies that training (and experience) may facilitate use of experience as a pivot for decision making and lessen the impact suitability. Training may therefore be a component in the definition of experience. On the whole, basic SLTs cite lack of knowledge more as a reason not to select treatments and this makes sense, as they would be expected to have accumulated less knowledge. Less-experienced clinicians acquired knowledge through other clinicians more than those with more experience. They relied more on colleagues and experts than other groups, agreed most that clinical experience is the best guide and most learned by working with other clinicians. This is expected given the lesser clinical experience of this group. This group were also similarly most likely to reference other professional sources to guide them such as department policy and standards of practice in the workplace. This suggests that the early years of practice are more heavily dependent on profession-specific influences.

This beginning stage of an SLT's career might be typified by reduced complexity, less autonomy and the need to establish core skills. The dependence on external sources appears to decrease with accumulated experience as clinicians move toward more the autonomous practice.

4.4.2. Mid-years regrouping

While not being significantly different from either end of the spectrum, there are suggestions that the group in the middle years of their careers may be a slightly different faction based on isolated occurrences. For example, dysphagia SLTs in the middle years of their careers showed a significant reduction in use of volume regulation and were least likely to not use tube feeding, Hanen and articulation compared to their colleagues in the early or later years of their careers. However, not all such explanations can be accounted for by the middle group. For example, while swallow therapies were most used in the middle years, this is explained by dedicated time. SLTs who used them most have most dedicated time in the area and this group also tended to be adult-acquired clinicians which may also explain why they used dysphagia instrumentation more frequently. The indications are that there may be a tendency to stabilise practice in the middle phase, a kind of regrouping or reconsideration of intervention options which may result in a review of use of some therapies, perhaps followed by a return to use in later years. This group may also be trying out lesser-used options in this phase, exemplified by senior SLTs use of carbonation more than their colleagues.

Some differences are also evident in reasoning. Senior SLTs as previously noted, were most likely to use therapies ‘because they work’ reflecting a move towards autonomy in this group. This was also seen in dysphagia respondents’ relative reduction in use of suitability and more use of clinical experience in the middle years of their careers. One in twenty therapies showed significant differences in reasoning between the middle-years clinicians and other groups, with those in the middle years far more likely to reference clinical experience for those items. While this is not a high volume, it suggests that the differences observed may have some merit. Where those in the mid-years are similar to other groups this tended to be the early group suggesting sequential development of reasons for some items but non-sequential for others.

This middle phase of clinical experiences appears unsettled. For all significant disability therapies, emerging clinicians were most likely to cite suitability and experts most likely to cite experience. On the whole, the middle group of experienced clinicians were equally likely to cite these reasons. For the one dysphagia item, it is the experienced SLTs who were most likely to cite suitability while the emergent SLTs and expert SLTs were most likely to cite experience. The small number of items being significant and low cell count numbers prevents extrapolation of any real meaning. However, the pattern of similarity between this and other demographics of the early years relying more on suitability, the middle-experienced group using both main reasons or being different, and SLTs in the later years of their careers using clinical experience suggests this idea may be worth considering. The original groupings also suggest perhaps changes over multiple time frames. Equity between the two main reasons for use is for example, most represented at the periods of 5-10 and 25+ years. Early experience leads to an increased reliance on clinical experience as a scaffold over time, followed by equity of the two main reasons, followed by a return to favouring suitability which again diminishes towards the later years. This pattern remained stable for general and specialised experience.

SLTs in the middle years of their careers were also different in their subtle tendencies to defer external influences. For example, those with middling experience and represented by a variety of demographics were most likely to disagree that department policy, research, college learning, colleague opinion or experts influence their decisions. Specialists in disability and dysphagia for example, showed no regard for expert opinion and there was a decreasing reliance on expert opinion by disability respondents with increasing self-determined skill from novice to expert. This suggests a move away from those sources most valued by less-experienced practitioners and implies increasing autonomy. SLTs working medium-dedicated in disability may be even more internally focused than their dysphagia colleagues. They were least likely to make efforts to keep up to date or read research and most likely to disagree with the placebo effect and person-centeredness. Furthermore, they least agreed that one can waste time or do harm and agreed most with non-scientific statements. This contributes to a picture of practice highly pivoted upon the individual clinician at this stage and least susceptible to external influences. This may be explained by increasing confidence in skills, a period of stabilisation of learned skills or reframing of practice. It may also be more simply explained as SLTs with middle-years' experience and senior SLTs disagree most they have enough time to develop practice, and are perhaps more constrained by busy work lives.

4.4.2. Later years de-selection and expansion

Experience is also central to the later-career years. There is increasing agreement cross the lifespan with reliance on clinical experience rising to 100% after 15 years. SLTs in the later years of their careers were most likely to cite this reason but showed less regard for the experience of colleagues. So they possessed a higher value for their own judgement than that of others. Thus, expert SLTs were least likely to use other experts as information sources and it may be that expertise is a learning tool in the less-experienced years. SLTs with later-years' experience also cited training most, suggesting that the further away from original training a clinician moves, the more that clinician uses lack of training as a decision-maker. Alternatively, it may imply an increased regard for knowledge as a scaffold to choices. Increasing experience also resulted in less susceptibility to patient influences as seen across various demographics similar to Watts-Pappas et al., (2008) findings that more experienced clinicians involved parents less. The group in their later-career years were less likely to agree that patient preferences influence them or value what the patient brings to therapy, and also disagreed more that specific-patient deficits influence them. However, literature on clinical reasoning (e.g. Higgs & Titchens, 2000) would suggest that many skills become less conscious with practice and it can be also postulated that the influences are integrated from previous learning, and unexplicated rather than diminished in influence.

A picture of a highly autonomous clinician emerges, with decisions less dependent on external than internal factors. This corresponds to an increase in confidence with years of experience especially seen for grade and skill. There was also an increasing trend towards more active practice with years of experience and this may reflect both confidence and accumulated experience which support such active practice. Specialist SLT, managers and expert SLTs were the groups most likely to disagree with passive practice. It may be that promotion facilitates time to become active and involved, or perhaps clinicians who believe themselves more active and engaged, are more likely to achieve higher status. Given that the demographic is weighted towards the younger group, it may be the case that had the respondents been more balanced, clinical experience may have emerged as the dominant reason for use.

Despite the internal focus in the later years, increased experience also entails an increased appreciation of research, also suggested by Lizarondo et al., (2011). Across a number of demographics, this group were most likely to disagree that research did not influence them, that it was difficult to translate and to agree that they read research regularly. Reading research was less differentiated among the dysphagia than disability groups, indicating that research values in dysphagia practice may be less altered throughout their clinical experience. It may be that initial training affects this susceptibility to research. The suggestion is that accumulated experience facilitates access to research appreciation and the EBP model becomes more useable with increased experience.

There are indications that practice is also increasingly complex. For example, increasing use of communication boards/books was seen with increasing experience across demographics with the largest effect for specialised experience. A developmental pattern is clear for the original groups with one-third of those working under two years using this therapy, rising sequentially through all groups until over three-quarters of clinicians working more than twenty-five years were using them. The overall picture is one of increased use with increased experience however it is measured. Complexity is also indicated by tube feeding. While there was fairly even use of use of it between groups, SLTs in the early years of their careers were most likely not to use this therapy. Furthermore, less-specialised clinicians favoured speech therapies although the explanation may pivot upon the populations served by these groups rather than experience itself. The indications are that while AAC dominated the repertoire of experienced disability clinicians, these were also primarily pure disability clinicians. So complexity for both dysphagia and disability may be more particularly about specialisation and population than years of experience.

Practice may however also be constructed in more complex ways. There may be an ethics effect since SLTs in the later years of their careers agreed most with ethics statements seen across a number of demographics. Experience, therefore in whatever way it is represented seems to effect a change in ethics. This complexity was also represented in the accumulation of a broader range of options especially in disability practice. Fewer therapies were never-used by those with most disability experience and they used a variety of therapies more frequently. The pattern appears to indicate the development of a repertoire with specialised practice. Experienced clinicians also seemed to use literature-based therapies more as represented by years of experience, professional qualification and grade. This suggests either more access to or use of literature with experience in an area. Perhaps experience or expertise is partly represented by accessing the literature.

Similarly, more experienced clinicians may also discard some (but not all) therapies. For example, although Hanen is a preferred therapy overall and respondents in all years of their career showed strong use of this intervention; those in their later years were most likely not to use it, perhaps using it less over time. ROM-tongue, the preferred neuromuscular technique in dysphagia, was used most by basic SLTs. Dysphagia SLTs in the later years of their careers showed a drop in use of instrumentation therapies, swallow therapies, neuromuscular treatments and individual therapies such as articulation. This may reflect deliberate de-selections by experienced clinicians or perhaps less-experienced clinicians are still in the process of testing their usefulness.

However, the discard hypothesis may be also explained by a generational effect which is also postulated. There were clear differences across some therapies based on length of time since qualification. Those longest qualified in dysphagia were most likely to use stretching and deep massage which were least used by those who were shortest qualified and who chose vibration more. SLTs that were qualified a medium amount of time were more likely to use Oralight. Those with more than professional qualification and most-specialised experience in disability used tactile-sensory stimulation most. However, the limited repertoires make it difficult to reliably argue this case although there are hints from broader interventions. For example, those in the middle years of general and specialised experience, and SLTs with more than a professional qualification who are an older demographic were more likely to use Bobath, a therapy which emerged into prominence in SLT in the late 1980s through the 1990s. Oral-motor therapy is a classic case in point. Expert SLTs were more likely to choose this and emergent SLTs least likely contradicting MacKenzie et al.'s (2010) study of practice in acquired dysarthria which indicated that the use of NSOMEs was not associated with years of experience. The underlying suggestion from this data is that those recently trained are not using it due to its prominence in professional debates. Expert SLTs were perhaps using this therapy either because they trained in it or they see its value contrary to literature. Other examples are evident. Narrative therapy was used more by those with less experience as measured by a number of demographics and is a more recent introduction into the field of clinical practice. TEACCH was most used by Seniors SLTs, expert SLTs and those in the later years of their careers. SLTs with middle-years disability experience used MORE most; this therapy emerged into prominence in the late 1990s. SLTs in the later years of their careers were more likely to use Listening therapy, this initially emerging in the 80s and being rebranded a number of times. Sensory-integration therapy was highly fashionable in the 1980s and 1990s, and this may be reflected in its more frequent use by senior SLTs, those SLTs who are longest qualified, and those with most dedicated time in disability practice. However the shortest-qualified SLTs also used this therapy which might be explained by its re-emergence or possibly a reduction in use by SLTs in the middle years of experience. The same pattern was seen for articulation therapy where both early and later-experience groups used it most. It was a standard for speech intervention through to the 1990s. Perhaps clinicians in the later years of their careers are passing it down to their less-experienced colleagues.

The impact of experienced colleagues is clear throughout the literature (e.g. Stronge & Cahill, 2012). In light of this, it is interesting that expert SLTs are least likely to value long-time use.

Thus a career lifespan is proposed. This incorporates a dependent early stage, which is subject to profession-specific and patient sources and prefers less-complex practice. At this stage, clinicians are developing core skills and have a more limited range of options than other clinicians. The middle-phase clinician is regrouping having become more autonomous and uses this stage to stabilise prior to moving forward. Finally, the clinicians in the later years of experience while also reflecting that autonomy, in addition to complexity, also display openness to selected sources in this case, research evidence.

4.5 DISSONANCE NOT CONCURRENCE

While there is a high degree of harmony in the data and the road map towards understanding clinical practice appears clarified, there are a number of points of dissonance that help both broaden understanding of practice and raise questions which need consideration.

4.5.1 Research use

On the whole SLTs place a high value on research evidence. Nevertheless, when specifically explicated using therapies, it is clear that the influence of research in guiding decisions is limited. Thus, while most studies (e.g. Risahmawati et al., 2011) suggest a respect for research explicated via attitudinal statements, it may be that elucidating actual practice as opposed to aspirations provides for a more accurate picture. At the very most, underuse of research as a pivot may suggest translational concerns as reflected by this data and by other authors (e.g. Bernstein-Ratner, 2006).

Despite this, clinicians appear to feel their treatment choices are well supported by research when in fact this is not the case, concurring with Watson and Lof's (2004) findings regarding NSOMEs. Even experienced clinicians who report using literature-based therapies more, evidence contraindications represented by the therapies they use. Expert SLTs for example, are significantly more likely to choose oral-motor therapy. The clear suggestion is that practice is constructed less on research and more on practical evidence. Indeed, recent new evidence (Clark, 2012) suggests that neuromuscular therapies may be more evidence based and theoretically sound than previously thought. If research can change direction, then clinicians under use of literature to scaffold decisions appears more logical than perhaps it was previously thought to be. The use of oral-motor therapy for paediatric populations suggests for example, perhaps considered use during a critical learning period (although the combined use of speech and oral motor therapies might suggest the opposite).

Additionally, it is interesting that specialist SLTs are least likely to use literature-based therapies. This implies that expertise is constructed as being mostly about experience. Furthermore, the aspirational statements differ more on experiential demographics, perhaps indicating that those with more experience have more aspirations or are more tactical in how they complete surveys.

4.5.2. Scientific values

Discord is also apparent between practice and aspiration for scientific values. For example, the analysis of the statement regarding science as deciding the direction of treatment shows no differences between those choosing and not choosing pseudoscientific therapies. In fact, higher numbers choosing these therapies tend to agree with the influence of science in treatment decisions, suggesting a clear detachment between what is practiced and what is preached. This also applies to CAMs, non-scientific therapies such as Talktools, as well as the more traditional options. This clearly suggests that science does not influence decision making and that aspirations are more fantastical than reality-based.

4.5.3. Ethics

Despite, the lack of scientific overtones, it is suggested that the low use of non-scientific and pseudoscientific practices in general reflects on a profession with clear scientific and ethical underpinnings. Likewise, responding behaviour suggests that personal reasons such as believing in, or familliarity with a therapy or technique are insufficient grounds for using an intervention. Surprisingly, over a third of respondents were neutral about the harm-potential of therapies. However, the most-experienced SLTs and those who worked in dysphagia were most convinced of the potential for harm, indicating that clinical experience and the area of practice impacts on such values. Disability clinicians, who work in areas where there may be more scope for pseudoscientific and non-scientific practices, were most likely to agree with wasting time. This infers a direct link between the area of practice and attitudes.

There does not however, appear to be a link between aspirations to science and ethical leanings. SLTs with more than a professional qualification, who were more aligned to scientific values, were also significantly more likely to disagree with the potential for harm and wasting time, indicating a disconnection between scientific and ethical values. A clear ethical stance did not emanate from the data. Perhaps SLTs have high confidence in their profession and its scientific basis. Perhaps they reference their own practice when making attributions, and clearly they are confident that their own practice is sound.

4.5.4. Confidence and passivity

Confidence is clearly present and furthermore not related to selected treatments. It is apparent for example, that use of the discipline-specific pseudoscientific and non-scientific treatments does not impact on confidence; clinicians who use these therapies are as confident in their choices as colleagues who do not. However, while confident as a group, this does not correlate with beliefs with over eight out of ten SLTs opposing practice based on therapist beliefs. Such beliefs are obviously not interpreted to mean believing in a treatment 'because it works', as 90% do use therapies for this reason similar to Gee's (1992) teachers. Do such beliefs and such confidence translate then into passivity? The answer is not necessarily if looking at the passive statements, as the group as a whole believe they can effect change and are active practitioners. This is itself may have a dissonant ring if the limited range of therapies used in practice is accurate.

4.5.5. Clinical experience

There is a high regard among all groups for clinical experience, a finding replicated in other studies (e.g. O'Connor and Pettigrew, 2009). Except for those in their early years of practice however, the knowledge and skill which tends to be valued is the clinicians own experience and not that of colleagues. This reflects on the overarching valuing of a clinicians autonomous and internal experience in making decisions, and the increased reliance on that internal scaffold with the accumulation of clinical experience. Thus clinical experience can be interpreted as a highly individual construct.

4.5.6. Training

Training explains to a significant degree the non-use of therapies similar to that seen in Turner and Whitfield's (1999) study, and there is harmony between this in both practice and aspirations. However, lack of training explains both use and non-use of the same therapies within the sample, even in dysphagia where there is mandatory training. The same effects are seen in disability for therapies which require training and those which do not. This might suggest that training is used habitually as a reason. It is postulated that the definition of training might explain this dichotomy. Training may in fact embrace informal methods in additional to formal ones, thus clinicians may require some training in whatever form before making a decision to use a therapy. Furthermore, training also continues to be crucial in the later years of the clinical lifespan concurring with this suggestion. The acquisition of knowledge may therefore be enable clinicians to reliably evaluate therapies prior to making a reasoned decision regarding use.

4.5.7. Practicality

SLTs are not overly influenced by resource or practical issues and thus appear less influenced by practical issues (in theory) than the findings from other studies suggest (e.g. Rose and Mackenzie, 2010). However they do report that they are constrained by practical issues applying to research evidence with more SLTS agreeing than not that it is difficult to convert research into practice. Furthermore, this is so despite the vast majority reporting that research influences their decisions regarding interventions, that they are more likely to believe in a therapy if research evidence is attached to it and reporting that they reading research regularly. Thus, practicalities are used to explain only research underuse and not considered relevant elsewhere. It may be that practicalities do not truly explain research underuse given SLTs disregard for it elsewhere. If however, the lack of use of research evidence in the clinical context is accounted for by concerns with translation, then it suggests that practice and research my not be compatible arenas.

4.5.8. Patients

Client suitability would appear to form a core component of decision making. However, data from attitudinal statements suggest that suitability refers primarily to patient characteristics as previously argued. Patient values and preferences tend not to be utilised by respondents when making actual treatment decisions. What this implies is that suitability as constructed by clinicians is more about the clinician's skills in using client-deficit information than consideration of patient values. The implication is that the pillar of EBP which relates to patient issues, much like the research pillar, is less utilised than the experience pillar, and may even be considered obsolete.

4.5.9. Repertoires

It is quite clear that practice is effectively represented by a reduced number of therapies for both areas of practice. However, only one in five of respondents agree that they have a repertoire of favourite treatments and they report that they actively explore new therapy options. It can be postulated that SLTs may actually pursue new options and despite this, limited new therapies make their way into practice. However, the overlying suggestion is that clinicians prefer to believe that they act differently and perhaps more scientifically than they actually do.

4.6 CHAPTER SUMMARY

The fact that so many dimensions produced by factor analysis are needed to explain practice is really not that surprising. Clinical practice is a pot with many ingredients and not simply explained by one or two constructs. However, given that clinicians effectively define practice quite narrowly, the extrapolation of multiple factors may be interpreted as another sign of dissonance. There is clearly a practice-preach divide represented by disconnections between attitudes as explicated and practice as defined by respondents. This mismatch suggests that clinicians either present a face which they think is appropriate although there is no reason for this to happen on an anonymous survey, or they believe what they say is what they do. It may also represent actual aspirations which may be impacted by the realities of practice. It implicates attitudinal studies as lacking in substance in accurately informing us how the profession operates.

Differences in use and reasoning may result from movement through the clinical lifespan, with increasing scientific valuing evidenced in later years. While therapies are not used for scientific or research reasons, neither are non-scientific practices well represented. This would suggest an engagement with scientific thinking although this is not realised in reasoning attached to therapy use. The indications are that the pragmatic clinician is operational, being more influenced by therapies that are functional and can be operationalized (Odom, Boyd & Hall, 2010). The case for scientific practice is unproven, although defining what SLTs means by suitability and experience may yield scientific characteristics, and this need to be understood before excluding any scientific merits they may incoportate.

Intervention decisions are highly therapy centred and clinician centred. The dominant reliance on clinical experience to rationalise choices indicates practice continues to be validated by experience, perhaps suggesting why literature may not impact on clinicians' choices. It implicates an inadequacy in EBP. It can be said that clinical experience is the pillar which effectively supports clinical practice and the other two pillars may be less useful. It also suggests that the EBP model needs rethinking. Essentially, the nature of clinical practice needs more explication but the overall suggestion is that the scientific aspirations of a scientific profession are not in fact realised.

Chapter 5: Group interview results

5.1 INTRODUCTION

Three focus groups served as the data sources for this phase representing participants from different work settings. The aim of the qualitative phase was to further explore clinical practice and augment the data from the survey. Questions were developed based on the original research aims and outcomes from the survey data. Therefore, the four questions which constituted the pivots of the focus groups concentrated on the constructs of client suitability, clinical experience, training and science. The findings are outlined below.

5.2 DEMOGRAPHICS

It is important to consider representativeness when summarising this data. Group make-up representing three communities of practice may not be archetypal of the profession as a whole. Additionally the nature of shared opinion in focus groups may function to constrain individuals as group dynamics may influence articulated opinion. However, the similarity of data across groups is striking and the data may be said to reliably represent current opinion.

SLTs working in voluntary (disability), hospital (acute) and community settings characterised the focus groups. The disability group was from the South region. The other groups represented the two Dublin regions. The majority of participants represented senior grades, paediatric populations and had basic professional qualifications.

Table 5.1 Focus group demographics

Demographics	**Disability**	**Hospital**	**Community**	**Total**	**%**
No. members	23	9	16	48	
Years' experience					
0-5 years	11	5	4	20	41.6
6- 15 years	6	4	5	15	31.3
15+ years	6	0	7	13	27.0
Time since qualification					
0-5 years	11	5	4	20	41.6
5- 15 years	5	4	5	14	29.2
15+ years	7	0	7	14	29.2
Grade					
Basic	11	3	3	17	35.4
Senior	11	5	11	27	56.3
Deputy manager	0	0	1	1	2.0
Manager	1	1	1	1	2.0
Area of practice					
Intellectual disability only	8	0	0	8	16.7
ASD only	4	0	0	4	8.3
ID & ASD	11	0	0	11	22.9
Dysphagia	3	8	2	13	27.0
Acquired-neurological disorders	0	6	2	8	16.7
Developmental speech & language disorders	0	2	13	15	31.3
Population age					
Paediatric	18	2	14	34	70.8
Adult	0	7	2	9	18.8
Mixed	5	1	0	6	12.5
Setting					
Voluntary	23	0	0	23	48.0
Hospital	0	9	0	9	18.8
Community care	0	0	11	11	22.9
Language class	0	0	4	4	8.3
Rehabilitation unit	0	0	1	1	2.0
Clinical					
Clinical	22	8	15	45	93.8
Administration	1	1	1	3	6.2
Highest qualification					
Diploma	3	0	2	5	10.4
Bachelors	14	3	6	23	48.0
Masters (professional) qualification	6	3	3	12	25.0
Post-graduate diploma	1	0	0	1	2.0
Masters by research	1	3	5	9	18.8

5.3 THEME DEVELOPMENT

5.3.1. Development of themes

Coding took place over eight phases in total. Amendments were made for incorrect coding and revisions made accordingly (Appendix 30). Phase one coding was revisited immediately post coding as coding was deemed to be unbalanced between the first and last groups due to under-coding. The evolution of coding was as follows:

Table 5.2 Coding evolution

Stage	Total codes
First order	1329
Second order	800
Third order	106
Fourth order	41
Fifth order	37
Sixth order (Main themes)	12
Seventh order (Super-themes)	3
Eighth order (Meta-theme)	1

An example of initial coding is provided (Appendix 31).

5.3.2. Member checking

As part of a rigorous approach to data analysis member checking was undertaken. Participants who consented to be approached for this purpose were sent summaries based on initial researcher impressions of the data following transcription. Of those participants who consented to receive member checking (n=33), one response (Annie) was received as previously referenced. Annie's comments were taken on board by the researcher during data analysis.

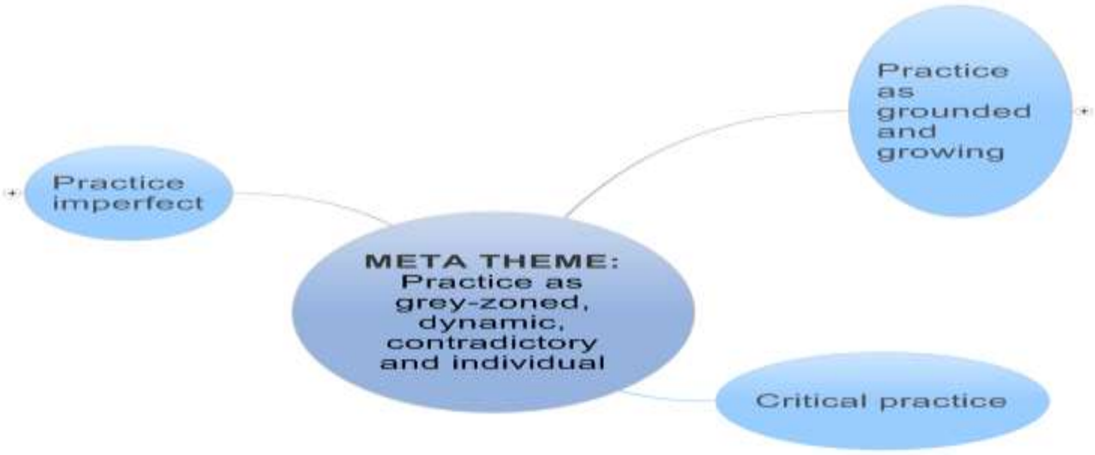
5.3.2. Meta theme

The meta-theme emerging from the data is 'Practice as grey-zoned, contradictory, dynamic and individual'. This reflects the balance and complexity of clinical practice as described and constructed by clinicians. Clinical practice is essentially multifaceted and compound, not neat and tidy, reflecting less a black & white construct than the 'grey zones' or quagmire initially described by Schön (1983). Practice is also composed of contradictions. It is for example art and science, both active and habitual, external and internally influenced, appreciator but not necessarily user of research.

The explanations for such practice appear to be pivoted on the uniqueness of each patient, resulting in continually dynamic and pragmatic practice, constraining the application of unadulterated therapies and rule-based treatments, and promoting flexibility and online reasoning instead. Patient uniqueness is mostly concerned with specific clinical characteristics and not necessarily patient preferences.

Essentially, practice is influenced by multiple variables and has the appearance of a chaotic enterprise but is scaffolded on a number of solid constructs which represent both the thinking and routine clinician. These are primarily the combination of a clinician's accumulated repertoire; co-operative evolution, and; trial and error with each singular patient. Practice is in essence, an experimental event, more ingredients than recipes. This means that at its core, it is not so much guided by translationally challenged external research evidence, as by the internal clinician functioning as sometimes scientist and sometimes artist. The metatheme is derived from three superthemes (Figure 5.1)

Figure 5.1 Metatheme and superthemes

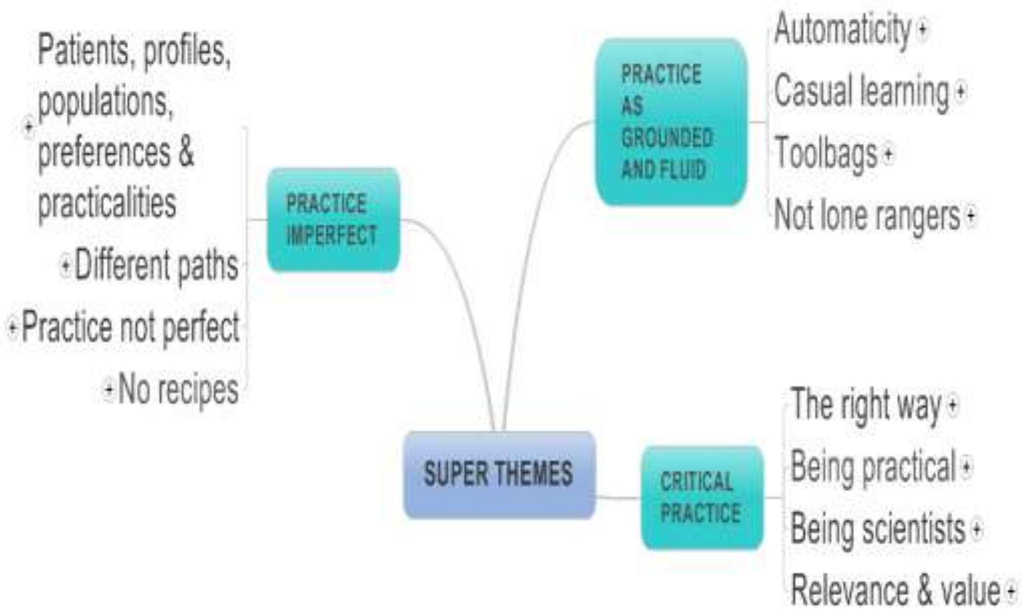


5.3.4. Superthemes

Three superthemes represent the meta-theme: Practice imperfect; Practice as grounded and growing, and; Critical practice. These superthemes paint both a complementary and contradictory picture of clinical practice as constructed by clinicians. Essentially, the superthemes suggest that clinical practice is not a textbook and seamless occupation, is continually shifting although grounded in previous learning, and requires flexibility in operation. The suggestion is that scientific thinking is a component of practice, a tool with which to approach the various ingredients and dynamic nature of such practice. However, these scientific elements do not necessarily reflect EBP as typically constructed.

The main themes which produced the superthemes are represented below (Figure 5.2).

Figure 5.2 Superthemes and main themes



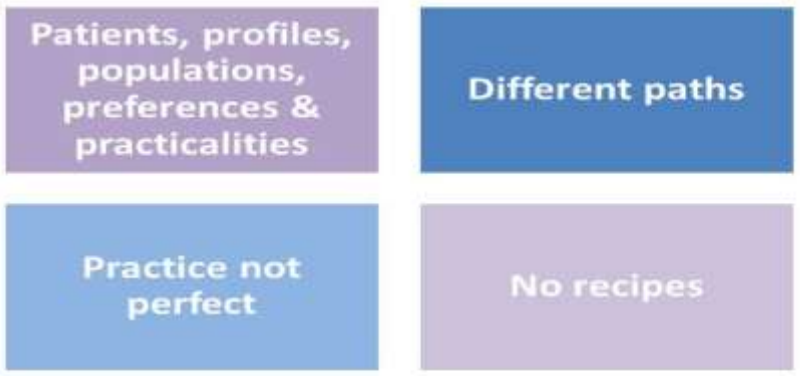
The results of the superthemes are presented below.

5.4 SUPERTHEME 1: PRACTICE IMPERFECT

'It's more science than art, but there's a lot of art in it…I think there are both; I think it's a mixture of both'. (May).

The supertheme 'Practice Imperfect' is constructed from four main themes (Figure 5.3).

Figure 5.3 Practice imperfect main themes



The main themes represent multiple constructs which essentially define practice as inconstant. Fundamentally, clinicians infer that practice is not overtly rule-based, not mirroring a recipe which the clinician can follow to produce a perfect intervention episode. While not disordered, it is highly responsive to a variety of factors. It is composed of manifold elements, impacted by clinicians themselves and the professional culture, but mostly by pivotal patients to whom treatment is individually tailored. Therapies are consequently not used without reference to the individual patient and therefore without modification. Field evidence contributes to this variability and dynamism, and clinicians recognise research evidence as flawed in guiding clinical practice in this erratic context.

5.4.1. Patients, profiles, populations and practicalities

'We couldn't possibly create a package that would be one size fits all'. (Matt).

The idea of unpredictable practice revolves predominantly around its human element, that is, the centrality of each individual patient in treatment decisions. Thus, many participants construct practice as *'individual packages'* (Lizzie). In effect, '*you can't just have a fast and hard rule for everyone'* (Nora). Such responsive behaviour implies that there are no cookbooks and mandates that treatment selections are primarily scaffolded on each single patient's characteristics. Participants across all groups identify a number of these including cognitive ability, medical issues and parental competencies. This therefore entails *'a very symptomatic approach'* to intervention according to Leah, a hypothetico-deductive model of reasoning characterised thus:

> *'You evaluate how they responded, and that's what guides you……you're constantly evaluating what you're doing and saying did that work, did that not work…why did that not work'* (Niamh).

This infers that therapies are not the primary influence when making management decisions, rather patient characteristics are matched to the therapy. In other words:

> '*We wouldn't be trying to fit the child to the therapy, but really would the therapy work with the child'* (Annie).

As a result of this patient-first focus, criteria attached to individual therapies constrain their use across client groups meaning that patients may not '*fulfil the criteria for that particular type of therapy'* (Becca). The nature of therapies may also restrict their selection. Matt for example, tells us that:

> *'The patient needs to have….the motivation and the buy in to the therapy…particularly with very intensive therapies like LSVT'.*

Practicalities also influence decisions such as '*whether they're likely to attend'* (May), '*class dynamics'* (Annie), and '*if they're an outpatient they might not be able to transfer back in'* (Nuala). Therefore, a clinician's treatment choice rests initially on the whole patient context.

The singular patient also has a broader context – that of the client group he or she represents. There appear to be treatments which are population appropriate, for example, '*the Shaker….I felt it was never appropriate for our population for the most part'* (Becca). Interventions may therefore be deselected if not fit for the population being treated. The Nuffield for example, was '*discarded that because it wasn't working for our client group'* (Stephanie). This does not imply that deselected therapies are valueless, just that they are population unfriendly. As Annie comments regarding the Derbyshire, *'whereas if I was going with a different client group I probably would use it'.* The client group a clinician works with impacts treatment options in two ways. Firstly, deselection of treatments:

> *'I didn't have anybody at the time which meant….I had never used that programme since the training I did'* (Maryanne).

Secondly, the precedence of population-specific experience:

> *'I prefer to go to a surgeon who has a number of operations under his belt than….maybe to a therapist who has very little experience'* (Julie).

This implies a constrained circle of knowledge which extends to other potential scaffolds such as research as *'you'll probably know more about the evidence base that's around the client group you're working with'* (Eleanor). However, the importance of population-specific effects does not appear to override the patient-specific effect as '*even with the same bag of tricks…..you're tailoring it to that person'* (Caroline).

So decision-making cannot be divorced from either the individual patient or the client group. However, patient issues appear defined by specific characteristics and deficits rather than any broader construct. Patient preferences for example, are infrequently mentioned across the three groups, the suggestion being that patient values form a lesser component of decision-making. Whatever the explanation, decision-making is effectively scaffolded on the unstable basis of each individual patient's characteristics and the clinicians experience with the patient group. This makes practice episodic and subject to multiple, unique and sequential decisions. The implication is that practice may not be wholly scientific as Tara argues:

> *'A lot of what we use is so open to slight changes…that invalidates…the results because it is so individual both to the clinician and the client'*.

Thus the uniqueness of each episode of intervention essentially means that practice does not follow rule-based approaches.

5.4.2. Practice not perfect

'You have to take on board factors very difficult to control in a research environment'. (Claire).

Conventional science may not accurately represent practice. As May points out, '*I would think what I'm doing isn't remotely scientific because it's a lot of bubble blowing'.* This is particularly noted by disability and community groups and is highlighted by ideas of immeasurable practice. Stephanie for example, comments on a recent case that:

> *'She has certainly improved but if I was to write out what she did on her assessment she hasn't made any improvements at all…how do you measure that?'*

Tracy concurs saying:

> *'Another girl…she had grown a foot taller….you could see the smile, the confidence. How do you measure that, you know?'*

The implication is that making a difference is not the same as producing a quantifiable outcome, and '*outcome isn't just based on the impairment so, while a person's scores may not change…you actually made a difference to their lives'* (Maryanne). On the whole clinicians argue for the valuing of non-measurable work. As Caroline notes,

> '*The creative art we do…probably has…. more real outcomes…for our clients…they don't really care about their scores at the end of the therapy block'.*

This supports arguments that clinicians are bound by behaviour change and making a difference may be defined functionally rather than scientifically.

There are indications of a context of clinical uncertainty, articulated by participants across groups and '*sometimes you're not even 100% sure what the diagnosis is yet'* (Claire). This lack of surety may mean that clinicians then '*you have to depend on trial* *and error'* (May). So practice is not always predictable, being largely explained by the human element. It is after all,

> *'…impossible to control for all the variables, human beings are so different and changeable from moment to moment, so that makes it hard to…have it an exact, kind of science'* (Helen).

The nature of practice itself also contributes to this uncertainty. There are for example '*incidentals in your therapy that can make a difference'* (Becca) which furthermore, '*might be a little bit difficult to unpick'* (May). Clinicians across settings appear highly aware of extra-therapeutic factors such as the placebo effect and the therapeutic alliance. As May emphasises:

> '*Sometimes there a danger that….it's the therapeutic relationship that was doing it…regardless of what you actually (do)'.*

This has implications for acting scientifically as *'it's hard to be hard to be scientific about some of the aspects of our therapy'* (Susan). Furthermore, being scientific may not be paramount, even in the context of pseudoscientific practices. Annie states that while *'there is no evidence for AIT...it's nice that a parent and child sit down for half an hour to do something together'.* This entails a broader construction of practice.

Practice is also unstable as it appears subject to trends or '*swings and roundabouts'* (Stephanie). Niamh equates this to fashion: *'some therapies come into vogue and then they go out of vogue'.* An experienced clinician even notes that *'if you stay around long enough they come back'* (Moira). Participants mention a number of approaches which were *'all the rage at one stage'* (Nuala). These changes can often lead clinicians to question practice such as '*why did I stop doing it in the first place?'* (Stephanie). Perhaps the seasonal nature of some therapies means they are less susceptible to being researched.

Clinicians acknowledge however, that imperfect practice may be reduced by the use of science and it appears that this notion of being scientific revolves essentially around monitoring and the use of outcomes as expressed by a number of participants.

Most clinicians '*would be thinking in terms of outcomes from the beginning*' (Eabha). Nevertheless, this may not be habitual:

> *'Part of what makes it hard for us to talk about it being science is that we don't document it very well either'* (Becca).

This promotes the suggestion that practice needs to be more scientific, essentially that *'we do need to tighten up things'* (Caroline). Moreover, research evidence rather than reducing uncertainty, may instead contribute to it. May underscores this feeling when she states that '*you're not really sure, for a lot of things we do there isn't really clear evidence about specifics of things'.* This leads to questions such as that posed by Stephanie: *'so if there isn't an evidence base what do you do? Do you not do it?'.* Thus, SLTs reference this lack of certainty resulting from research output explicitly, most exemplified by Catriona's contention that practice *'can't be scientific in the sense that it is not clear cut'*. Practice effectively, does not permit perfection.

5.4.3. Different paths

'You have to be able to make your own clinical judgement as someone who works a lot'. (Ruth).

Clinicians construct both themselves and the discipline as unique in many ways. They admit that practice is impacted by individual clinicians, what Oliva calls '*personality preference'.* This results in variable practice even with defined programmes, given that:

> *'Even if you take an off the shelf package, the way I might do it might be very different to the way Matt might do it'* (Nuala).

Moreover, this is not necessarily a bad thing as '*none would be wrong, just (a) different slant'* (May). In fact there is a clear expression of being different as being okay across all groups, from Leah's rationalisation that its '*okay to take different routes because everyone's putting a lot of….thought into it anyway',* to Matts contention that it doesn't make a lot of difference '*as long as you reach that goal'.* The belief that reaching the goal is most important is agreed with by multiple participants. However, this dependence on the individual clinician has implications. Essentially, each clinician is essentially responsible for the quality of their own practice, being

> '*…as experienced as you put into it, so somebody could be on a single track for twenty years and really not develop'* (Annie).

Thus, scientific practice may rely on a number of traits including '*seeking the experience…taking the initiative' (*Nuala), and *'your willingness to take on different things' (*Lizzie). This implies a heavy dependence on each clinician to act scientifically.

Differentiation may extend to areas of practice, with some areas being considered more traditionally scientific. After all, '*it depends…on the setting that you work in'* (Claire). Indeed, SLTs who do not work in acute settings reference such settings as being more scientific:

> *'Sometimes SLTs…can define themselves a little more scientific because they're working in more medical scenarios…than…particularly for us working in the community'* (May), and;
> *'If you worked in a hospital setting…you could scientifically evaluate that….a lot more clearly than…the population we work with'* (Claire)

Dysphagia in particular is cited as more potentially scientific because it is '*a lot more concrete'* (Matt). It is not clear whether clinicians elect to work in areas that fit them or they fit into the culture of their work setting. Perhaps, Sarah asks, '*if we worked in a different environment would we be leaning in a different direction?'* Furthermore, there appears to be a reference to the group to check practice as Rose exemplifies:

> '*I find it reassuring because that's not what I do so….I'm saying to myself well if no-one else is doing it…I'm not too bad!'*

Some clinicians also construct the profession as unique and different from other professions– this is most commented on by the hospital group and a large part of this identity refers to creative elements:

> *'We have a degree of creativity in our profession that other professionals don't….OT & Physio….have more of the same programme for every patient than we do...it's not that simple from not being able to talk to being able to talk'* (Matt).

Part of this difference seems to imply that SLTs are more responsive to patients than other professions, for example:

> '*What we do can be quite interpersonal with people, and maybe that's what physios don't get the opportunity to be'* (Nuala), and;
>
> *'We're not like teachers; we don't have a prescribed curriculum'* (Niamh).

The implication is that other disciplines have prescribed interventions which do not entail a creative or interpersonal component. Being different encompasses therefore both the clinician and the profession.

5.4.4. No recipes

'We don't have recipes really, we just have loads of ingredients and we decide to put them together in the way that we want'. (Niamh).

Clinicians quite clearly indicate that practice is dynamic, requiring them to be continually engaged. It is comprised of many variables which effect decision making. Beth reflects multiple voices when she calls practice '*a package then'.* Fundamentally, there is the requirement for intervention to be multiply scaffolded on a combination of *'both science and creativity together'* (Clara), being essentially defined as:

> *'You have an idea…that's the art, and the science part is the fact that you measure things and you've theories and…the evidence base'* (Lorcan).

Practice thus requires flexibility and this is reflected continuously by the data, perhaps most specifically by notions of trial and error which occurs '*constantly'* (Catriona), being *'used an awful lot'* (May) resulting in an apparently causal attitude: *'So you try something and you know, it doesn't work and you have to go a different route'* (Stephanie).

The idea of absent recipes is further enhanced by the eclecticism which defines practice among all respondent groups. The feeling is that '*most therapists take an eclectic approach anyway, they mix and match'* (Rose) resulting in practice which is '*a bit of this and a bit of that'* (Stephanie). In fact, there is an underlying suggestion that clinicians are comfortable with such styles of working in that they *'like to be flexible….I* *don't rigidly stick to it if it's not appropriate for that person* (Maryanne). Thus, clinicians appear reluctant to follow more stipulated and less individually-based practices and are grateful for the latitude:

> *'Like in America there's only prescribed things you can do…we're very fortunate here in that there is that leeway to try a bit of this, that didn't work, give this a go'* (Sarah).

Indeed, while '*there's very few off the shelf programmes'* (May), the underlying complaint is that such interventions are not representative of the patients typically presenting in clinics, being for '*dream children really'* (Jackie). This sentiment transfers across the area of practice.

The lean towards flexibility may in fact explain the appeal of some preferred therapies, that is, their very adaptability - even when not recommended.

> *'A lot of therapists go on courses and….take the really good bit out of it and…we might end up doing a form of treatment with a client that's a little bit of a few things' (Clara).*

In effect, clinicians take '*aspects of it and implement it….as it suits your client group* (Beth). There is an overriding view that '*a lot of therapies are…flexible, and can be adapted'* (Catriona). The lack of appeal of some interventions might be similarly explained. Maryanne for example, speaks positively about LSVT, but also suggests it is too rigid: '*it's very effective, and its very evidence based, but you have to stick to it'.* Clara in referencing MACS, contrasts this *'very much dictated approach as opposed to being flexible and adaptive with clients'.* This inclination towards tailoring therapies, while representing the accommodating and active clinician, has major implications for the use rule-based therapies and research evidence

The freedom to alter therapies enables clinicians to exploit less frequently-used options and results in fewer discarded therapies than might be imagined:

> *'I would…use…part of it, I don't think I can think of anything I've completely dismissed and put away in the back of a filing cabinet' (Sarah).*

Clinicians then appear to be highly pragmatic in practice and may also be less likely to follow the rules over time, after all:

> ‘*Therapies and adapting them…comes very much comes with clinical experience’* (Olivia).

So while,

> *‘Maybe initially you’d follow it to the letter of the law….but later on…as your clinical experience kicks in, it’s more pick and mix’* (Julie).

Thus clinicians appear to select from various sources to construct interventions. Such eclecticism may emerge from a pragmatic and responsive attitude towards the singular patient. Accommodating the human element is likely to increase uncertainty and appears to be expected by clinicians, after all:

> ‘*Patients have a habit of responding and talking back! You know, change the whole flow of it!’* (Nuala).

Internal and external influences may also integrate to scaffold practice and reduce uncertainty with many participants talking about amalgamating experience and research. Thus, practice can be ‘*a mixture of the practical, what you’ve tried, and the scientific’* (Claire). Despite this, the tone of comments tends to indicate a heavier reliance on the practical. Even if the therapy is disproved in the literature the consensus appears to be that if experience showed a treatment worked, clinicians would ‘*probably still continue to use it’* (Maryanne). The implication from such data is that clinicians choose not to ignore the lack of recipes, but to respond by placing a heavy reliance on practical evidence which includes ‘*what’s worked and what hasn’t worked’* (Catriona). Thus, clinician’s ‘*knowledge about what has worked with a similar client is going to inform…decision making’ (Heather).* This idea of ‘what works’ appears based on the clinician’s trial and error practice. Rose tells us for example that she has ‘*used (it) with a couple of children and, it sometimes worked and sometimes didn’t’.* Furthermore, this concept indicates problem solving behaviours. According to Niamh:

> *‘You’re constantly….saying did that work, did that not work, what, why did that not work, was that a level too high, how can I make this a little bit easier’.*

So ‘what works’ essentially appears to refer to a knowledge base accumulated from previous experimental practice which supports the creation of unique recipes for each individual client.

5.4.5. Summary

Decision making is scaffolded on the unstable basis of each individual patient. This makes practice episodic and subject to multiple, unique and sequential decisions in line with theories of hypothetico-deductive reasoning. The implication is therefore that practice cannot be totally scientifically grounded or predictable. However, there is the suggestion that clinicians are operating within the restrictions of dynamic and individualised practice in this uncertain context using both scientific and less scientific behaviours.

SUPERTHEME 2: PRACTICE AS GROUNDED AND GROWING

'The longer duration that you work, the more patient exposure you have, the more patient exposure you have…you've done more reading around different things you've come across….so you've kind of learned from others for longer, you've learned from your patients for longer, you've learned from the literature for longer…it's the exposure to….the day to day being a speech therapist….you learn so much every day that the longer you do it'. (Leah).

This super-theme is constructed from four main themes (Figure 5.4).

Figure 5.4 Practice as grounded and growing main themes

Clinical practice as reported by participants is not stagnant. While hinged upon a clinician's portfolio - an accumulated repertoire of skills which develops over time – it is typically continuously cultivated and fluid. Practice as grounded and growing therefore represents two core elements of a clinician's practice: that which is grounded in learned knowledge and skills, mainly composed from trial and error, an understanding of what works and client experience, and; that which is added to this tool bag over time. The learning which enhances a clinician's stock is on-going, both informal and formal but mainly informal, and heavily influenced by the solicitation and use of colleague knowledge. Clinicians utilise external sources of knowledge in addition to their own trial and error learning, thus representing considered and systematic behaviour.

5.5.1. Automaticity

'I personally tend to...favour other things first, like I would tend to use postural techniques first.....I tend to engage with…ones…I know would probably work quite well'. (Matt).

Clinical practice leads to the accumulation of a range of skills and techniques which despite the lean towards eclecticism, results in a degree of automaticity. Heather for example, refers to practice as '*constant online problem solving almost…we have become quite good at that and it's so automatic…we almost do it….without thinking about it'.* It has clear echoes of pattern recognition:

> *'It's almost like a little unwritten database in that's in your head….it's nothing that you can concretely print off…it's very intangible…you know what works, what doesn't work, you know what's gotten you into trouble, what hasn't, you know what clients have liked, what they haven't liked'* (Nuala).

This represents components of practice as vague and nebulous. Such automaticity however, may not be without logical merit merely because the thinking underpinning such rapid and reflexive practice is not readily articulated. In others words, *'it doesn't mean it doesn't include scientific knowledge'* (Moira). Matt hints at a logical process when he states that clinicians take '*the bits that work and leav(ing) the bits that don't work'.*

There is however, apparently much potential for routineness:

> *'You become used to what you use, because it's easy and its fast and it has been effective and…you do kind of rely on it….sometimes…you try…and think about…other therapies that are available…but often you might go back to your bag of tricks anyway'* (Becca).

In other words as Siobhan says, *'I feel I'm using….what I've previously used or what I might have used a lot of at the time'.* This underscores practice as habitual, highlighting concerns that therapies may be mechanically employed by clinicians. Thus clinicians may not be '*really specifically targeting…anything'* (Nuala) suggesting some interventions may not have clear rationales, and furthermore, that clinicians are aware of this. There may also exist a supposition of scientific underpinnings, and '*it might just be ingrained'* that clinicians *'would assume science….the evidence was there'* (Olivia) further suggesting casual practice. Indeed clinicians may *'sometimes….just rely on what we see and…move onto the next step without measuring outcomes'* (Catriona). Caroline suggests that this is not as stark as it might seem as '*it might be the old reliable but….you're using it in a different way',* suggesting once more, experimental practice.

So robotic or not, this accumulated inventory may be said to partly or effectively represent clinical experience, being constructed from trial & error, pick n' mix and knowing what works and what doesn't. This may be what Tara calls '*on the ground evidence'.* Such practical evidence is not just limited to the clinicians own experiences but incorporates those of colleagues, after all, '*that's experience, isn't it…if it's worked for somebody else before'* (Ruth). Essentially, such routine practice operates as a shortcut and may be said to be epitomise efficiency especially as *'certain key areas appear to crop up again and again'* (Evie). Knowledge of the client group influences routineness with familiarity breeding automaticity. For example:

> *'The same thing I suppose springs to mind each time….it's seems…like the obvious thing to do'* (Ruth), and;
>
> *'The more you see of the same problem the more experience you get, which informs your future practice'* (Maryanne.)

The move towards automaticity happens over time being relied upon more heavily with the amassing of clinical experience. It exponentially affects a clinician's confidence. Stephanie's confidence kicked in after a year and a half and it was then she '*felt confidence…it's about you feeling….I know what I'm doing'.* This confidence may also be constructed as 'comfort'. There is for example, *'a certain comfort that's offered in knowing that something works'* (Leah), also reflected in being '*comfortable with the client group'* (Moira). It may also contribute to definitions of expertise as Maryanne argues:

> *'Wouldn't you as a service user want to be seen by somebody who's done it a good few of times…..that's how I would feel'.*

Thus, while the fundamentals of practice involve core skills, experienced practice does not involve repeated learning and clinicians effectively *'come to every patient with that experience'* (Nuala). This concurs with knowledge-based models of clinical reasoning. Automatic practice includes what can be referred to as tool bags.

5.5.2. Tool bags

'So you will have a bag of tricks as it were'. (Niamh).

A clinician develops a tool bag which scaffolds practice. All clinicians start from a set base – college learning - which as multiple participants note, enables the clinician to work across most areas. The tool bag is augmented based on the area of practice so '*there's specific knowledge and skills that we would require people to achieve'* (Nuala). Additions vary with work context. In disability for example, '*everybody here should have some form of training in a core group of things'* (Tara). However, this does not infer that each clinician has a similar tool bag as each may have their own *'pet methods'* (May). This does not limit the group influence as clinicians may add to their tool bags '*because everybody did it, everybody started it; everybody loved it'* (Tara). This suggests a cultural effect to some acquisitions. Furthermore, there are no specific scientific overtones to these procurements.

Kahmi's 'what works' query may be explained in this context as knowing what works represents the contents of a tool bag. As Grace states, *'certainly a lot of stuff I would do, I just do it, because it works'.* This experiential knowledge appears to supersede scientific knowledge. Clinicians use therapies even though *'there's no great evidence behind it but yet you know from the results that you're getting that some of the things do work'* (Nuala). Knowing what works contributes to feelings of comfort as '*there's a certain comfort that's offered in knowing that something works'* (Leah). Thus, being comfortable and confident with a therapy impacts upon its addition to the collection, or selection once added. Nuala exemplifies this when saying that, '*I never felt comfortable using it ...so I don't think I gave it a chance to see if it worked'.* Indeed this ease with a therapy may be pivotal: '*I think you have to be comfortable using it to be effective'* (Niamh).

It is clear that tools bags are an important instrument for structuring practice. The appeal of structure is evident as '*sometimes it would be lovely to say, this is exactly what you do, these are the materials you use, you use it twice a week'* (May). This structure can be represented by the concept of packages. Clara also notes that she

> *'...would love....if that's the pack you use for speech, and that's the pack for language and it can be frustrating sometimes because our work is never really that'.*

Nuala also aspires to '*a little machine that you could measure somebody using it'.* The implication is that the tool bag fulfils part of the need to structure of practice.

If practice does naturally evolve into this bag of tricks, there are clear consequences for EBP. This comfortable approach to practice may negatively influence critical engagement as while clinicians *'sometimes do....try...think about...what's new'* , they also '*often...go back to the bag of tricks anyway'* (Becca). This means there is potential to:

> *'...get stuck in a bit of a rut as well. You...tend to do the same thing.... probably....because you can't think of anything else...it's just that I've done it for a long time'* (May).

This repository of options reduces the weight experimental practice and may represent pragmatic practice as Rose tells us:

> *'I think if you're confident that the old, goldie oldie one is gonna work then you'll use it, rather than bumbling around in the dark and possibly missing the mark'.*

Trial and error learning itself contributes to the contents of the tool bag as…

> '*You can try something and it doesn't have to work…it's not a lost session because you've learned about the child…and just put something else in the tool bag'* (Eabha).

Not only does trial and error contribute to the tool bag, but it is also enabled by it. According to Elaine, clinicians have *'a bigger bag of tricks from which to do…trial and error'.* Thus tool bags can facilitate flexibility.

5.5.3. Casual learning

'Most of my day to day stuff wouldn't have been….influenced by training…day to day stuff it isn't like, you go on a course, you apply it and that's that'. (Grace).

Clinicians tend to go on formal training only '*if there was a training programme there'* (Lorcan). Often, there's *'not necessarily going to be a formal training course'* (Nuala) or as Siobhan says *'not every type of therapy will come in a nice little package'.* This necessitates a certain pragmatism, and thus, a clinician accumulates part of her repertoire from casual learning. Indeed, even in the presence of formal training options, clinicians tend to be flexible. As Stephanie says, '*I wouldn't have done the training and I would have been quite happy to work away at it'.* Part of the valuing of casual learning may also reflect disappointed experiences of formal training such as not seeing *'the value of it, and how you're going to use it'* (Niamh). In fact, casual learning may be appreciated because of its relevance, whereas formal training might be translationally challenged. Thus '*on the day of the course it seems brilliant and fabulous but when you're back in the clinic, it mightn't just fit right' (Caroline).*

This flexibility results in what a number of participants refer to as 'dipping':

> '*I haven't been specifically trained…yet colleagues have, and I can dip on them…or kinda take bits out of that'* (Beth), and;

> *'The programme…people had been using bits of it….we used to dip in and out of it'* (Niamh).

Dipping may represent the nature of learning in practice, and be also characterised by the idea of giving it a go, a *'just go and do it'* (Nuala) approach. As Siobhan tells us:

> *'If I hadn't had experience in something…I'd have no problems sort of going in and using it….I'd think I'd give that a go'.*

This suggests an active, experiential approach to learning. Such an approach naturally produces errors which then also contribute to learning as *'you've learned an even bigger lesson because then you've learned to go forward'* (Susan). Mistakes are in fact integral and highly formative as Eabha previously explained.

Thus it seems that clinicians actively participate in learning. This includes reflecting on, or evaluating the merits of learning. With regard to formal learning, Heather contends that:

> *'If you don't reflect on it afterwards and discuss it, then training doesn't actually have the value…(it) might have…you have to do that piece afterwards'.*

Clinicians do not appear to accept new knowledge without exploring it fully. Training therefore does not equal commitment but consideration as Katie declares, *'I definitely would need the training and then decide myself'.* Use of new therapies and new knowledge therefore appears contemplated and measured and suggests conscientiousness. Learning formally does not therefore equal roboticism and is not an end point but a base point from which clinicians are '*in a position to be flexible…around it'* (Catriona). Thus formal learning also results in casual use. Clinicians therefore appear to form maximum relevance through flexibility. While formally acquired knowledge guides clinicians on *'how important it is to do some parts exactly as designed and other parts that you can be a bit artistic about'* (Elaine), clinicians can be creative around the rules attached to individual therapies.

So clinicians acknowledge the need to be grounded in many ways e.g. in experience of similar clients, by having a repertoire and by learning. This learning itself forms a basis upon which the willing clinician adds new knowledge. Contrary to having repertoires, clinicians are aware of the need to keep growing. In other words,

> *'It's important…that you don't get stuck in, because this has worked for the last ten kids I'm not going to be open to try new things' (Erica).*

Training whether casual or formal is one way of achieving this and acknowledges the importance of knowledge. It is interesting that conventional book learning is rarely mentioned by clinicians, instead experiential learning characterised by 'just doing it' appear as one of the most valued and relevant sources of growing practice.

5.5.4. Not lone rangers

'You're not as much a lone ranger'. (Elaine).

Colleagues are also a primary source of learning, what Siobhan calls *'drawing from other's experiences'.* This reflects again on the values for relevance, practicality and shortcuts. A clinician can after all, '*get your clinical experience in talking to…people'* (Rita). It appears clinicians actively pursue co-operative growth. Indeed in some cases it is essential given the absence of training options. For example, '*there's no generally specific training course for ICU….so it tends to be you're shadowing somebody'* (Nuala). Colleagues often replace formal training, it being '*one way of doing it without having done the training'* (Caroline). It may be most appreciated by new graduates, being considered '*invaluable'* (Susan).

Thus, use of colleagues appears to constitute a normal part of practice. Indeed, '*for most cases…you watch somebody else'* (Nuala). This can take many forms, including '*shadowing'* (Olivia), '*talking'* (Maggie), *'demonstration' (*Nuala) and '*pull(ing) experience from others'* (Ciara). More experienced colleagues are most valued. Clinicians identify others *'who...are more expert than we are…if there's a stammering child everyone heads to Alice's office'* (Heather). Thus, the solicitation of colleague opinion is usually the seeking of measured opinion. As Eleanor notes:

> *'If I'm looking to somebody for advice I know they've got a lot of experience…they've looked into the evidence that supports what they're doing too'.*

Colleagues are recognised as providing balance to a clinician's own experience *'where that's more reliable'* (Heather). This is especially important as *'if you are working on your own then it's quite easy to have tunnel vision' (Beth).* Furthermore, contemplated action tends to follows that sought opinion, clinicians being '*able to take from her experience and information on it and adapt it'* (Siobhan).

So colleagues influence '*change'* (Eleanor) and this co-operative growth has many levels. This includes peers who '*alert(ed) us to the most recent research there is on outcomes'* (Alice), and; students and new graduates who are a source of up-to-date knowledge, and can *'bring in an idea that nobody else has really been using in the department'* (Ruth). However, clinicians distinguish between SLT and non-SLT colleagues with discipline-specific sharing being more valued. Other professionals *'may not fit ones needs as precisely as if it was a team of SLTs'* (Elaine). But there is an acknowledgement that external influences are important, as Ruth points out, *'you…look to outside as well'.* This reflects an awareness of the potential for stagnancy and the importance of not '*get(ting) stuck in (what has) worked for the last ten kids'* (Erica).

Importantly, the wisdom of colleagues is prized more than other sources of knowledge and is reflected in words such *'invaluable'* (Sarah). It has '*more impact maybe than lots of stuff you read in a book'* (Pamela). There appear to be two main reasons for this. Firstly, such knowledge is expedient, after all '*it's much quicker to access somebody whose next door…than it is to read an article or several articles'* (Heather). Secondly, it is more practical or relevant. So clinicians '*want to know what do they practically do within the forty five minutes, and that's the kind of info you can get from others'* (Siobhan). Practicality extends to comparison with formal training as:

> '*The experience of other people in a similar setting can be a lot more practical…than….when you come away from a course'* (Caroline).

This relative valuing of colleague knowledge extends to positive research evidence as clinicians would use this opinion to fortify their own doubts, that is, '*just get their experience and kind of reinforce it that way'* (Becca).

Thus, colleague knowledge and opinion act as a powerful influences on decision making and promote confidence because '*if someone says this has worked….it gives you maybe more confidence to try it'* (Pamela). Clinicians therefore learn the art of practice in large part from profession-specific colleagues. This indicates a heavy reliance on what could be termed at the very least anecdotal sources, or at the very most expert opinion.

5.5.5. Summary

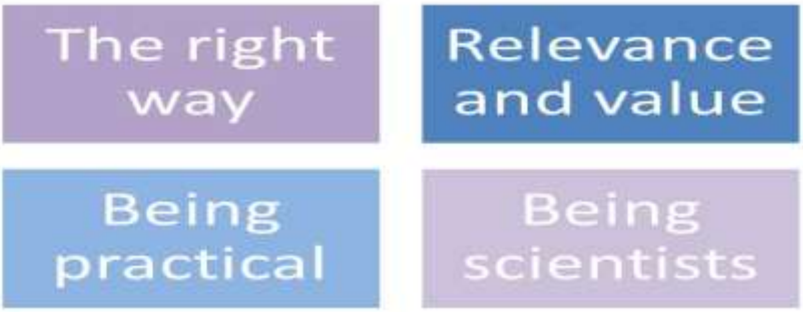
Practice as grounded and growing represents the skills and knowledge upon which all practice is founded – learned and accumulated repertoires stemming from working with specific populations, and the on-going learning that adds to those skills, mainly from experiential and colleague influences.

SUPERTHEME 3: CRITICAL PRACTICE

'You don't necessarily need…throw the….baby out with the bath water…totally change everything if new evidence comes along'. (Jill).

This super theme is constructed from four main themes (Figure 5.5):

Figure 5.5 Critical practice main themes



In essence, clinicians indicate that they are critical thinkers, being active rather than passive participants in clinical practice. They exist in a world where decisions are constantly being made based on assorted considerations such as patient presentations, pragmatics, science and knowledge. Clinicians ground themselves in solid principles and accumulated skills, and are typically conscientious and rigorous. They may consider themselves to be more scientist than artist but this may be influenced in degree by the setting they elect to work in, and there are clear concerns with the concept of scientist. They are sceptics about both non-scientific practices and EBP. They demonstrate scientific behaviours in ways that are not conventionally constructed.

5.6.1. The right way

'They say you have to do the training there's a reason why, so that you actually understand the principle of that particular programme, and that you can use it better'. (Niamh).

Clinicians acknowledge the need do things correctly. They see distinct advantages to formal training and demonstrate a considered approach to it. In some ways they see it is as following the rules and there is the idea of *'you can't'* with regard to certain training. Beth says for example, 'you're *not just gonna read the book and run a course, you can't do that'.* In other words, *'there are certain things you do training'* (Rita). As Siobhan notes, *'if I hadn't gone on the PCI course I wouldn't even attempt it'.* It appears that formal learning builds assurance:

> '*We don't feel like we…are confident in the therapy we are doing unless we've been on a training programme and have received instruction on it'* (Matt).

This sentiment echoed throughout the groups.

Doing things the right way by undertaking formal training has other outcomes. It essentially means being better informed about a therapy, having *'the core concept (of) what's behind it'* (Catriona), '*so that you actually understand the principle of that particular programme'* (Niamh), or as Elaine calls it, '*the essence of it… why it's working or….how important it is to do some parts exactly as designed'.* This information leads to better decisions about treatment choices. Furthermore it may not be so much that training teaches a clinician to carry out a technique '*not necessarily a right way, but…a better way*' (Niamh).

Such training does not replace the experiential learning previously discussed. It is specific to certain therapies- including those for which there are potential for harm, that is, '*if it's …a particular thing that can actually cause harm*' (Rita). Thus there is a feeling that *'now I can't do any harm because I've been trained'* (Leah). This idea of harm is pervasive, especially in settings where dysphagia is practised, especially if '*it's an invasive therapy like…DPNS*' (Matt). Comfort is important:

> '*There's things I wouldn't….feel very comfortable in doing….if I'm not trained in it and it involves putting stuff on somebody*' (Sarah).

Some respondents in disability also express notions of harm related to communication therapies. Eabha for example lets us know that '*PECs is one….that requires training, because a lot of prompt dependency can develop and you can do damage'.* Furthermore, not undertaking training means '*it's never going to be in its purest form….and that has an impact on possibly quality of service*' (Olivia).

The right way also means that clinicians can be assuredly adaptive, as subsequent to training rules can be bent and modifications made. Catriona calls this *'being flexible'* with training, essentially once trained clinicians can *'then… go away and tweak it based on your own experience'* (Elaine). However, the right way is not always adhered to as clinicians can still feel comfortable to *'take bits out of that'* (Beth) and be '*quite happy to work away at it*' (Stephanie) without undergoing training. The implication is that some therapies can be appropriately used without such training if the knowledge base of the profession enables an understanding of the therapy. In other words, *'you don't dip into things which you've absolutely no background in whatsoever'* (Katie). This infers that flexible practice is not random but emerges from a firm knowledge base. So training can be considered as a measured exercise, undertake for '*those courses that you need to really learn a specific skill and you need to be certified*' (Nuala). The right way indicates solid knowledge informs decision-making but does not restrict flexibility.

5.6.2. Relevance and value

'That kind of research doesn't really speak to what we do, or the value in the work that we do'. (Caroline).

Clinicians value relevance to their practice as indicated by co-operative learning and when discussing training. Essentially, clinicians undertake training '*that would benefit (the) most rather than single'* (Katie). This suggests that training is predominantly defined as client relevant and not as personal growth. As Aoife notes, '*it's very important about maximising the outcomes for the patient'.* This results in an economic and pragmatic approach to training defined by the word 'benefit'. It means that a clinician '*can't just sign up for everything…because you won't necessarily get the benefit out of it'* (Stephanie). Extracting maximum relevance may involve investigation typified by Stephanie's comment:

> *'You think "oh my god this could be fantastic". But you really have to look more into it more…it's like a parent looking at an alternative therapy that claims to do everything. Training can often claim to do everything'.*

So use of a new therapy with or without formal training is contemplated and measured in order to increase value. Additional worth is also realised in what was previously outlined, whereby a clinician actively participates in evaluating the merit of a therapy after training.

Clinicians place relative values on sources of information which guide their decision-making. While there is a relatively high valuing of colleague experience, clinicians also appear to have regard for research. This is reflected probably best by older clinicians:

> *'The research is coming out now and that's wonderful and we talk about evidence base and it's becoming more scientific and that's the way to go'* (Catriona).

Clinicians do appear responsive to research evidence by changing practice: *'There was a lot of talk in research…so I probably wouldn't use that anymore'* (Eleanor). On the whole however, clinician's behaviours appear less than accommodating. Similar to Eleanor saying she *probably* wouldn't use a therapy with negative research evidence, there is a perception that it is '*not the only way'* (Catriona). In other words, '*you don't* *have to take them as gospel'* (Niamh) particularly as '*there's always going to be evidence that shows both sides'* (Leah). This implicates clinicians as being less than convinced about using research. Therefore the right way appears to reflect research appreciation but not necessarily practice alteration. This is not to say that an obstructive attitude prevails, as a scientific attitude is evident. Ruth for example says, *'you'd have to evaluate that disconfirming evidence'* and there are a number of reasons clinicians offer why this is. Most reference the quality of published research. Perhaps '*it could have been a crap article…that wasn't in any way rigorous …it can be rubbish evidence'* (Nuala). Basically, clinicians agree that '*just 'cos it's published research doesn't mean its good research' (*Heather)*.* The implication is that research evidence cannot be used as intended, in the correct way. It does however indicate that research evidence is integrated with practical evidence as recommended by the EBP model.

There is also evidence that clinicians feel research is not pure and is open to abuse thus impacting on its worth. Eleanor points to the dangers of over interpretation:

> *'There was a paper that was out…to say that speech and language therapy doesn't work…and it was something like, they come twice a year for therapy'.*

They are suspicions of therapies, particularly pseudoscientific ones who abuse research, essentially, '*how valid is their research'* (Tara). Commercial products are not immune, some therapies being *'packaged products designed to…make people feel as though they are evidence based'* (Matt). Thus while suspicious of research evidence, clinicians also use it to undermine the worth of some practices. Of Listening therapy Jackie states, '*I don't know that there's a lot of evidence for, and there seems to be a lot against'.* Research supporting clinicians' opinion can result in a positive reaction such as '*I never believed in it, and, then when the research came out…I was delighted'* (Heather). What is evident therefore is a contradiction. Research evidence has some appeal specifically in terms of discrediting questionable practices, but may not be necessarily useful otherwise.

The suggestion therefore is that clinical experience is the right way. Leah reflects the mood when saying:

> *'This paper comes out that says it doesn't work at all. You might kind of go well I've ten other patients that say otherwise'.*

This reflects what can be said to be a pragmatic orientation.

5.6.3. Being practical

'*Sometimes when deciding if I'm going to use one method or approach or another approach, it would sometimes depends on the teacher…the teacher's approach and preferences impacts hugely on my work'. (Rose).*

Practically takes many forms including extracting value discussed previously. It represents a construct of practice which defines clinicians as pragmatic. This is perhaps most demonstrated by the identification of the patient as pivotal in decision making, and a concern for functionality and behaviour change which a number of clinicians specifically refer to:

> '*Really he needed...something to make his communication functional'*
> (Siobhan), and;
> *'Keeping it functional to the needs of the child, rather than following a set programme that's recommended'* (Beth).

Such functionality may include breaking the rules i.e. adapting therapies, which '*would be adapted because of the very different needs'* (Beth).

Indeed, the eclectic clinician discussed previously may at heart represent the practical clinician, resulting in the adoption of a pick & mix approach to practice. As Clara comments:

> *'A lot of therapists…take the really good bit out of it and…we might end up doing a form of treatment with a client that's a little bit of a few things'.*

This emphasis means intervention may be less about a programme than a practical outcome. As Tara tells us when she talks about an individual client:

> '*A particular child walked out on a ramp…who had major behavioural problems….that that is monumental in this child's life, and for this family'.*

Thus the clinician's recognition and valuing of individual needs results in a pragmatic practitioner who may place less importance on non-practical sources. As Grace admits:

> *'Certainly a lot of stuff I…do, I just do it, because it works, but I certainly wouldn't have checked up…to see…if there's evidence behind it'.*

Practicality is also apparent when considering resources. Ciara for example talks about *'lengthy training, like its five days'* being a barrier. Such lengthy training may only be undertaken if patient benefits can be achieved. But mostly it's about trying to *'map that onto what's practical and what's available in your setting and your resources'* (May). This focus on practicality may also help explain the dominance of experiential learning and why clinicians elect not to utilise formal routes where possible.

Such pragmatism may also be a fountain for scepticism particularly noted among disability respondents for some mandated training programmes. Clinicians provide a number of examples:

> *'Two people have to be trained to run it together. One person trained could train another person….there's nothing outside of what we do'* (Eabha), and;
> *'Unless you've done a course in the last three years, you lose your certification and have to be retrained again….I mean that's complete money making you know' (Julie).*

Scepticism is also apparent for commercial programmes and includes an awareness of the lack of scientific merit of some programmes. Thus says Olivia:

> *'Talktools…..that's an example of a very well packaged programme that's…..got lots of lovely…and expensive resources and there isn't really a whole lot of evidence there for it'.*

This scepticism extends to the research evidence as previously outlined but is particularly focused on the translational problems with research. Many of the sentiments expressed echo and identify differences between what research does and what clinical practice is. Research is essentially '*done in sort of ideal conditions…not…. real clinical situations*' (May). So this idea that different arenas are operational is clearly highlighted, after all:

> '*Those children don't really exist in the real world…so, you can't take exactly what they've discovered in their research paper and apply it to your hundred clients because it's just not going to work in that way'* (Heather).

These translational issues extend to cultural issues, there being 'a *lot of articles (which) are US based or UK based….there are small cultural differences here'* (Heather).

Practical problems extend to the paucity of research evidence. Thus, '*for a lot of things we do there isn't really clear evidence'* (May). This may be particular to specific client groups and despite the best efforts of clinicians. Stephanie tells us that she works *'in adult services and…we've trawled the journals looking for evidence…and it isn't there'.* Concern also extends to '*conflicting evidence'* (Claire) and lack of clear direction as '*always papers at the end of it say….further research'* (Leah). In effect:

> '*Quantitative stuff….doesn't tell you very much because they're not real people…and so then you can't transfer it'* (Heather).

This does not translate to case studies, as clinicians clearly express appreciation of such research, underlining the meaningfulness of case evidence (and perhaps anecdote) to practice. It would, for example,

> '*…be much more useful to read a very detailed case study about somebody….so you have a real picture….and you have something useful to take away from that that you might be able to apply to a similar client down the road' (Heather).*

In this climate then, clinicians are knowingly using therapies which do not have supportive research evidence, '*certainly there's stuff that I would do that….wouldn't have a strong evidence base'* (May). This may merely reflect the pragmatic practitioner operating in the absence of research rather than an unengaged clinician.

5.6.4. Being scientists

'They might say the decision making is based on clinical experience but that doesn't mean clinical experience doesn't include scientific knowledge'. (May).

This leads to questions about whether clinicians consider practice to be either partly or wholly scientific in nature. Some think practice *'isn't remotely scientific* (May).

Others would be '*more comfortable being called a scientist than an artist'* (Nuala), stating that:

> '*We are clinicians; to say speech therapy….is an art is…doing your profession a bit of a disservice….it is…a science'* (Maggie).

However, while numerous clinicians agree to a scientific canopy, they also express a 'science but' argument. Eleanor pronounces that '*we are scientists but we're maybe more along the qualitative bit'.* Heather argues that '*there is a definite scientific base but it's not science in the way that medicine is science'.* This 'science but 'assertion extends across numerous participants and is fundamentally defined as '*science but not exact science'* (Annie), even *'the art of science'* (Leah).

Practice as art is not a concept which has no appeal. Art can be defined '*clinical experience….the kind of no real….hard, bedrock what you're doing'* (Lorcan), or '*the more creative elements' (*Clara). This creativity may not necessarily be devoid of scientific components as '*sometimes…you're….trying to create solutions or being imaginative'* (Clara). As with science, the concept of artistry is not straightforward. It can be perceived as '*a…bit too frothy'* (Caroline), sounding *'a bit like you're …making stuff up'* (Lorcan). Additionally the interface between art and science is not clear-cut:

> *'Scientists just don't politely do formulas and techniques, they are quite creative….they have to be to come up with ideas'* (Nuala).

There is however, a hesitancy to embrace science which Caroline conveys:

> *'We're reluctant, we don't see ourselves as scientists, but we see science and all that concreteness that as something very desirable….we really do have a very uneasy relationship with that whole question...I think we'd kind of like to be more scientific than we are'.*

The overall suggestion is that SLTs essentially have not found a satisfactory construct to which they would comfortably align themselves.

Some clinicians also feel they are being compelled by an incompatible construct which is EBP. This apprehension with the perceived pressure of EBP includes concerns for the art in practice, essentially whether *'creativity (would) be squashed as the evidence gets stronger'* (Lorcan). A few participants refer to 'being pushed, for example, '*that's the way the professions…. are being pushed'* (Ruth). Eleanor talks about being coerced:

> *'We've been probably shoehorned to go down the quantitative stuff but actually we're probably more about the qualitative, human side'.*

This feeling of being coerced appears to reflect the non-scientific nature of the profession. As Heather says,

> '*What frustrates us is trying to shoehorn it into that mode of science that it maybe doesn't sit in there in that very pure science because there is a lot of other aspects to it'.*

There is almost a notion of siege offered by Eleanor *'so yeah, you're not going to say, okay, I give up, do you know!'* It may be that being artist or scientist depends on individual clinician's areas of practice, with some areas being more traditionally scientific as previously referenced. Group influences may also impact. When Tara says she used a therapy because '*because everybody did it, everybody started it, everybody loved it'* and Catriona reveals that despite concerns she '*went along with it up to a point',* questions may be asked whether the culture impacts on scientific practice.

Moreover, when asked to define their scientific practice, clinicians first go to conventional and traditional definitions of scientific acts including '*formal assessments'* (Jean) and *'recording'* (Rita). Across groups, measurement arose as key to scientific practice; essentially measurement is '*what makes it scientific…..we always measure it'* (Leah). Such measuring means that '*it's very much like a scientific process that we're going through'* (Olivia). Measuring also functions as a scientific behaviour to support unvalidated therapies, that is, its okay '*as long as you're evaluating it'* (Nuala). Other scientific behaviours which support practice such as having '*a clear rationale why you're doing something'* (Julie), and using theory, mentioned by many clinicians. Leah directly relates it to science:

> *'The theory behind it is to target something scientific…..you….make use of neuroplasticity or something scientific'.*

Clinicians therefore clearly report scientific behaviours which directly support the idea that practice contains scientific components. Experimentation is identified explicitly including '*testing hypotheses*' (May). These behaviours are clearly aligned to the idea of science:

> *'You start off with a hypothesis…and then you test that through whatever therapy you're using, and then change….what you're doing….is what most scientists do if they're doing an experiment' (May), and;*
> *'That's part of us being the scientist…we are…..experimenting with an approach, evaluating the outcomes and the modifying it so see that is effective'* (Leah).

Also clearly explicated is '*problem solving'* (Beth). Susan calls clinicians '*problem solvers'* and Lizzie says practice is about '*looking for different reasons, or different causes or solutions'.* However it may be that such scientific behaviours are not conscious, that while '*people actually do have scientific knowledge…some of it is very deeply integrated'(*Caroline)*.* It might be that '*people aren't great at reflecting on, or actually unpicking, yes that does come from a scientific basis*' (May), replicating ideas of automaticity, but not negating scientific elements to practice.

Scepticism, previously referenced, appears pervasive, incorporating EBP and being seen across a number of discussions. Clinicians for example, display concerns regarding some therapies especially those which may be well-packaged or '*very strongly commercialised'* (Siobhan). After all states Heather, '*that's just expert opinion just like my expert opinion or your expert opinion'.* This scepticism extends to those therapies which '*factor in training* ' (Niamh) especially as '*more and more now there are training programmes out there where you so need to be certified to carry them out'* (Olivia). There is a feeling voiced by Julie that certification and retraining is '*complete money making'.* This scepticism extends to a fear that American models which embrace commercial interests will infiltrate the Irish context. Ruth expresses a communal concern:

> *'I would hate it to go the way it's gone in the states…it has to be a pre-packed programme because then you have companies marketing things and lobbying to get things put on…..the reimbursement scheme….and there isn't really any*

> *evidence there it's just a very strong marketing department that have got that out there'.*

The appeal of science may be most seen in a critical approach to therapies which are not scientifically based. Clinicians clearly identify pseudo and non-scientific practices. As May states, *'anything with huge promises and a lot of money is worrying'.* Indeed, money appears to be a red flag:

> *'Where something new arrives….it's pretty obvious that it's just quackery and they're looking for money I think that usually gives you a fair idea'* (Nuala).

Erica also argues that patients '*perceive it to be the superior because they're paying money for it'.* However money is not the only factor, clinicians being also concerned with promises made and broken. As Siobhan relates of one of her cases:

> *'People trying to fix him and…poor parents, you would have thought they were seeing this as the holy grail and it didn't turn out to be the holy grail of course'*.

Scientific practice is also clearly demonstrated in considered opinion formation referenced previously. This occurs mainly through use of colleagues, trial and error practice, reflection post training and a judicious approach to evidence. It reflects awareness that sources of information need to be validated. Marie advises that '*finding out where the idea came from'* is important. This represents a commitment to critical practice and also an insistence on clarity and precision which extends to clinicians' intervention episodes. Clinicians question whether it '*is…actually that method I found that's working or is it, something about the way that I'm doing it?'* (Helen). It all centres on being analytical, as Leah says *'it comes back to….critically evaluating'* and generally '*critically thinking and analysing'* (Caroline). This ensures openness to reasoned change:

> '*We're all flexible here….we've all changed what we're doing, we're not just going to stick to it because we like it'* (Eleanor).

Clinicians also act to share their scientific and critical knowledge facilitating scientific behaviours in others both colleagues and clients. These include:

> '*Print(ing) out….a summary of the research and give it to them to read'* (Eabha), and; '*Prepar(ing) a list of questions that they should ask of any*

> *approach they were considering…..so we gave them tools to analyse it themselves'* (Tara).

All this lends weight to the idea that practice is not a random occupation where clinicians are not *'blindly just doing something'* (Nuala). There is an overwhelming sense of informed decision-making representing a scientific approach

5.6.5. Summary

These behaviours represent engaged practice, with the clinician acting as sometime scientist, sometime artist but grounded in the constructs of science, mostly though scientific thinking and behaviours. The data also indicates a reluctance to be classified as wholly scientist (or wholly artist). It suggests that clinicians do not feel that the discipline fits neatly under the science umbrella.

CHAPTER SUMMARY

Practice is complex, perhaps both art and science and pivoted on the patient as a group and patient as an individual. There is no clear suggestion that clinicians may prefer practice to be located more towards the science on the art-science continuum, and they demonstrate some problems with EBP as a model, specifically research evidence. This does not appear however, to result in unscientific practice as they display scientific attitudes and behaviours, with the clinician acting as sometime scientist, sometime artist. This lack of centring the discipline on one preferred construct references the dynamic and multifaceted nature of clinical practice, which is as yet under defined.

Chapter 6: Focus groups discussion

6.1 INTRODUCTION

The aim of this research was to explore decision making scaffolds in clinical practice, with specific attention paid to scientific constructs including EBP. As previously noted, group dynamics must be considered when contemplating group interview data as the influence of the group may be felt in restrained or compelled opinion. The findings between the groups nonetheless are quite universal, and suggest either a strong cultural effect or reliability of the data. Both may also be assumed.

The super-themes which evolved paint a picture of clinical practice as constructed by clinicians. Essentially, they suggest that clinical practice is not a textbook-based and seamless occupation, it is continually shifting although grounded in previous learning, and it requires flexibility in operation. The findings will be considered under four emerging constructs:
A different arena;
The pivotal patient;
Science but, and;
The authority of clinical experience.

6.2 A DIFFERENT ARENA: THE REALITY OF CLINICAL PRACTICE

'A problem–solving, manoeuvre –according–to-circumstances approach' (Conture, 1997, p.240).

Decision making is effectively scaffolded on the unique basis of each individual patient's characteristics and the clinician's experience with the patient group. This makes practice episodic and subject to multiple, distinctive and sequential decisions in line with theories of hypothetico-deductive reasoning (Higgs & Jones, 2008).

Essentially, this implies that rule-based interventions whether they are individual therapies or research evidence, do not fit seamlessly into clinical practice, and may even fail to recognise the realities of that arena. Therefore, many of the sentiments expressed by participants echo Firensuoli's (2000) argument, that there is an identified difference between what research does and what clinical practice is.

6.2.1. Uncertainty

'Perhaps the most important skill for any health care professional to master in their career is the ability to recognise and handle such clinical uncertainty' (Kitson, 1999, p.x).

Clinicians demonstrate a regard for functionality that may not reflect conventional or purely scientific values. Although representing a responsive attitude, pivoting practice on individual patients results in uncertainty, replicating Schön's (1983) concept of practice based on swampy ground. Instability also results from other influences including extra therapeutic effects, supporting findings (e.g. Garske & Anderson, 2003) which give due weight to such factors.

Clinicians appear to acknowledge both general uncertainty, and uncertainty about their skill, expertise and knowledge base as argued by Thompson et al. (2002). They act to reduce it in a number of ways concurring with Kitson's (1999) argument regarding the importance of mastering clinical uncertainty. It might be surmised that the structure provided by rule-based treatments and research evidence would be a primary facilitator in such attempts. This is obviously not the case, suggesting that the realities of practice mitigate against those particular structures. Research evidence, rather than reducing clinical uncertainty as Gambrill (2005) suggested, may actually contribute to it and contradict clinicians' attempts to reduce that uncertainty. Barrier-studies on the use of research evidence (e.g. Nail-Chiwetalu & Bernstein-Ratner, 2007) are awash with findings which identify research-use problems and this may in part be explained by the failure of such data to recognise or tackle the problem of uncertainty.

Instead, preferred decision scaffolds include knowledge of the client group, the use of tool-bags, reference to colleague opinion and use of scientific behaviours. The unpredictability of practice may explain the high valuing of case-based data in the form of colleagues' experiences, client-group experience and case-based research. While being considered less valuable in the EBP paradigm, such sources may be more meaningful to clinicians, perhaps because they are more relevant and help to moderate uncertainty most. The response to uncertainty is also evident in the clinician's tool bag, that is, the clinicians' collection of therapies and techniques. The tool bag on the surface might suggest practice is more routine than scientific. However, these tool bags may function to enable more organised responding and to structure approaches to intervention. A clinician's kit can be said to reduce the weight of trial and error in intervention, and thus clinical uncertainty. Furthermore, if practice naturally involves tool bags, then the persistent questions in the literature revolving around underuse of EBP in clinical practice may at least be in part explained. The concept of tools bag may furthermore help to understand why practice may be more uncertain in the early years, as the tool bag is emptier at this stage of clinical development. Tool bags and case-based knowledge can also be said to represent pragmatic shortcuts (Heffernan, 2011) to efficient practice.

Clinicians also manage uncertainty by acting scientifically perhaps best characterised by the notion of experimentation, and replicating Logemann's (2004) contention that much of SLT practice is composed of individual clinical trials. Scientific thinking is also apparent in the valuing of measurement as a tool even in the context of less-scientific practices, thus clinicians act to validate information acquired from the patient in a reliable fashion as argued by Edwards et al. (2004). Furthermore, clinicians also acquire new knowledge which appears to be integrated with critical consideration further serving to structure practice decisions. This suggests measured behaviour which uses scientific behaviours and information to reduce uncertainty, turning unaided decision making into informed decision making.

Thus clinical practice is an arena where control is not always possible with clinicians identifying the human element and the need to respond to individual patients as important in this regard. The implication from such data is that clinicians do not choose to ignore clinical uncertainty but to decrease it in a variety of ways. This thought-through approach means that, as Thompson et al. (2002) note, 'chance and all the biases that come with unaided decision making' reduce their effect on the outcome (p.31). Such active and deliberate attempts to reduce uncertainty can be said to be evidence of critical practice.

6.2.2. Contradictions

'At the heart of clinical medicine is an unresolved conflict between the essentially case-based nature of clinical practice and the mainly population-based nature of the research evidence' (Firensuoli, 2005, p.7032).

The concept of uncertainty is contributed to by contradictions which participants reflect. The main contradiction revolves around the art and science debate, practice being both what Lutterman (2011) calls 'content counselling' and 'affect counselling' (p.4). This effectively means clinicians find, at varying times, that they are scientist and artist; not scientist but artist; scientist but not artist, and; sometime scientist and sometime artist. This appears to represent an on-going dilemma for clinicians with participants suggesting that essentially they have not found a satisfactory construct to which they can comfortably align themselves. EBP does not meet the needs of clinicians in this regard, reflecting a recognition that intervention is about more than the therapy and more than the patient. Thus, while individual clinicians may lean slightly more in one direction or another based on personal preference or work setting, perhaps the badge of a professional discipline is the ability to shift elegantly and effectively between and across these dimensions.

There are also indications of contradictions in the use of therapies. Clinicians use unvalidated and sometimes questionable interventions such as oral-motor therapy, thus suggesting less than scientific behaviour. However, clinicians also engage with scientific behaviours such as measurement and outcomes. Therefore, SLTs can be said to sometimes use acts of science to make the unscientific more scientific. This appears to represent a considered response to unscientific practice but also a conflict, that is, the appearance of valuing both science and non-science. It may be that clinicians are being pragmatic. Perhaps they understand the issues regarding the lack of theoretical and evidential support for such practices, and therefore impose scientific controls to validate their use. This of course assumes that all clinicians using such therapies use measures to evaluate their practice. This may not always be the case. Some clinicians, particularly those in disability, also reference immeasurable practice. They report that some goals cannot be measured, and this constrains their definition of practice as scientific. It also epitomises their struggle between thinking like scientists and acting in less than scientific ways. However, the very idea that some behaviours may not be seen as measurable by clinicians is of concern for a scientific profession with some clinicians validating unscientific practice by such thinking.

Contradictions are also manifested in other areas: in the notion that practice is highly individualised, but also highly dependent on population-specific knowledge, and; in the idea of practice being scaffolded by tool bags but being highly eclectic. These opposites may however work in harmony with each other. Instead of being divergent operations, such scaffolds perhaps work compatibly to both represent and inform practice. Population knowledge and tool bags for example, may the serve needs of simpler practice and effectively underpin the more erratic components involved in individuating practice and responding to complex patients. Clinicians are above all pragmatic and make reasoned decisions about their practices. This can explain other discords, including that of doing things the ‘right way’ but acting ‘incorrectly’ by using therapies when untrained. Clinicians act in the right way when this is required, for example when unsure or concerned with ethical and safety issues. So such apparent contradictions appear to be logically and pragmatically founded and explained by simple and complex operations. As Higgs & Jones (2008) have stated, ‘clinical reasoning is both simple and complex’ (p.4).

Clinicians appear somewhat conflicted by the demands of complex practice. They tend to dismiss rule-based approaches which are interpreted as incompatible with practice. Such rules are represented by Americanised systems, research evidence and rigid therapies. However they also express an appeal for structure and dictated practice such as packages and machines. Clinicians don't use research while at the same time they reference it to undermine the worth of pseudoscientific and commercial practices. It appears therefore, that clinicians may like the idea of structured and rigorous answers but find challenges when translating them to practice. Even positive attitudes to research and clinical guidelines do little to ensure their uptake as Dowsell, Harrison and Wright (2001) noted. Clinicians do not appreciate what they see as external impositions which they report as failing to appreciate the nature of practice and which conflict with their autonomous operations. If practice is accurately characterised by the uncertainty previously discussed, then such contradictions are natural, representing both the character of such practice and the attempts of clinicians to adjust to and respond to it.

6.2.3. Dynamism

'Clinical practice by its nature, and each clinical interaction, requires constant adaptation and dynamism' (Chapman & Sonneberg, 2000, p.15).

Clinical practice is a dynamic process which while underpinned by a clinician's experience, remains subject to the influence of multiple variables. It appears the best way clinicians have found of responding to such diversity is by being both pragmatic and reflexive concurring with Kahmi's (1999) postulations regarding eclecticism. Dynamism is reflected continuously in the data perhaps most specifically by references to trial and error and experimentation, and by constructs such as 'dipping in' and 'just doing it'. These are in essence mostly scientific behaviours which, accompanied by values for measurement, suggest that dynamic practice clearly contains scientific components.

Not only are clinicians defining practice as dynamic, but they indicate that on the whole they are comfortable with this way of working, centring themselves in the shifting sands through notions of experimental practice. As Jones et al. (2006) argue the scientific method evaluates one variable at a time across hundreds of subjects, whereas in clinical practice hundreds of variables reside within one subject: the patient. This can be summarised by one participant's metaphor concerning lots of ingredients but no recipes. Clinicians appear to consistently and flagrantly break the rules: they adopt a pick and mix approach to therapies as Hayhow (2010) suggested, using therapies for which they have not been formally trained, and; they use their colleagues as shortcuts to practice decisions. This inclination towards tailoring of therapies and experimentation represents clinicians who are accommodating and who are in effect efficiency focused, as indicated by Joffe & Pring (2008). Responsive practice may thus form the basis of clinical practice and may explain problems with the use of research evidence. Furthermore, such practice requires that the clinician be continually mentally-engaged. This suggests that Enderby's (2004) call for clinicians to be reflective practitioners is heeded.

6.2.4. Summary

Practice is unique, based on individual patients and characterised by dynamism, uncertainty and contradictions**.** Rycroft-Malone et al. (2004b) has described therapy as an endlessly creative interpersonal encounter. This leads clinicians to act pragmatically, eclectically and autonomously. It suggests an arena which requires further definition in order to better understand both the nature of practice and how science interacts with, or scaffolds it. There are clear suggestions of scientific behaviours supporting such imperfect practice, and this must be interpreted positively. Attempts to impose an externally-based rule system onto what is essentially an internally pivoted and responsive arena may be doomed to failure and explain poor uptake of research evidence.

6.3 THE PIVOTAL PATIENT

'At the heart of clinical medicine is an unresolved conflict between the essentially case-based nature of clinical practice, and the mainly population based nature of the research evidence' (Firensuoli, 2005, p.7032).

Clinical practice is a different arena to that of research because of the individual patient and the resultant treatments sculpted specifically for each patient. This has far reaching implications on how practice operates and is defined.

6.3.1. The singular patient

'Clinical decision making occurs by the selective application of general rules to particular individuals and contexts. The uniqueness of the individual precludes any purely rule-based methods for assigning diagnoses and selecting treatments' (Greenhalgh 2002, p.397).

The individual patient is at the cornerstone of decision-making and this is reflected throughout all themes. Patients are the reason why practice is imperfect, it being highly responsive to individual presentations, and explains why critical practice is required. It is reflected in the valuing of case-based research over higher-level research as Rappolt (2003) argued, and is further evident in the targeting of colleague's anecdotal and expert experience. The dominance of the patient influence results in clinical decisions being under influenced by external scaffolds, effectively defining clinical practice as predominantly patient-centred and internally located.

This focus on patient-centeredness results in a functional approach to intervention including adapting therapies and being eclectic. It implies, as Gabbay and LeMay (2004) have commented, that there are no cookbooks for intervention. Thus, clinicians form maximum intervention relevance for their patients by being artistic and flexible with rule-based treatments and research evidence. The value for functionality supports Kahmi's (1999) argument that clinicians are bound by behaviour change. King et al.'s (1998) interdisciplinary study provides evidence that functional goals lead to improvements in children's functioning, suggesting not just practicality but rationality in choosing this path. Functionality also takes into consideration the bigger picture; clinical practice requiring ‘an understanding of the person as well as the disease’ (Edwards et al., 2004, p.314), and this is evident in clinicians’ comments. Clinicians’ recognition of this, places client considerations centrally in the treatment process

The conflict clinicians feel about whether the discipline is scientifically based appears to originate from this patient focus. The art in practice partly represent clinicians’ acknowledgement of the human element and subsequent resistance to reducing the patient to ‘static, linear and simplistic labels’ (Fourie, 2011, p.11). There is support that acknowledgement of the human element and extra therapeutic effects are important (e.g. Hubble et al., 1999). Certainly there is promising evidence from the discipline of neuroimmunolgy (Evans, 2003; Kop & Gottidiener, 2005) to indicate that the therapeutic alliance may have real effects on the immune system and the healing process. This implies that clinicians are acting logically when considering the artistic components of clinical practice. However, this patient focus does not necessarily signify the absence of scientific practice, as clinicians construct their patient encounters as essentially experimental, or scientifically endeavours.

6.3.2. The client group

‘Individuals are not populations’ (Chambers, 2008, p.7023).

Chambers (2008) is correct when in stating that individuals and populations are not the same proposition. Clinicians clearly agree when they references the ‘dream’ populations of research and compare them to the ‘real’ clients in practice. However, the singular patient does have a broader population context which is not defined by research evidence but by the client group that patient represents, and the clinician’s experience with that group. The client group influences treatment selections and appears as a dominant consideration motivating choices made by clinicians. Treatments are population specific and population exclusionary, meaning specific client-group options are to the forefront of a clinician’s decision making. The client-group effect is also obvious in the use of targeted, population-specific colleague opinion. So client-specific experience whether the clinician's own or that of a colleagues, significantly influences and simplifies the decision making process. This population-assisted scaffolding may contribute to our understanding of what clinical experience actually entails.

Contrary to notions that practice is therefore highly individualised, is the suggestion that it is also broadly based on practical population knowledge. Such knowledge is deemed relevant and integral to efficient practice. It also leads to routinised and culturally-based interventions. Clinicians suggest that it does not exclude individualisation but acts as a further scaffold to support it. The reliance on such practically rather than theoretically-based population knowledge, concurs with knowledge-based models used in clinical reasoning specifically 'pattern recognition' (Higgs & Titchens, 2000). This stored knowledge may suggest automatic or instinctual practice (Greenhalgh, 2002) and might conceivably be interpreted as part of the art of practice. However, it may belie the logical nature of that stored or intuitive knowledge being most likely accumulated from problem-solving practices suggested by both the models of cognitive reasoning and by the participants themselves.

In this way the making of practice decisions is narrowly defined, being highly client relevant, both individually and population centred. This appeal to relevance may cement the client-specific tool bag but also constrain ability to adapt between client groups.

6.3.3. Pathology not preferences

'Clinicians face ill-defined problems' (Higgs & Jones, 2000, p.4).

Intervention appears not merely defined by patient influences, but limited to specific patient influences. While clinicians are concerned with the broader construct of the patient and with social models of practice, intervention decisions tend to be clinician dependent, and less about patient preferences and values and more about patient pathologies. This infers a highly internalised and focused form of decision making and implies a medical and restricted model of practice.

This emphasis on patient characteristics implies that hypothetico-deductive reasoning is operational, supporting Edwards et al.’s (2004) argument that this model ‘remains the most enduring clinical reasoning model in medicine’ (p.314). In this model of reasoning, tentative hypotheses are generated from patient cues on a continual basis and this indicates that practice cannot be a passive exercise, as it requires the engagement and responsivity from the clinician to patient cues. This contrasts with the idea that practice is pivoted on client group but fits with the idea of adaptable practice. Intervention is not reduced to an uncomplicated act. Rather, this construct of clinical practice which is formulated on individual patient traits can be said to heighten the demand on the clinician to be creative, experimental and actively involved in the process.

The knowledge that patient values appear to form a substantially minor component of decision-making has significant implications for EBP as a model. EBP clearly incorporates patient preferences and values as one of its three pillars, and the three pillars are intended to be used collectively to guide practice decisions. The clear suggestion is that if practice is not inclusive of patient opinion to any significant degree then EBP is not fully operational, with perhaps only two of the pillars being utilised. While this requires more evidence from research on clinical practice to reliably confirm this, it suggests that the attempts to redefine EBP to make it more inclusive may have missed the mark.

6.3.4. Summary

The idea of the singular patient as pivotal is at heart a simple notion. Each episode of intervention is effectively scaffolded on the unstable basis of each individual patient’s characteristics. The implication is therefore that practice cannot be fully scientific as conventionally constructed, but is subject to on-going individualised and responsive decisions and individual patient experiments. It suggests a reason why the ‘science but’ attitude prevails.

6.4 SCIENCE BUT

'The science behind the therapeutic measures is not as strong as the faith' (Basmajian, 1975, p.608).

The SLT discipline is constructed as a scientific profession. Its origins in scientific training and scientific degrees clearly suggest this (Lum, 2002). A leaning towards science would be currently most obvious by the embracing of EBP, and specifically the use of research evidence. Despite this, there are clear undertones of reluctance in pinning the profession under the canopy of science.

6.4.1. Speaking scientifically

'Unfortunately, science, truth and logic have little impact on our professional identity as speech-language pathologists' (Kahmi, 2004, p.111).

Basmajian (1975) and Kahmi (2004) contend that those concepts which underpin scientific behaviour are not dominant in clinical practice, and participants are reluctant to fully commit to defining the profession as scientific. Instead, they volunteer the 'science but' argument which although articulated in multiple ways, always results in the message of science with restrictions. There are clinicians who feel more allied to science than others, but even for those clinicians, a full commitment to science is not appealing. Furthermore, stances by participants with regard to EBP and specifically research evidence further highlight the 'science but' positioning of clinicians.

'Science but' suggests problems with concept of science or what science represents, and it is likely it reflects an understanding of the limits of science in practice. There may be a reluctance to embrace science due to an apparent science-practice incompatibility. Reluctance may also stem from the perceived demands such a description would place on clinicians especially if conceived of only as research evidence, or arising from a narrow definition relating only to notions of white coats and Bunsen burners. This appears supported by the initial attempts of clinicians to define scientific practice using traditional concepts of research, assessment and diagnosis. While probing reveals evidence of scientific behaviour, clinicians appear not to automatically classify their everyday functioning as 'scientific', perhaps suggesting a different construction of practice or a restricted understanding of what science means. Sherman's (2009) contention that too often science is presented as a 'disembodied collection of facts' (p.35) may explain this dilemma if science is indeed seen as facts without ownership. Indeed, until the question directly relating to science was asked, it rarely occurred in the discussions, and neither did EBP. Science does not appear to be a term in everyday usage by SLTs despite Herbert's (2003) contention that science in clinical practice would seem obvious and uncontroversial. It is clear the definition of science in clinical practice needs attention and explication.

Practice therefore, rather than being purely scientific, appears to involve loose constructs of both art and science, although neither of these definitions are clearly expressed. There is a clear appeal for artistry in practice, defined mostly as creativity even though this too has scientific overtures. However as with science, clinicians do not want to fully commit to the idea of practice as art. The notion of the 'art of science' as articulated by one participant may have most appeal– a scientific underpinning to stabilise practice which other skills augment. This would define practice as a complimentary arena.

Furthermore, it may also be that a clinician's scientific leaning may depend on their area of practice, with some areas being more traditionally scientific and some less so. It is not clear whether clinicians elect to work in areas that fit them or they fit into the culture of their work-setting. This cultural effect may also have implication for being scientists. There is clearly a culture of looking to the group to check the validity of practice, which while positive in that it is a behaviour which suggests attempts to check practice, can also result in the rationalisation of poor practices. This may explain in part the continued use of culture-based and unvalidated therapies in the profession. Clinicians appear to be influenced more by their colleagues in decision making than the scientific basis of the interventions, and by their experience than the science behind a treatment.

The uncertain arena discussed previously is further evidenced in these discussions on defining the profession and the place of science within that definition. While science as conventionally constructed appears not to be a useful construct, clinicians do agree that they have an active role in contributing to scientific practice through for example measurement, experimentation or case-based research. Additionally, clinicians see their profession as unique. This desire or need to differentiate their discipline from other disciplines is perhaps not particular to SLTS. It suggests a need to explain clinical behaviour and perhaps to validate clinical actions in the knowledge that science does not suffice in this regard. This type of thinking also points to a tendency towards tenacity in preserving the profession's self-conception. By defining themselves as unique, perhaps SLTS give themselves a licence not to abide by the rules.

6.4.2. Behaving scientifically

'To be a scientist, is in essence to think critically (or validly) and naturally' (Lum, 2002, p.137).

So given clinicians' reluctance to fully embrace science, one could ask if scientific behaviour is evident. Logemann (2004) as previously stated argues that much of what SLTs do is 'an individual clinical trial' (p.134). Participants certainly suggest that they are acting in ways that are compatible with scientific practice. According to McLean et al. (2007), repeated practice which produces the same outcomes is individualised experimentation. Such experimentation is evident including attempts to validate information acquired from the patient through measurement (Edwards et al., 2004) and tracking client progress through data collection (McLean et al., 2007). If science is systematised knowledge derived from experimentation (Federspil & Vettor, 2000), or a systematic logical process to search for solutions (Apel, 1999), then, depending on the degree of systematisation, practice may be said to be scientific. This may not always be the case however. The idea of immeasurable practice in particular suggests some less than scientific practice. Nevertheless, the predominantly problem solving, trial and error approach to intervention means that clinicians can be considered to be acting scientifically at least some of the time, resulting in the reduced effect of chance on the outcomes of intervention (Thompson et al., 2002).

Scientific practice therefore appears to revolve around experimentation and problem solving, lending further support to a dominant hypothetico-deductive reasoning model of clinical practice. However, some of this practice may become automated, supporting Greenhalgh's (2002) contention which proposes that as clinicians move towards expertise 'they no longer rely explicitly on rules and maxim' (p.396). The logical foundation of such automatic practice may not be obvious, merely integrated into clinicians' practice decisions**.** Furthermore, clinicians do see merit in following the rules when appropriate but are free thinkers in that they use their own critical thinking to evaluate those rules, and then be creative around the rules attached to, for example, individual therapies. Practice cannot therefore be equated with roboticism or lack of autonomy which is further emphasised when clinicians report their considered use of new knowledge. Clinicians are not resistant to reasoned change and alter their behaviour accordingly after engaging with the new knowledge. The seeking of other opinion while pragmatically inclined is reflective of open rather than dogmatic practice and a search for clarity. This type of responsiveness is clearly defined by Adler (1987) as critical behaviour, and lends weight to the argument that the acquisition of new skills is a considered exercise. As Kahmi (1999) argues, 'there is no substitute for an informed clinician willing to try different treatment approaches and able to critically evaluate the effectiveness of these approaches' (p.97).

McLean et al. (2007) also identified practice informed and guided by the best knowledge regarding efficacious interventions as a scientific behaviour, although clearly clinicians cannot be considered to be acting scientifically in this regard. Thus, there may be an eclectic approach to the use of science. However, lack of adherence to EBP may have its roots in a broadly applied scepticism, itself a clearly scientific cognitive process. Clinicians do not only display some scepticism about EBP but about a wide range of issues, including pseudoscientific practices, training programmes, Americanised practices and colleague opinion. Critical behaviours which support such scepticism include being critical, not accepting, an insistence on clarity, and lack of tolerance of practical inconsistency and vagueness (Adler, 1987). This suggests that reluctance to embrace EBP may be more logically founded than previously thought. Quite clearly clinicians demonstrate a commitment to critical practice representing a scientific attitude. Their affiliation with anecdotal sources, unvalidated approaches and immeasurable behaviour, which represent less than scientific behaviour when interpreted in isolation, may be less than worrying in the context of such overtly critical practice.

Therefore despite their standpoint as reluctant scientists, SLTs position themselves by their clinical and articulated behaviours in the scientific realm. This appears to sit alongside an understanding of the limits of science in practice and an appreciation of the broader nature of practice. It does not however, represent what is seen as best practice, that is, the mantle of being evidence-based practitioners.

6.4.3. Translating scientifically

'The assumption appears to be that evidence-based practice is the "right" thing to do' (Beecham, 2004, p.131).

Kahmi (1999) argued that clinicians are 'not naive research consumers' (p.94) and this was apparent in the opinions clinicians articulated regarding research. Clinicians' appreciation of research concurs with multiple previous studies both profession specific and cross-disciplinary (e.g. Metcalfe et al., 2001). However, despite this, they express concerns with many of the points made echoing previous findings including conflicting evidence (e.g. Mullen, 2005) and lack of evidence (e.g. Law et al., 2004) and poor generalizability (Metcalfe et al., 2001). These issues imply as Logemann (2004) argues, that the profession cannot effectively be evidence based. Clinicians must by necessity, use unvalidated interventions in their everyday practice.

Newbold et al. (2008) expressed fears that by not using research evidence, the discipline is thus more of a technical occupation than a scientifically-grounded profession. However, the opposite argument can also be made, that applying research evidence to clinical practice may itself be a technical operation devoid of an understanding of the realities of practice. Clinicians' overriding concern with relevance and practicality means that research evidence may fail to effectively meet practice needs, the ideal circumstances of research being 'rarely realised in the practice of speech-language pathology' (Ylivisaker et al., 2002, p.xxvii) and thus a mismatch accruing. Many of the sentiments expressed by participants echo this theme suggesting as Dopson et al. (2003) state, that perhaps policy makers and evidence-based enthusiasts have frequently taken a 'somewhat simplistic view' of implementation issues (p.311). The outcome of the practice-research mismatch is that clinical decisions must be scaffolded by factors other than research evidence, and not necessarily even in combination with research evidence as outlined by the EBP model. Clinical solutions to practice decisions thus do not appear to include research unless it is case-based research which clinicians find to be more meaningful and translational. As case data are deemed to be low level evidence, this once again clearly indicates an apparent failure in the meeting of minds between what is relevant and valued clinically, and what is produced in an attempt to guide such practice. So it can be argued that the non-utilisation of research does not originate from a lack of desire to be scientific, but from its problems with relevance and generalisability.

SLT experts have suggested a number of other reasons why EBP is not as broadly used by SLT as it should be (Reilly, 2004b). Reilly (2004b) for example, mentions a belief that clinical trials are not possible in the discipline; that students are not necessarily educated to be evidence-based practitioners, and; that existing clinicians do not have the background to use the process. Logemann (2004) suggests additional reasons centring on funding and research issues. This type of argumentation may miss the point which consistently places the breakdown at the clinical rather than philosophical or model level (McCurtin, 2012). It may also misrepresent the true nature of clinical practice, an arena where clinicians need to take account of many different factors when deciding on treatments, including those represented by the individual patient.

Clinicians' awareness of research and their relative valuing of it indicates an open but also conflicted attitude. So even though they recognise problems with research, at the same time they use it to undermine the worth of questionable practices. They also understand that it is a concept open to abuse. SLTs' thinking about research appears both considered and rounded, and essentially clinicians report that research presents them with more problems than solutions. Delmar's (2005) contention that 'the truth is that we have not found a way to use evidence-based practice every day – or better, for every patient' is warranted (p.297).

6.4.4. Summary

While it can be said that clinicians are not EBP practitioners, there are clear indications that clinicians operate in a scientific manner being the appreciators of science Bernstein-Ratner (2006) called for. It appears that clinical practice and EBP may be different operations, making them incompatible. It is remarkable that after nearly twenty years of barrier studies, the mantra of clinicians is relatively unchanged. While lauded by those who teach and write, EBP remains problematic for those who practice. It would seem that the three pillars of EBP having been destabilised by the undermining of the patient scaffold, now appears to have suffered damage to the research pillar. This implicates the use of clinical experience as the dominant scaffold, governing rather than balancing decision-making.

6.5 THE AUTHORITY OF CLINICAL EXPERIENCE

'Internalized, collectively reinforced and often tacit guidelines…informed by clinicians' training, by their own and each other's experience, by their interactions with their role sets, by their reading, by the way they have learnt to handle the conflicting demands, by their understanding of local circumstances and systems and by a host of other sources' (Gabbay & LeMay, 2010, p.44).

Clinical experience emerges as the primary scaffold being articulated in a variety of ways from the broad 'field evidence' and 'practical evidence' phrases to statements such as 'what works'.

6.5.1. Field vs. laboratory evidence

'Individual and environmental variables influence nurses' clinical decision-making' *(Bucknall, 2000, p.34).*

There is undoubtedly a preference for practical evidence which is articulated across all groups. The underlying tone of 'but' within discussions of research and science were not present for discussions on clinical experience. Given the valuing of pragmatism and efficiency this favouring cannot be said to be surprising. Practical evidence effectively operates as a system of relevant shortcuts, thus enabling effective practice in a dynamic and pressurised environment. Therefore, reliance on clinical experience can be said to be functionally and logically based, recognising the limitations of services and the need for individuation of interventions. It is far more directly relevant and applicable than research evidence, which it can be argued may fail to meet many of the above criteria.

The main advantage of research evidence is of course its grounding in rigour and replication, and its suggestion of unbiased outcomes. It can be said that clinicians have not shown that field evidence or clinical experience is either. Indeed Cicerone (2005) points to clinical decision making as 'fraught with potential biases' (p.1074), although McLean et al. (2007) point to the 'essence' of science as the 'continual effort to compensate for confirmation bias, a propensity that afflicts clinical researchers and practitioners alike' (p.84). It can be argued, however, that practice does demonstrate scientific components, although perhaps not being as rigorous or replicable as for research evidence. The constructs of tool bags and of population-specific experience suggests that, replication is an instrument applied in a targeted manner which is individualised via a practical response when required. Rigour is suggested through the idea of individualised experimentation and measurement although clinicians suggest problems with being highly rigorous. This may reflect constraints imposed by practice itself. In contrast to research, clinical behaviour appears to be both scientific and pragmatic. SLTs are also aware of and attempt to reduce potential bias in a variety of ways similar to Copley and Allen's (2009) clinicians, although it can be assumed that not all decisions are unbiased. The same can be argued with regard to the outcomes of research however. There is clear evidence of bias in publications and under publication of negative outcomes (Tobler, 2004) and perhaps bias in interpretation of outcomes (Westen, 2005). There is even clear evidence of the increasing retraction of papers due both to error and fraud (Steen, 2010). Thus bias is not limited to the clinical arena. The under publication of negative evidence is interesting in highlighting the disconnects between practice and research. Clinicians are bound to carry out interventions which result in neutral or negative outcomes (Bouffard & Reid, 2012), and which in turn encourages them to change or adapt their interventions. There is clear evidence that a lot of research produces negative findings but fails to be accorded the same degree of publication space or value as positive findings (Tobler, 2004). Such outcomes reflect clinical practice in that negative results are produced; however in research they are not accorded their natural place. Thus, bias in what is published sends a message to clinicians that their practice may be flawed if they fail to produce positive outcomes. Consequently, even in ways that research and practice are similar, the valuing within the published literature sends a conflicting message.

Clinicians in effect tend to see more usefulness in the notion of practical evidence accumulated by themselves and their colleagues. This means clinical experience dominates the three pillars of EBP and may even act as the supreme scaffold.

6.5.2. Defining clinical experience

'While clinical experience and the development of clinical instincts are a crucial part of becoming a competent physician, information derived from clinical experience and intuition must be interpreted cautiously, for it may be misleading' (Dopson et al, 2003, p.313).

It may be that part of the explanation as to why clinical experience is undervalued and under defined is because it is less tangible and more abstract than research. Part of the appeal of research is the provision of clear and apparently easy answers. Part of the problem with grey-zoned clinical experience is its lack of predictability and its requirement for flexibility. Accordingly, as McCurtin (2012) has pointed out, if we are to find ways of making EBP work, then we need to make a serious attempt to understand the nature of clinical experience.

According to clinicians, clinical experience can be said to be composed of two core constructs: that which is accumulated and habitual, and; that which is experimental and dynamic. Clinicians then acquire a tool bag which is highly population specific, and which effectively acts as a route to efficient practice, thus reducing the weight of trial and error and mental effort. This is colloquially known as 'because it worked' (Kahmi, 1999, p.93) or 'what's in your head', and can be dismissed as illogical. However as discussed, the origin of such an accumulated repertoire is primarily experimentally derived from the clinicians' own experience, although it may be influenced by other sources such as colleagues and training as also indicated in numerous studies (e.g. MacKenzie et al., 2010). Additions to the tool bag appear not to be integrated without critical evaluation and trial and error. Thus this repertoire is not applied to the individual patient in an inflexible way.

The knowledge-based models of reasoning such as illness scripts (Edwards et al., 2004), what Andre, Borgquist, Foldevi and Molstad (2002) also call rules of thumb, are integral to understanding this repertoire. Essentially, through accumulated experience the clinician recognises similar features in cases by accessing stored and integrated knowledge. This explains the valuing of population-specific knowledge and experience. Furthermore, this specific experience appears central to perceptions of expertise and competence. This stored knowledge enables practitioners to perform more efficiently, and may be misrepresented as instinctual, routinised or even habitual. Alternatively, this might also be interpreted as part of the art in practice, although it does not necessarily represent unscientific practice. Conversely, there is also the possibility that dependence on such ways of working whatever its origins, may lead to less than individualised and less than scientific ways of working, perhaps depending on the individual clinician, the culture and the work context. The second component of clinical experience is both scaffolded on, and utilised alongside, this tool bag and represents an eclectic and experimental approach to intervention. It is best represented by notions of creativity, flexibility and adaptability. This experimental and eclectic approach in itself leads to the repertoire being complemented over time by new additions, forming an ever-growing tool bag from which intervention decisions are made. So while clinicians acknowledge the need to be grounded in many ways e.g. in experience of similar clients, by having a repertoire and by use of colleagues, this stored knowledge also forms a basis upon which the willing and experimental clinician adds new knowledge. Thompson et al. (2002) have argued that experience can provide a false sense of certainty and is of little help when faced with a situation the clinician has not previously encountered. This does not appear to represent the true nature of practice as the accumulated repertoire facilitates engagement with new situations, as does the clinician's willingness and tendency to experiment. Thus, as clinical experience accumulates, and as practice is more weighted on this accumulated repertoire, it support the clinician to critically engage with more complex patients and thus leads to further experimenting, problem solving and theorising. This may and does include mistakes, a consequence of the trial and error nature of practice. Lutterman (2011) calls these mistakes 'nuggets of gold' (p.7) and these are added to the tool bag to inform future practice.

6.5.3. Science absent or science present

'A shortage of research and a lack of research training have led to a profession that is uncritical of its knowledge base and unscientific in some of its practices' (Pring, 2005, p257).

The pervasive sense is that clinical experience is either not scientific or certainly considerably less scientific than research evidence. This may be contributed to by the substantial influence tool bags play in clinical practice where, because practice has become integrated and explicated, it is assumed not to be scientifically based. This idea of tool bags fits with the contention that the more experienced a clinician gets, the less logical their decision making processes are shown to be (Greenhalgh, 2002). This is no different from managing any task which someone does repetitively and there is no reason to suggest that clinical practice should function differently to any other skill. As Greenhalgh notes (2002), 'we are at our most intuitive when doing our regular job and dealing with patients whom we know well' (p.396).

Participants explain that practice does contain clear scientific components. Tool bags can be said to represent scientific practice at least in part, increasingly becoming scaffolded on this integrated and unexplicated experience more over time. The apparent lack of logic said to characterise increased experience may not accurately represent its foundations as Greenhalgh (2002) argued, as it may be likely that the thinking underpinning rapid and reflexive practice is not readily articulated. Neither can experience be inferred to be less reliable than practice guided by research. Charman (2010) for example, points to several studies in the field of autism which show that for two-year olds, diagnostic reasoning using expert clinical judgment is more reliable than the standard diagnostic instruments. Moreover, the clinical context is different and the application of research appears less relevant than experience, perhaps also being subject to questions regarding reliability.

Furthermore, the second component of clinical experience, that of dynamic practice essentially represents scientific behaviour: experimenting, problem solving, using trial and error, and valuing measurement. It may not be scientific in the one hundred per cent rigorous way that represents constructs of conventional science, but this does not mean than scientific bases are absent. Importantly, clinicians consistently reference the use of critical faculties especially when acquiring new knowledge. Use of a new therapy for example appears contemplated and measured. Training is not automatically applied but reflected on. Research articles are evaluated. Colleague opinion is weighed in the context of the clinicians' own experience. This seeking out of other opinion, of searching for clarity, of criticism and scepticism, of altering behaviour in a reasonable way clearly represents scientific behaviour. Furthermore, critical thinking is applied whether the knowledge comes from a discipline specific source or a pseudoscientific one. Clinicians understand the potential for bias. While participants essentially define practice as a 'science but' exercise, this does not mean there are no scientific undertones. Science is both integrated into clinical experience and functions alongside it.

6.5.4. Summary

Clinical experience emerges as a highly dominant scaffold underpinning decision making in clinical practice. This supremacy can be said to reflect and represent the nature of clinical practice. The response to such a singular scaffold is that likely to be that reliance on such a less than scientific scaffold is bad for the status of the profession. This can only be the case if such a scaffold is constructed as fallible, ungrounded and biased. There is no reason to suggest that this is, in fact, the case.

6.6 CHAPTER SUMMARY

'It is fair to suggest that we potentially limited our understanding of why EBP has failed to gain momentum in practice as opposed to paper, by primarily focusing on clinician deficits and practical constraints' (McCurtin, 2012, p.334).

Practice is dynamic and pivoted on the patient as both a member of a group and as an individual. Practice is primarily scaffolded on clinical experience and exists in a 'science but' world, where it is underpinned by scientific behaviours but not necessarily defined by EBP. The clinician is sometimes a scientist and sometimes not. EBP remains problematic for clinicians and the notion of science and evidence-based practice may not be highly useful to practising clinicians.

Chapter 7: Integration and conclusion

7.1 INTRODUCTION

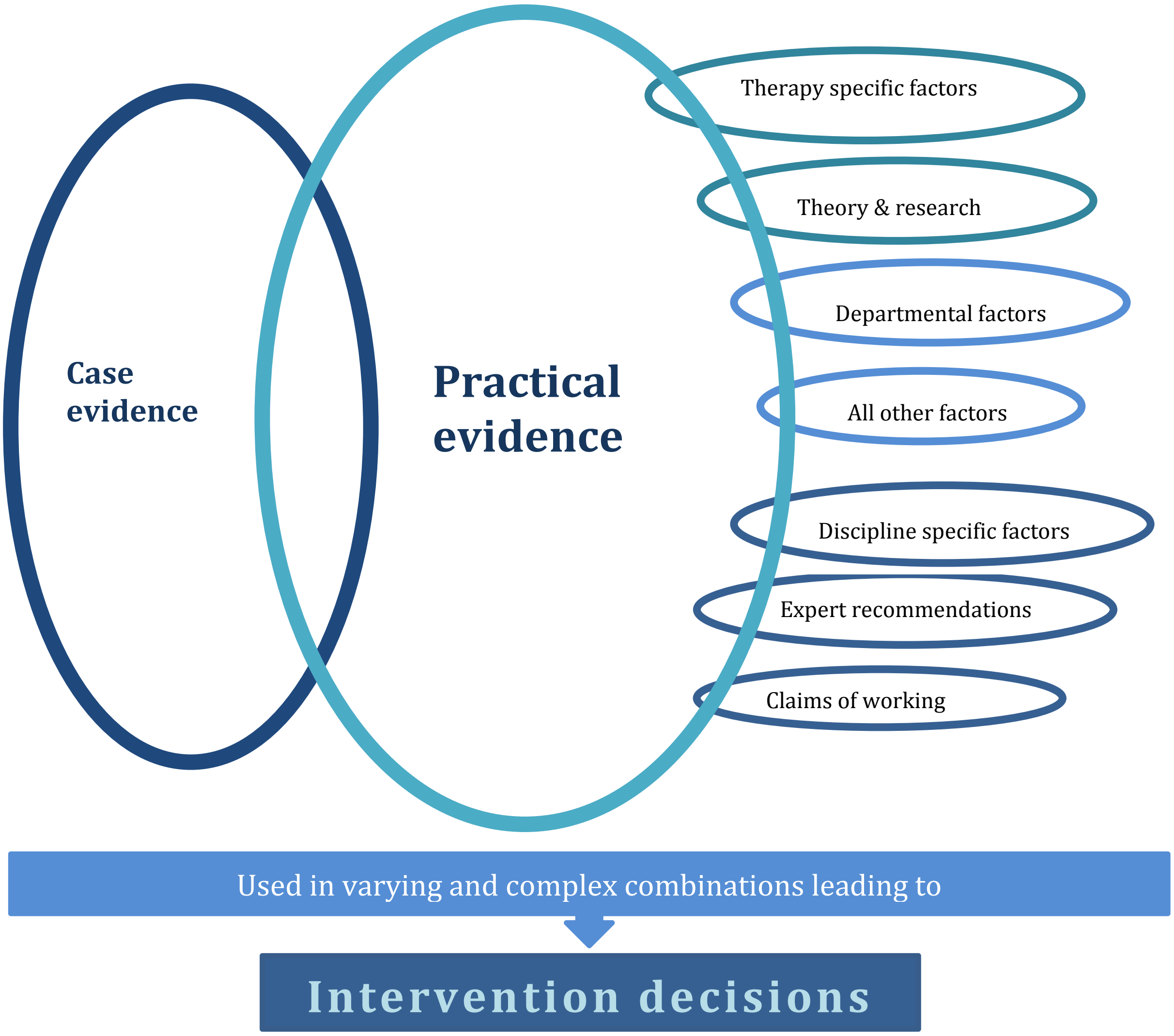
'Clinicians are science-using, information-sorting interpreters of time-bound circumstances' (Montgomery, 2006, p.174).

The aim of this research was to explore professional knowledge and decision-making scaffolds in SLT clinical practice. This originated from a concern with pseudoscientific practices and an interest in the EBP paradigm, especially in the context of repetitive findings from barrier studies that clinicians were not research utilisers. It led to questions of whether clinicians were rejecting science in practice by their apparent rejection of EBP and their readiness to embrace pseudoscientific therapies. In using a mixed-methodology approach, it was hoped to gain an authentic understanding of the role of science in practice and thus, a deeper appreciation of the nature of SLT practice. This chapter aims to bring together the study findings and provide directions for research and practice.

7.2 SYNTHESIS

In amalgamating the findings from both study phases, there is little evidence of discord. In summary, interventions decisions are primarily scaffolded on practical and case evidence and conventional scientific scaffolds are less than pivotal in guiding clinical decisions. Furthermore, clinicians employ relatively limited clinical reasoning as reflected in the weighting in Figure 7.1.

Figure 7.1 The bases and weighting of SLTs intervention decisions



Clinicians have a conceptual problem with the definition of science, as they mainly associate scientific practice with conventional concepts such as research evidence as opposed to being scientific thinkers. Despite this, they use research evidence to undermine questionable practices and furthermore, report using scientific behaviours such as problem solving in clinical practice. In essence, practice is relatively narrowly defined, being far more influenced by internal and discipline-specific factors than external factors.

7.3 SCIENTIFIC PRATICE

These findings have implications for scientific practice. The science in practice is practical science; intervention episodes being experimental in nature and signalling SLTs' appreciation of other practice components. These components include the human element, thus reflecting an understanding of practice perhaps not truly evident in models such as EBP.

SLTs on the whole do not use pseudoscientific practices and the non-scientific practices they adopt seem to be used in a more rational manner than might be previously thought. However, there are indications that those SLTs using pseudoscientific and non-scientific therapies are more influenced by non-scientific sources, thus suggesting a sub group within the profession. This also implies that the vast majority of SLTs can be said to be acting scientifically.

While the primacy of practice knowledge has implications for understanding clinical decisions as scientific, clinicians do not just accept knowledge whatever form it takes but 'triangulate it' (Gabbay & LeMay, 2010, p.200) thus demonstrating scientific thinking. There are in effect indications of attitudes or actions supportive to critical thinking (Hicks & Southey, 1995) including openness to opposing viewpoints, being critical, being serious, autonomous, sceptical and altering behaviour according to new knowledge. While there is some evidence of the operation of prior belief (disregard of negative evidence), this may reflect the nature of the research base as much as indifference to the findings of research. There is a lack of resistant attitudes (Hicks & Southey, 1995) on display including a lack of dogmatism or resistance to reasoned change, deference to authority (including EBP), being accepting and a tolerance of ambiguity. However, there is also a tendency to tenacity in preserving self-conception: SLTs in this study consider themselves unique and different from other professions although this emphasis on difference may have arisen from clinicians being asked to explain the nature of their practice.

Practice thus reflects science in different ways to conventional constructs; and extends beyond science, reflecting human, uncertain and complex situations. While clinicians hesitate to define themselves as scientific, they clearly do not define themselves as pseudoscientists. Practice can therefore be said to be based on science but not purely scientific, having scientific undertones and behaviours but not limited to science.

7.4 EVIDENCE-BASED PRACTICE

EBP can be said to be a model which is on the whole not operated by clinicians. Research in particular may be a tool valued by academics or intellectuals rather than practitioners. Clinicians on the other hand highly regard anecdotal knowledge which is significantly less esteemed in EBP hierarchies. The consistency of such findings across disciplines suggests a pervasive problem with EBP, and implies that EBP as a practical rather than theoretical model may be doomed to failure.

If science is viewed solely as evidence from research, it can be interpreted as restrictive and reductionist and, incompatible with responsive, pragmatic practice. EBP continues to be fundamentally constructed as research evidence which may partly explain problems with its uptake. Despite positive changes to the definition, the EBP paradigm has failed to accord the less concrete elements of clinician and patient contributions the same attention as research. Consequently, there is a failure to define clinical experience and develop protocols enabling clinicians to integrate experience and values with research evidence. The implication is that there is a problem with either the definition of EBP itself, or that the pillars representing clinician and client scaffolds are of lesser significance.

Importantly, EBP itself has produced little evidence to show that its use improves outcomes (Rappolt 2003), coaxing Murray et al (2007) to claim that EBP is based on 'faith rather than persuasive evidence' (p.512) and suggesting that EBP itself may have pseudoscientific features. Recommendations that it is clinicians who need to change in order to facilitate improved research use appear to miss the point (McCurtin, 2012) which is that the complex and individualised nature of practice is often ill-suited to the products of research evidence. EBP therefore appears to be a model which ignores the realities of practice.

7.5 PRACTICAL EVIDENCE

The findings of most studies, this one included, demonstrate clearly that clinicians are pivotally persuaded by practical evidence. Clinical decisions are based on individual population-specific repertoires which may in essence define clinical experience. While alterations occur throughout the lifespan, the tool bag itself persists as the primary reference used by clinicians in making intervention decisions, with clinicians eclectically forming modified treatment recipes for each singular patient. It is suggested that the tool bag dominates because of the complex and individualised nature of practice, and clinicians' intimacy with, and understanding of the character of such practice.

Questions regarding the usability of EBP have led to calls for multiple hierarchies of knowledge not single ones (e.g., Nairn 2012). It appears that while clinicians agree with this sentiment, they do not acknowledge it should also apply to practical evidence. Despite its dominance, practical evidence allows for flexibility of decisions which is integral to individualised practice. Practical evidence can be said to be a scaffold which is responsive and relevant although concerns arise as clinical experience is potentially biased and subjective. Naylor (1995) rightly comments that the dependence on clinical experience might be a 'pooling ignorance as much as distilling wisdom' (p.841). If this is the case, it is a concern for the scientific nature of such practice.

The central interest with EBP is 'what works' (Bouffard & Reid, 2012). This is also the phrase used by clinicians in attempting to define their clinical decisions. So the goals of EBP and practitioners is essentially the same, it is just that the ways of getting there may be different. Thus, Tannebaum's (2005) contention that 'EBP occupies the moral high grounds because its practitioners do 'what works' (p.69), can also be said to apply to clinical practice. Furthermore, given that clinicians' practice in an applied rather than theoretical arena, then perhaps clinicians' ideas of 'what works' can be said to be more realistic.

7.6 RECONSTRUCTING PRACTICE

Despite recent changes to the EBP model to accommodate clinical and patient contributions, EBP is still firmly weighted on research evidence. Greenhalgh (2012), once a proponent of the model, now calls it 'a conceptual cul-de-sac' (p.92). To reflect better the complexities of decision making, some authors have argued for developments to the model; these appear timely. Tonelli (2006) for example, argues for the addition of multiple scaffolds including pathophysiologic rationale, system features including resources availability, society and professional values, and legal and cultural concerns. Tonelli's (2006) model suggests no-one factor should take precedence, with equal weighting accorded and priority being determined in individual situations. Research evidence for example, may guide practice in complex situations, whereas clinical experience might inform more routine practice decisions.

Despite calls for broader models, the dominant scaffolds supporting intervention decisions in SLT clinical practice are case evidence and practical evidence and rethinking the model to extend EBP may not reflect the actualities of practice decisions. Rather than reworking an incompatible model, clinical practice itself as characterised by clinicians should form the basis of a new paradigm if it is to both reflect practice and be embraced by practitioners (see Figure 7.1).

7.7 CONCLUSIONS

'Medicine is located in the gap between the simplicities of science and the complexities of individual lives' (Gawande, 2002, p.8)

Practice is best defined by clinicians as a 'science but' endeavour, scaffolded on practical and case evidence and reflecting internal rather than external scientific thinking. This exposes clinical practice as a different construct to that encapsulated by the EBP model. Essentially, clinical practice and EBP reflect different paradigms and autonomy is the natural home of intervention decisions. The disconnect between EBP and clinical practice helps explain problems with research uptake and suggests that new or altered models to reflect practice are required. Indeed, revisiting some of the seminal works focusing on clinical reasoning (e.g. Higgs & Jones 2008) is warranted to facilitate this exercise.

Science in practice reflects that there are simply no scientific answers for a lot of clinical problems; what is conceived of as a properly scientific approach is not feasible in clinical practice. Scientific thinking is a means of ensuring good practice and this is not necessarily a bad thing. While Pring (2004) talks about clinical experience and intuition as unpredictable weapons which contribute to inconsistency in intervention decisions, it is known that heuristics are often as at least as accurate as complex statistics in pointing to the right decisions (Gigerenzer et al., 1999). Clinicians however, need to make their knowledge explicit, as by articulating their practice they can best reflect their scientific behaviours and allay concerns regarding the fallibility of those practice decisions which are not research based.

Effectively, researchers and theoreticians can continue to deny the nature of practice and impose translationally challenged models or, they can attempt to better understand the challenging arena which is pivoted on human clinicians and patients. Clinicians have often been accused of being resistant to EBP. However, it may be that proponents of unconditional EBP have been unwilling to understand the nature and realities of practice, that is, as Niamh pointed out, that *'we don't have recipes really; we just have loads of ingredients'.*

7.8 LIMITATIONS

Some potential limitations are outlined below:

7.8.1 Constraints on the research process.

- While a pilot focus group was scheduled, this was cancelled on three occasions by the gatekeeper. Planning should have included a back-up pilot group to accommodate such circumstances.
- SLT mangers acted as gatekeepers for the focus groups and as these groups targeted SLT departments, managers were included as members in the focus groups. This may have constrained group members from presenting honest opinions and for this reason managers should have been excluded from the groups. Another possible option would have been to target groups of SLTs via Special Interest Groups. This was considered at the time but dismissed given the infrequency of SIG meetings. Single subject interviews could also have been undertaken in place of focus groups to facilitate the explication of unrestrained opinion.
- Use of experts to inform the content of the survey could have been more specifically targeted from the outset. Attempts to cover multiple areas of practice resulted in the generation of redundant data (although these data are not lost as it has been used in other research).
- Although piloting did not identify this as an issue, it is possible the survey could have been shorter in length which may have resulted in higher response rate. This may have been facilitated by piloting the volume of therapies and reasons for use and non-use on a larger number of respondents, thus identifying core therapies and reasons earlier in the process and reducing the options offered to respondents in the main survey phase. This was not attempted due to the relatively small potential sample of respondents in the SLT profession in Ireland.

7.8.2 Potential influences on data analysis and interpretation.

- Explication of scientific or critical thinking might have been more directly targeted in other ways for example, case-based reasoning and tests of critical thinking.

- The targeting of academic and patient opinion might have been included in the study in order to present the perspective of groups other than that of clinicians. This may have contributed to a deeper understanding of the issues and findings which link more specifically to the three EBP pillars.
- Other methods such as ethnography might have been utilised to bring even more insight to the topic under investigation.
- Although in this study the quantitative phase preceded the qualitative phase, it is also possible the reverse sequence of the qualitative phase followed by the quantitative phase might have yielded even more knowledge and understanding of the subject matter.

7.8.3 Bias

- Researcher bias must be considered although multiple strategies were used in order to minimise the effect of bias. Examples of this include the use of other individuals (experts, supervisory team and colleagues), methods (reliability checks, decision matrices and immersion) and techniques (reflective summaries, reflective diary).
- Focus group data may have been influenced by social desirability. It is possible that some contributions may have been swayed by attempts to impress or collude with either other individuals in the group, or the group as a whole. Furthermore, the presence of managers in the groups may have constrained or shaped the opinions of group members.

7.9 RECOMMENDATIONS

Implications for practice and research are outlined below:

7.9.1 Research and practice interface

Acknowledge that practice and research are different arenas and are not best represented by the EBP model in its current form. More attention to the nature of clinical practice and how this facilitates or prevents the use of research is required. New models which accommodate the realities and uncertainties of practice and which consider the research-practice interface need to be conceptualised. This should not be done in isolation from those who engage at the coalface of practice – the practitioners and the patients. Authors who have shown an understanding of this topic should be consulted in this regard, including Gabbay & Le May (2010), Greenhalgh (2012) and Miles (2007). Furthermore, clinicians need to actively promote practice-driven translational research.

7.9.2 Therapies

Given the ongoing problems with the evidence base, consideration needs to be given to defining and understanding treatments in broader contexts than by their research evidence alone. Broader considerations may include mechanisms of action, theoretical bases, and the parameters for determining candidacy. The evidence-based movement may also be better served by looking at evidence-based principles as recommended by Hayhow (2010), than by evidence based therapies. Furthermore, researchers need to more actively engage in researching the therapies that are used in practice and which are either under researched or ignored in studies of therapy. Clinicians should actively influence research agendas in this regard.

7.9.3 Scientific thinking

The understanding of science in practice should be broadened from limited interpretations involving research production and use, to include constructs of scientific thinking and scientific behaviours. Research into scientific practice should extend beyond considerations of research use to scientific thinking. Consideration should also be given to explicit training pre and post qualification on areas such as science and pseudoscience, clinical reasoning, clinical decision making and critical thinking. This should occur in both the initial training of students in SLT qualification courses, and to all post qualification training opportunities. Given the current emphasis on continuous professional development by professional bodies and employers, the professional bodies should lead on the explicit incorporation of scientific thinking elements into all training course and workshops.

7.9.4. Practical evidence

The use of tacit knowledge and the role of the autonomous clinician should be legitimised by acknowledging its importance in clinical practice, and by entrenching articulated decision making and argumentation into student training and clinical practice. This necessitates that professional qualification courses undertake to prioritise debates and training regarding the nature of clinical practice which extend beyond discussions about evidence-based practice and therapies, and incorporate concepts and constructs including clinician skills, patient involvement and extra therapeutic factors. Clinicians also have an opportunity to highlight practical evidence by confidently advocating its centrality in decision making.

Furthermore, practical evidence and its transmission systems, specifically information sharing between colleagues requires exploration to determine the nature and validity of such knowledge. This might be best done by examining the nature of knowledge transmission between clinician educators and student clinicians.

7.9.5 The culture/ the discipline

Given the high dependence on shared clinical experience, attention should be given to the role that culture plays within the profession in promoting and maintaining both valid and invalid practices. The method of ethnography might best serve to elucidate this subject.

7.9.6. Future research

A number of possibilities for future research stem from this study. They include those outlined below.

- Research in general needs to link more closely with practice issues. These include investigation of the therapies that are being used by clinicians rather than those predominantly of interest to researchers and of practice issues generally.
- Further research on scientific and critical thinking in clinical practice is required in order to define and substantiate the presence and use of scientific knowledge in practice.
- Conduct research into decision making across the clinical lifespan to solidify or negate ideas of such a lifespan.
- Acknowledge the importance and the influence of culture in informing decisions by further exploring its impact and scientific components.
- Research into 'collective sense making' (Gabbay & LeMay 2004) or shared clinical knowledge is required. For example, the nature and scientific basis of anecdotal information and informal training provided by colleagues deserves more attention if the nature of practice is to be truly understood and new models are to be developed which more accurately reflect clinical practice.
- The influences of extra therapeutic factors needs to be more closely examined in order to both understand these variables and how they correlate with clinicians and client factors, and to place generic and therapy specific effects in context.
- The promotion and publication of single subject designs originating from clinical practice should be encouraged in order to build practice-based research and reflect the individual nature of clinical practice and knowledge.
- More attention needs to be given within the profession to patient factors broader than that of case evidence including patient contributions to outcome and patient preferences and values.
- Given the similarities between disciplines, all research should be cross disciplinary rather than unidisciplinary.

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Appendices

Appendix 1 Glossary of terms

ABA: Applied Behaviour Analysis.
Approach: 'A theory driven process or set of procedures defined by its scientific base' (Apel 1999:104).
ASHA: American Speech Hearing Association
Clinical decision making: Decision making is a broad term that applies to the process of making a choice between options as to a course of action. Clinical decision making by health professionals is a more complex process, requiring more of individuals than making defined choices between limited options. Health professionals are required to make decisions with multiple foci (e.g. diagnosis, intervention, interaction and evaluation), in dynamic contexts, using a diverse knowledge base (including an increasing body of evidence-based literature) with multiple variables and individuals involved (Smith et al 2008:89).
CAMS: Complementary and alternative medicines.
Clinical experience: Knowledge or practical wisdom gained from what one has observed or encountered.
Clinical practice: 'A model of practice that involves those activities with and on behalf of clients, especially those activities completed in the client's presence and with the client's collaboration. These activities are informed by an assessment. These intervention and change oriented activities are based on a range of theories with the clinician selecting the one most appropriate for the client's situation' (www.etsu.edu/socialwork/mswprogram/defclinicalpractice.aspx retrieved 9/9/12).
Clinical reasoning: 'The thinking and decision-making processes that are used in clinical practice' (Edwards et al 2004: 314).
Client-specific factors: Refers to factors used to support clinical decisions which relate to the client including patient attributes, patient values and patient contributions to the therapy process.
Clinician-specific factors: Refers to factors internal to the clinician which support clinical decisions. Includes a range of factors such as epistemological bases such as clinical experience and personal beliefs.

Critical thinking: 'Reasonable reflective thinking focused on deciding what to believe or do' (Ennis 1987:9).

DLT: Derbyshire Language Scheme

DPNS: Deep pharyngeal neuromuscular stimulation.

EBP: Evidence-based practice.

Evidence-based practice: 'The conscientious, explicit and judicious use of current best evidence in making decisions about the care of individual patients' (Sackett et al 1996:71).

EMST: Expiratory muscle strength training.

Extra-therapeutic /non-therapy specific factors: Refers to factors not directly related to the intervention being used which may impact on treatment outcome and include placebo, the therapeutic alliance and patient motivation.

General sources of information: Refers to factors other than profession or health specific which are used to support clinical decisions such as the general media.

Hypothetico-deductive model of reasoning: 'The clinician attends to initial cues from or about the patient, from these cues, tentative hypotheses are generated. This generation is followed by on-going analysis of patient information in which further data are collected and interpreted. Continued hypothesis creation and evaluation take place as examination and management are continued and the various hypotheses are confirmed or negated. A person moves from a generalisation (multiple hypotheses) towards a specific conclusion'. (Edwards et al 2004:314).

IASLT: Irish Association of Speech and Language Therapists

ISL: Irish sign language.

LSVT: Lee Silverman Voice Therapy.

NICE: National Institute for Clinical Excellence.

NSOMEs: Non speech oral motor exercises.

OMT: Oral motor therapy.

Other sources of information: Refers to sources of information other than scientific, professional or health specific and vernal sources which are used to support clinical decisions.

Pattern recognition / illness scripts: 'The clinician recognises certain features of a case almost instantly. This recognitions leads to the use of other relevant information, including "if-then" rules of production in the clinical stored network. This form of reasoning moves towards from a set of specific observations towards a generalisation and is known as 'forward reasoning' (Higgs & Jones 2000:6).

PECS: Picture Exchange Communication System.

Profession-specific factors: Refers to professional factors used to support clinical decisions such as professional standards, texts and culture.

Pseudoscience: A theory, methodology, or practice that is considered to be without scientific foundation.

RCSLT: Royal College of Speech and Language Therapists

Scaffold: Refers to bases of knowledge and decision making used to support clinical decisions.

Science: 'Systematized knowledge derived from experimentation, study and observation' (Beyerstein 1995:2).

Scientific sources of information: Refers to factors supporting clinical decisions which emanate from scientific sources include scientific research and scientific thinking.

Scientific thinking: 'A set of cognitive and behavioural methods to describe and interpret observed phenomena…aimed at building a testable body of knowledge open to rejection or confirmation' (Shermer 2001:98).

SIT: Sensory integration therapy.

SLT: Speech and language therapy /therapist.

TEACCH: Treatment and Education of Autistic and related Communication handicapped Children.

Technique: The strategy or way of implementing a programme or therapy.

Therapy: Refers to a type of approach such as oral-motor therapy.

Therapy-specific factors: Refers to factors which are specific to the therapy or technique in question range from physical or technological attributes to user-friendliness.

Tool: 'Devices used to perform an activity' (Apel 1999: 103).

VFSSB: Videofluroscopic Swallow Study – biofeedback.

Appendix 2 Specialist information request

UNIVERSITY of LIMERICK
OLLSCOIL LUIMNIGH

Identify the therapies, tools and techniques used by speech & language therapists in your specialism.
Include emerging ones that you are aware of but which may not yet be in use.
Include ones in use even if you do not agree with their use
Include ones you think should be used but may not be.
Include as many as you feel appropriate.

Definitions to guide you
Therapy: An approach or therapy is "the process or set of procedures ….." (Apel 1999:103). Therapy refers to a type of programme or one defined by a theoretical position. A generic approach example is oral motor therapy. A specific example is FastForword.
Tools: Tools are simply devices used to perform an activity – a tool is designed to provide intervention materials for the approach (Apel 1999). An example of a tool is a bite block or videofluroscopy.
Techniques: These are the strategies or ways of implementing a programme or therapy (Turner & Whitfield 1999). An example from dysphagia is the chin tuck.
Complimentary & Alternative Medicine is defined by the National Center for CAM in the states as "a group of diverse medical and health care systems, practices and products that are not presently considered to be part of conventional medicine" Haltiwanger & Stein 2009:3

Area of specialism (*Please circle the area of practice which best defines the specialism for which you are completing this form)*

Stuttering (dysfluency)	Voice (dysphonia)	Eating Drinking & Swallowing Disorders (dysphagia): Paediatric /disability
Acquired communication disorders	Language delay/disorder	Eating Drinking & Swallowing Disorders (dysphagia): Adult /acute
Developmental speech disorders	Motor speech disorders	Craniofacial disorders
Communication in intellectual disability	Communication in physical disability	Reading & writing (dyslexia)
Communication in autistic spectrum disorders	Communication in mental health: paediatric*	Communication in mental health: adults
Head & Neck Oncology	Cognitive Impairment (dementia)	Progressive neurological conditions
Hearing impairment	Communication in adults with Intellectual disability	Other *(please specify)*

*Other than ASD

Are you currently working as a *(please circle the title which best defines your work):*

Clinical specialist	Specialist clinician*	Academic

* *(not employed with title of 'Clinical Specialist' but working clinically within area of specialism for at least 5 years*

Please identify the therapies, tools, techniques or alternatives medicines for your specialist area, which are used by speech & language therapists

Therapies / approaches	**What specifically does this target?**
Tools	**What specifically does this target?**
Techniques	**What specifically does this target?**
Complimentary & alternative practices	**What specifically does this target?**

This research has been approved by ULREC.

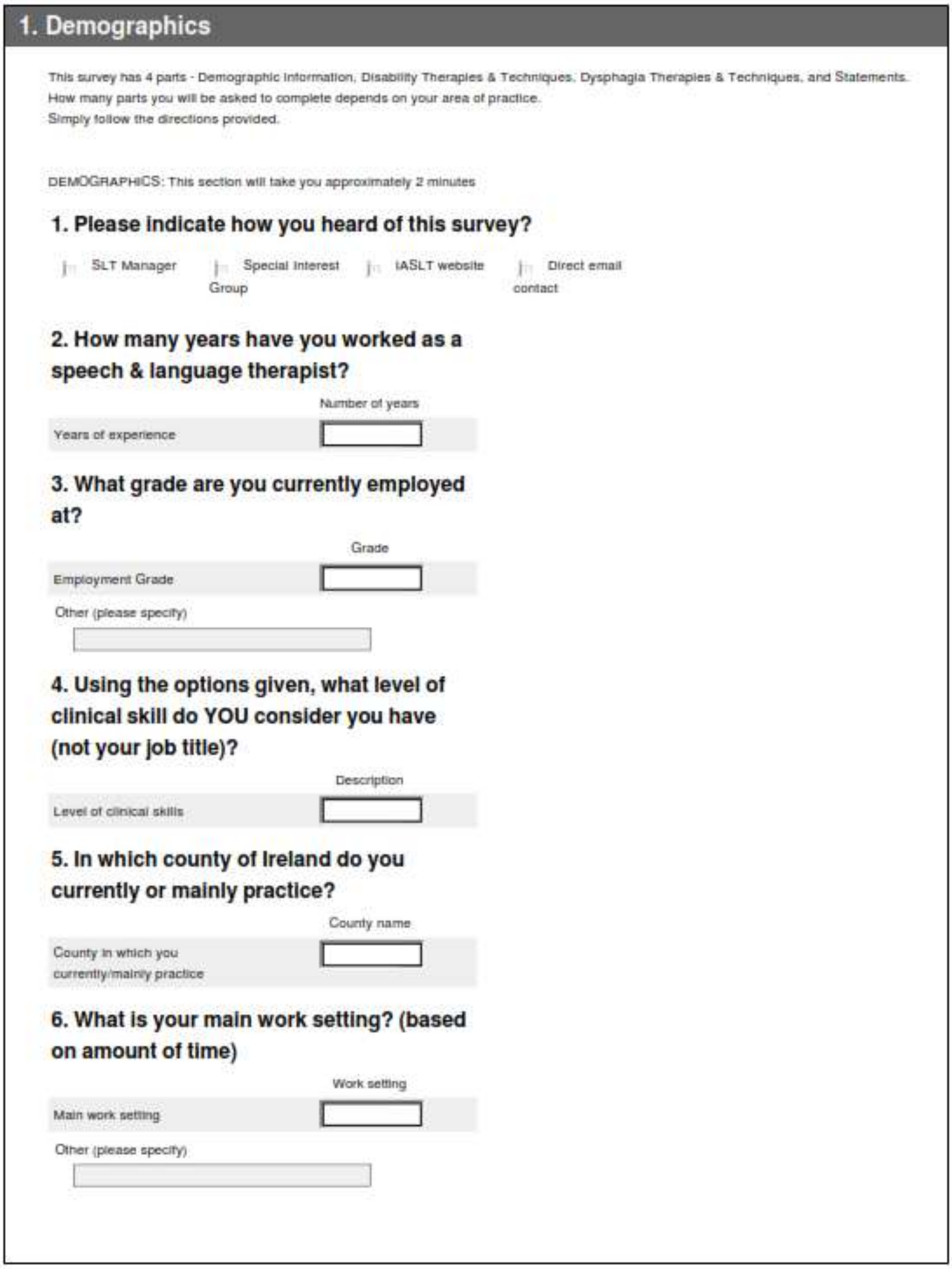
Any questions you have can be emailed to Arlene.mccurtin@ul.ie

If you have concerns about this study and wish to contact someone independent, you may contact: The Chairman of the University of Limerick Research Ethics Committee, c/o Anne O 'Dwyer, Graduate School, University of Limerick, Limerick.

Thank you for your support

Appendix 3 Survey master

Therapies & Techniques used by Speech & Language Therapists in Ireland



1. Demographics

This survey has 4 parts - Demographic Information, Disability Therapies & Techniques, Dysphagia Therapies & Techniques, and Statements.
How many parts you will be asked to complete depends on your area of practice.
Simply follow the directions provided.

DEMOGRAPHICS: This section will take you approximately 2 minutes

1. Please indicate how you heard of this survey?

☐ SLT Manager ☐ Special Interest Group ☐ IASLT website ☐ Direct email contact

2. How many years have you worked as a speech & language therapist?

	Number of years
Years of experience	

3. What grade are you currently employed at?

	Grade
Employment Grade	

Other (please specify)

4. Using the options given, what level of clinical skill do YOU consider you have (not your job title)?

	Description
Level of clinical skills	

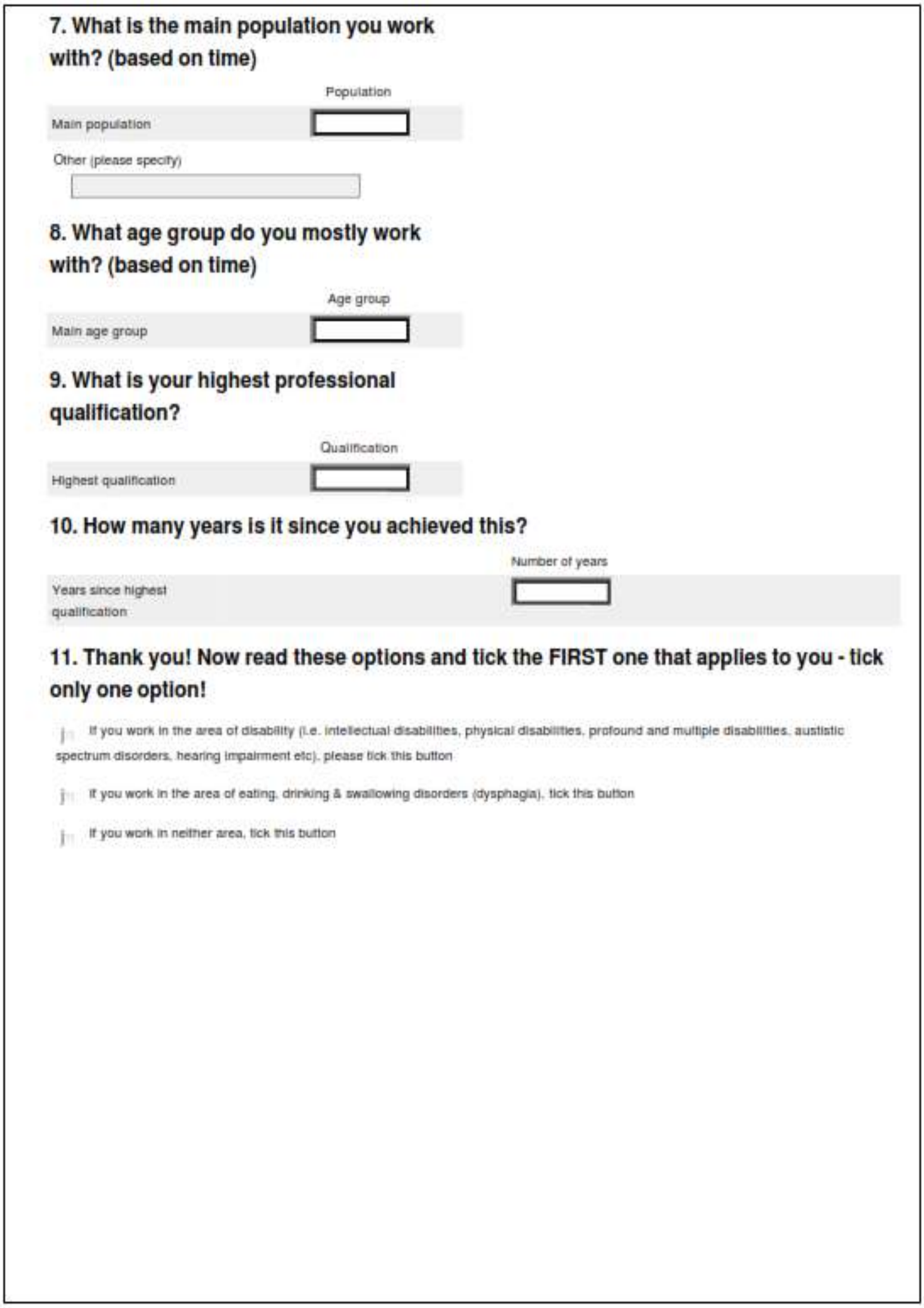
5. In which county of Ireland do you currently or mainly practice?

	County name
County in which you currently/mainly practice	

6. What is your main work setting? (based on amount of time)

	Work setting
Main work setting	

Other (please specify)



7. What is the main population you work with? (based on time)

	Population
Main population	

Other (please specify)

8. What age group do you mostly work with? (based on time)

	Age group
Main age group	

9. What is your highest professional qualification?

	Qualification
Highest qualification	

10. How many years is it since you achieved this?

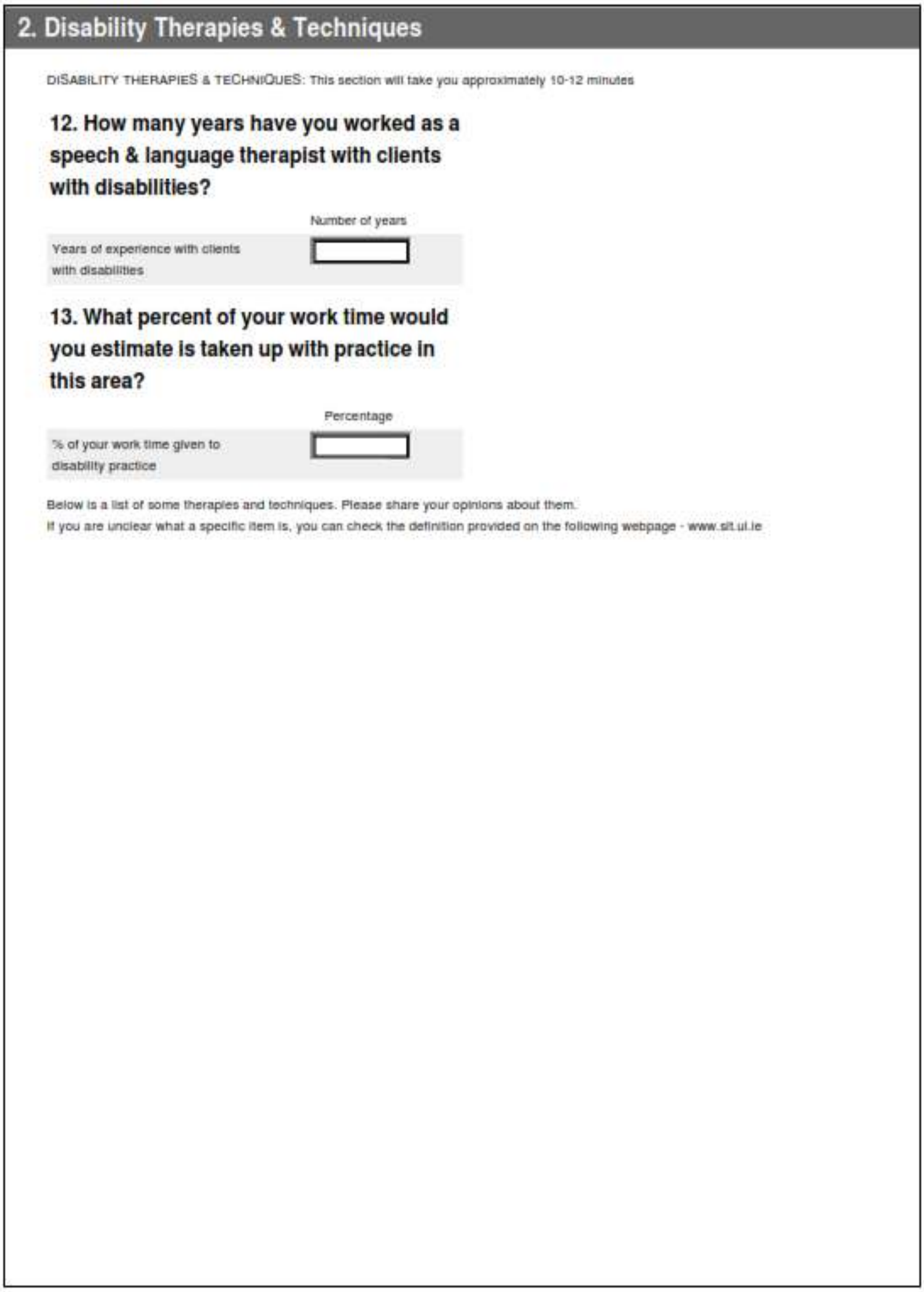
	Number of years
Years since highest qualification	

11. Thank you! Now read these options and tick the FIRST one that applies to you - tick only one option!

○ If you work in the area of disability (i.e. intellectual disabilities, physical disabilities, profound and multiple disabilities, austistic spectrum disorders, hearing impairment etc), please tick this button

○ If you work in the area of eating, drinking & swallowing disorders (dysphagia), tick this button

○ If you work in neither area, tick this button



2. Disability Therapies & Techniques

DISABILITY THERAPIES & TECHNIQUES: This section will take you approximately 10-12 minutes

12. How many years have you worked as a speech & language therapist with clients with disabilities?

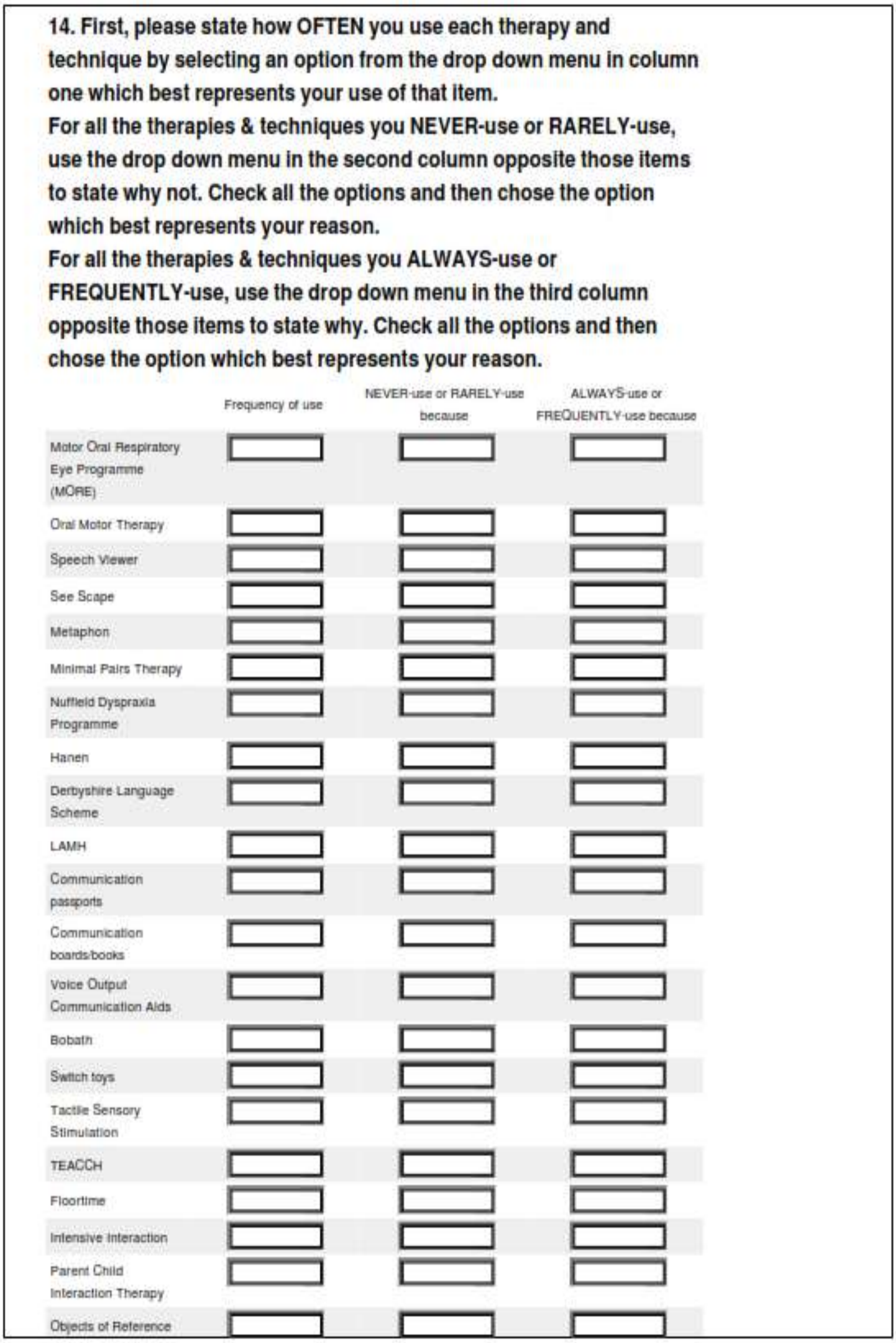
	Number of years
Years of experience with clients with disabilities	

13. What percent of your work time would you estimate is taken up with practice in this area?

	Percentage
% of your work time given to disability practice	

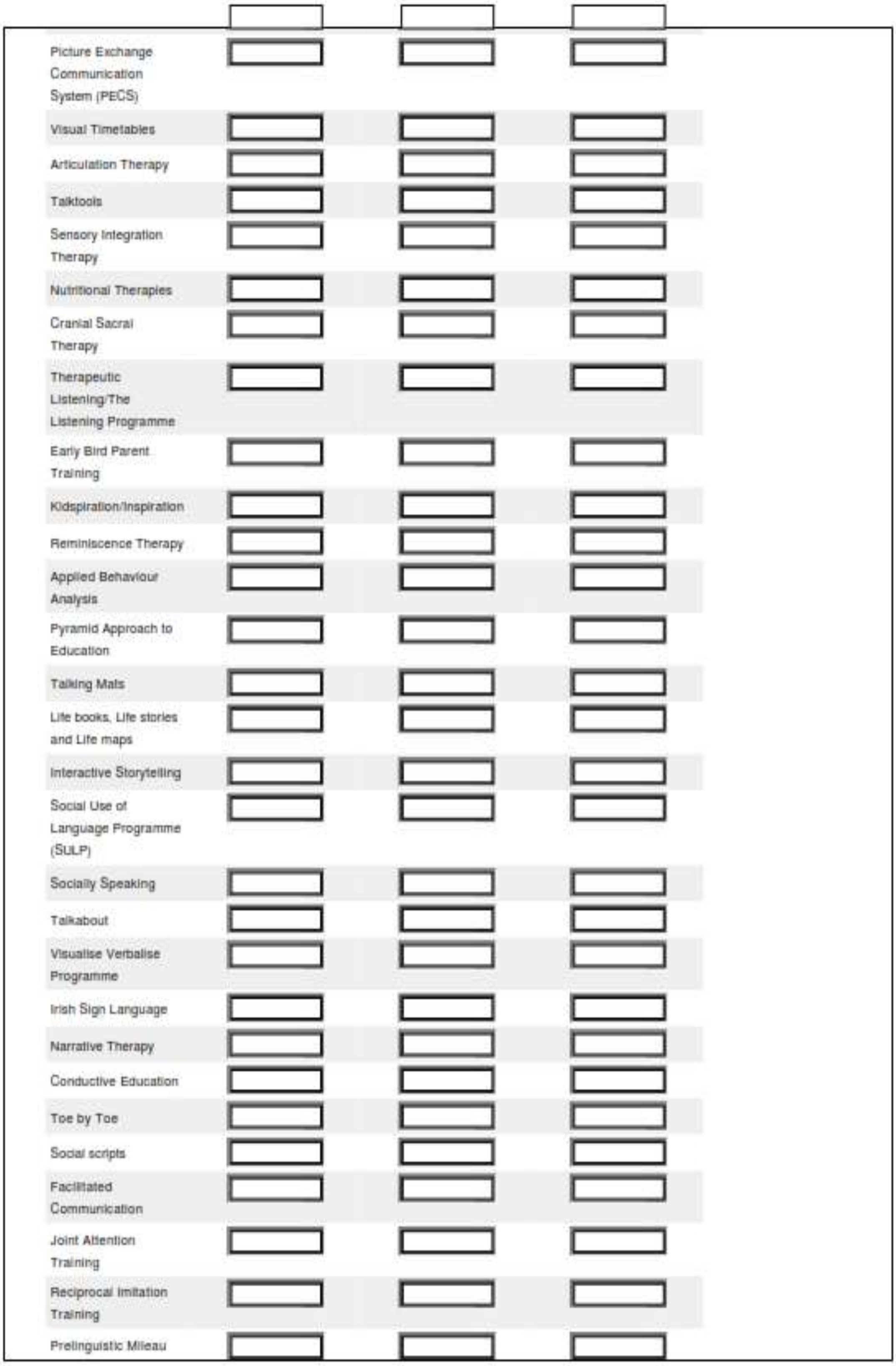
Below is a list of some therapies and techniques. Please share your opinions about them.

If you are unclear what a specific item is, you can check the definition provided on the following webpage - www.slt.ul.ie

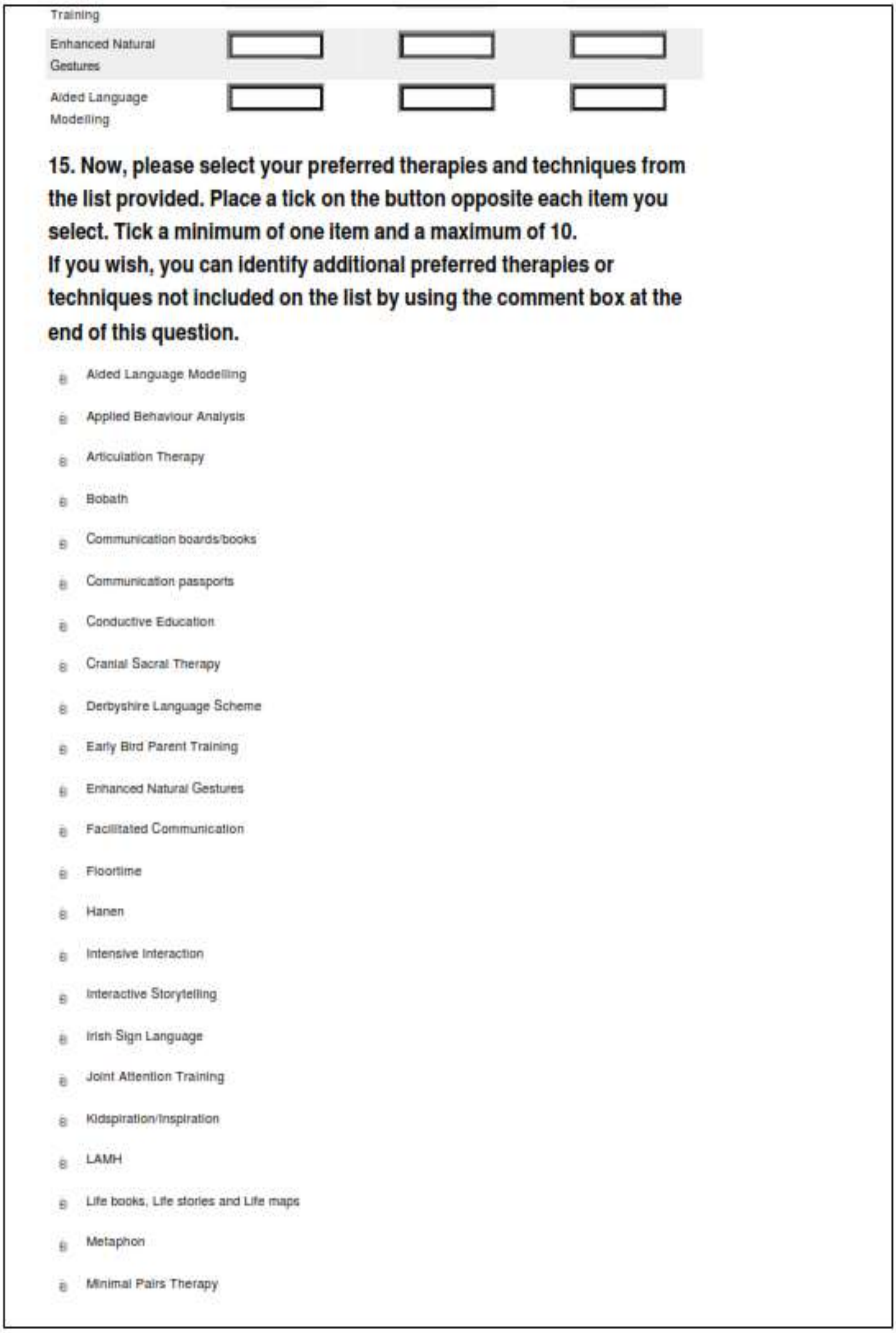


14. First, please state how OFTEN you use each therapy and technique by selecting an option from the drop down menu in column one which best represents your use of that item.
For all the therapies & techniques you NEVER-use or RARELY-use, use the drop down menu in the second column opposite those items to state why not. Check all the options and then chose the option which best represents your reason.
For all the therapies & techniques you ALWAYS-use or FREQUENTLY-use, use the drop down menu in the third column opposite those items to state why. Check all the options and then chose the option which best represents your reason.

	Frequency of use	NEVER-use or RARELY-use because	ALWAYS-use or FREQUENTLY-use because
Motor Oral Respiratory Eye Programme (MORE)			
Oral Motor Therapy			
Speech Viewer			
See Scape			
Metaphon			
Minimal Pairs Therapy			
Nuffield Dyspraxia Programme			
Hanen			
Derbyshire Language Scheme			
LAMH			
Communication passports			
Communication boards/books			
Voice Output Communication Aids			
Bobath			
Switch toys			
Tactile Sensory Stimulation			
TEACCH			
Floortime			
Intensive Interaction			
Parent Child Interaction Therapy			
Objects of Reference			



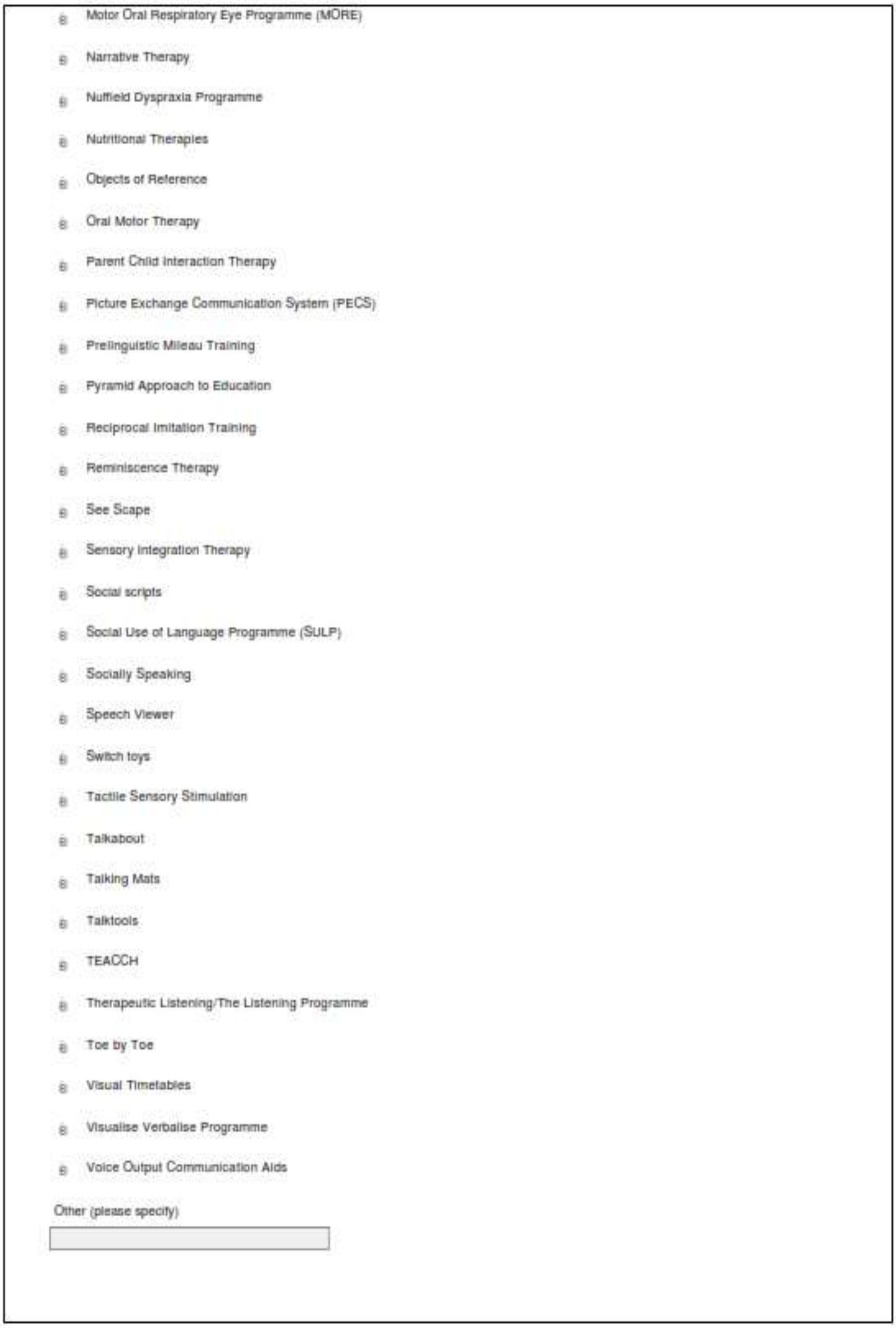
Picture Exchange Communication System (PECS)			
Visual Timetables			
Articulation Therapy			
Talktools			
Sensory Integration Therapy			
Nutritional Therapies			
Cranial Sacral Therapy			
Therapeutic Listening/The Listening Programme			
Early Bird Parent Training			
Kidspiration/Inspiration			
Reminiscence Therapy			
Applied Behaviour Analysis			
Pyramid Approach to Education			
Talking Mats			
Life books, Life stories and Life maps			
Interactive Storytelling			
Social Use of Language Programme (SULP)			
Socially Speaking			
Talkabout			
Visualise Verbalise Programme			
Irish Sign Language			
Narrative Therapy			
Conductive Education			
Toe by Toe			
Social scripts			
Facilitated Communication			
Joint Attention Training			
Reciprocal Imitation Training			
Prelinguistic Milieau			



Training			
Enhanced Natural Gestures	☐	☐	☐
Aided Language Modelling	☐	☐	☐

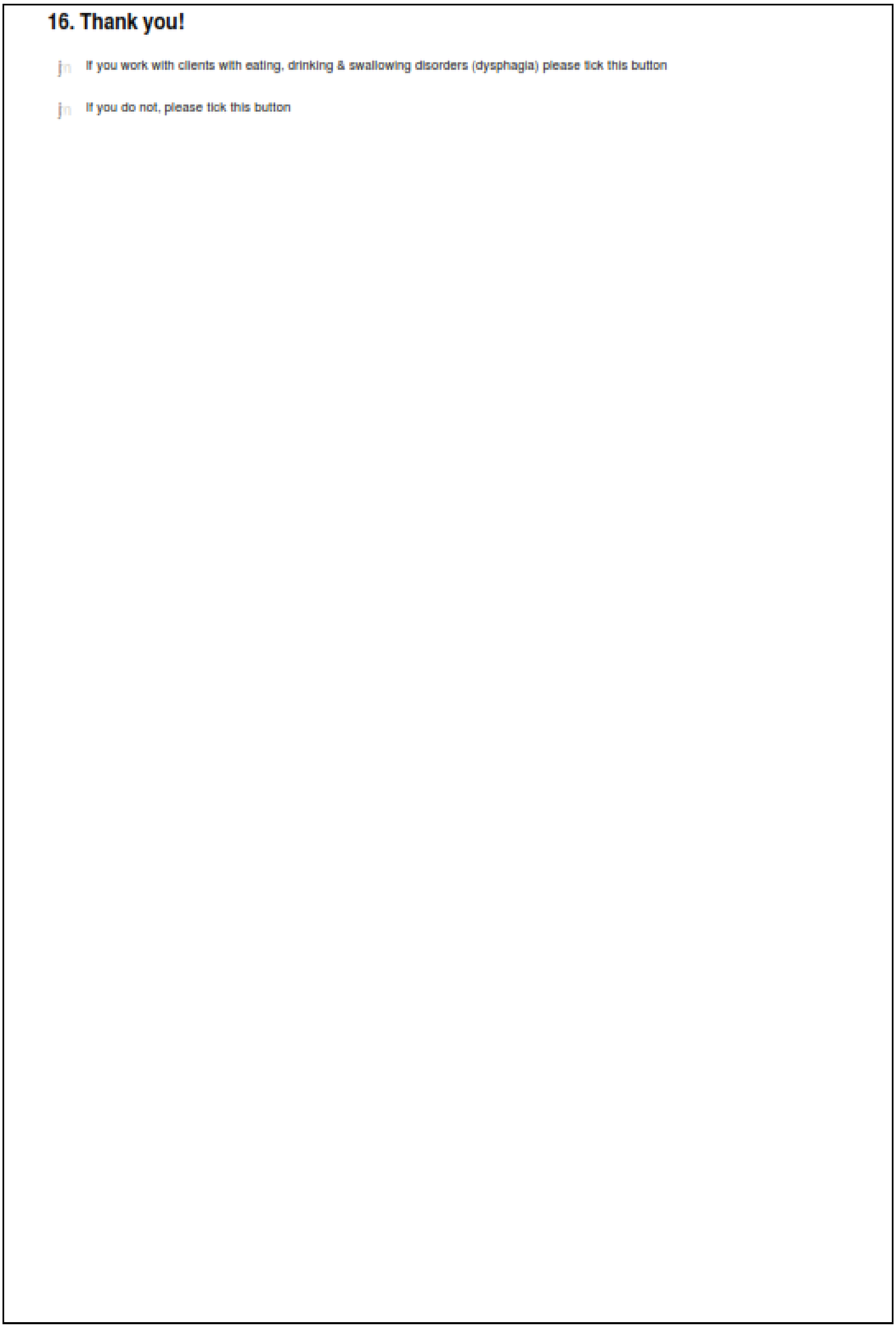
15. Now, please select your preferred therapies and techniques from the list provided. Place a tick on the button opposite each item you select. Tick a minimum of one item and a maximum of 10.
If you wish, you can identify additional preferred therapies or techniques not included on the list by using the comment box at the end of this question.

- ☐ Aided Language Modelling
- ☐ Applied Behaviour Analysis
- ☐ Articulation Therapy
- ☐ Bobath
- ☐ Communication boards/books
- ☐ Communication passports
- ☐ Conductive Education
- ☐ Cranial Sacral Therapy
- ☐ Derbyshire Language Scheme
- ☐ Early Bird Parent Training
- ☐ Enhanced Natural Gestures
- ☐ Facilitated Communication
- ☐ Floortime
- ☐ Hanen
- ☐ Intensive Interaction
- ☐ Interactive Storytelling
- ☐ Irish Sign Language
- ☐ Joint Attention Training
- ☐ Kidspiration/Inspiration
- ☐ LAMH
- ☐ Life books, Life stories and Life maps
- ☐ Metaphon
- ☐ Minimal Pairs Therapy



- ☐ Motor Oral Respiratory Eye Programme (MORE)
- ☐ Narrative Therapy
- ☐ Nuffield Dyspraxia Programme
- ☐ Nutritional Therapies
- ☐ Objects of Reference
- ☐ Oral Motor Therapy
- ☐ Parent Child Interaction Therapy
- ☐ Picture Exchange Communication System (PECS)
- ☐ Prelinguistic Milieau Training
- ☐ Pyramid Approach to Education
- ☐ Reciprocal Imitation Training
- ☐ Reminiscence Therapy
- ☐ See Scape
- ☐ Sensory Integration Therapy
- ☐ Social scripts
- ☐ Social Use of Language Programme (SULP)
- ☐ Socially Speaking
- ☐ Speech Viewer
- ☐ Switch toys
- ☐ Tactile Sensory Stimulation
- ☐ Talkabout
- ☐ Talking Mats
- ☐ Talktools
- ☐ TEACCH
- ☐ Therapeutic Listening/The Listening Programme
- ☐ Toe by Toe
- ☐ Visual Timetables
- ☐ Visualise Verbalise Programme
- ☐ Voice Output Communication Aids

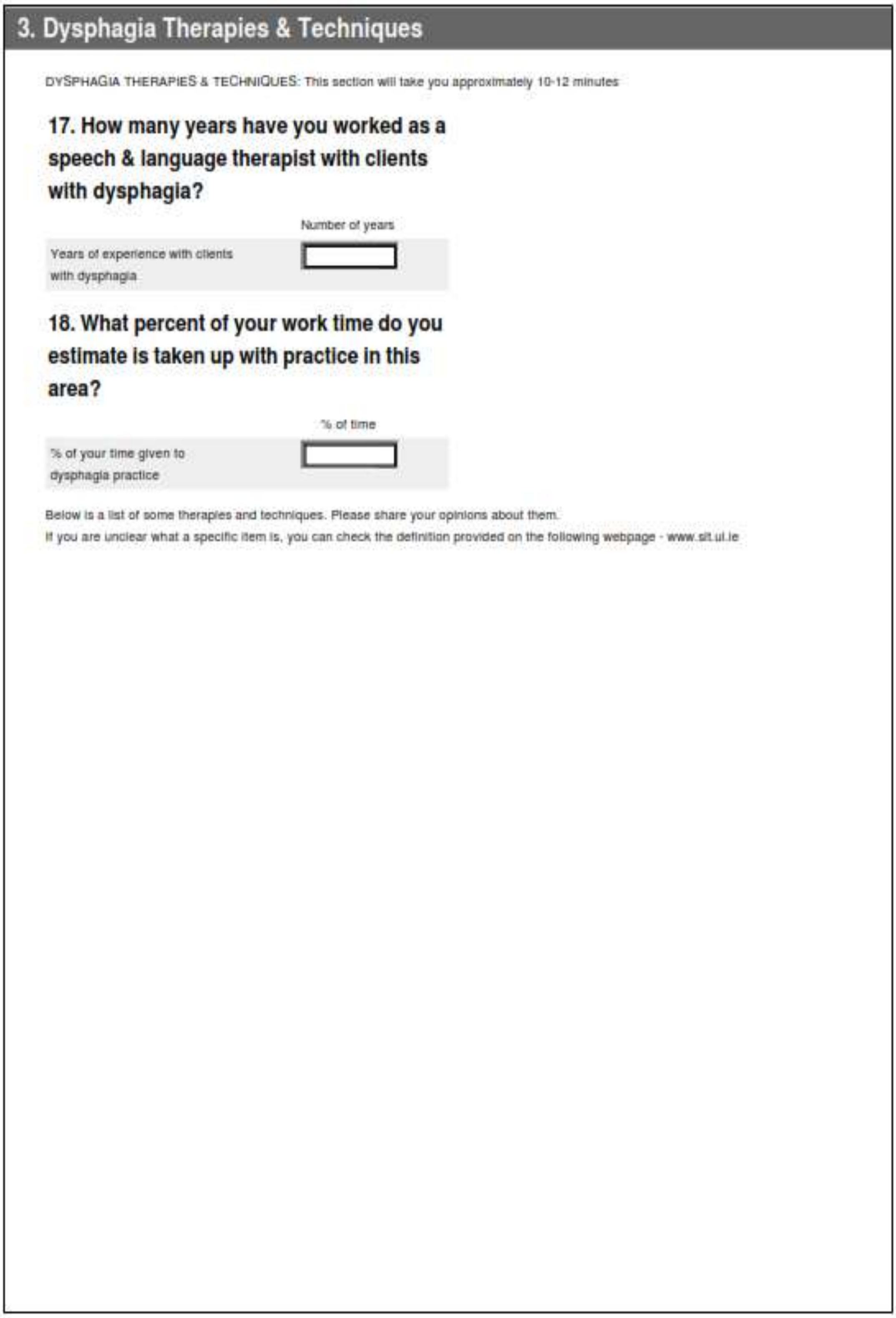
Other (please specify)



16. Thank you!

○ If you work with clients with eating, drinking & swallowing disorders (dysphagia) please tick this button

○ If you do not, please tick this button



3. Dysphagia Therapies & Techniques

DYSPHAGIA THERAPIES & TECHNIQUES: This section will take you approximately 10-12 minutes

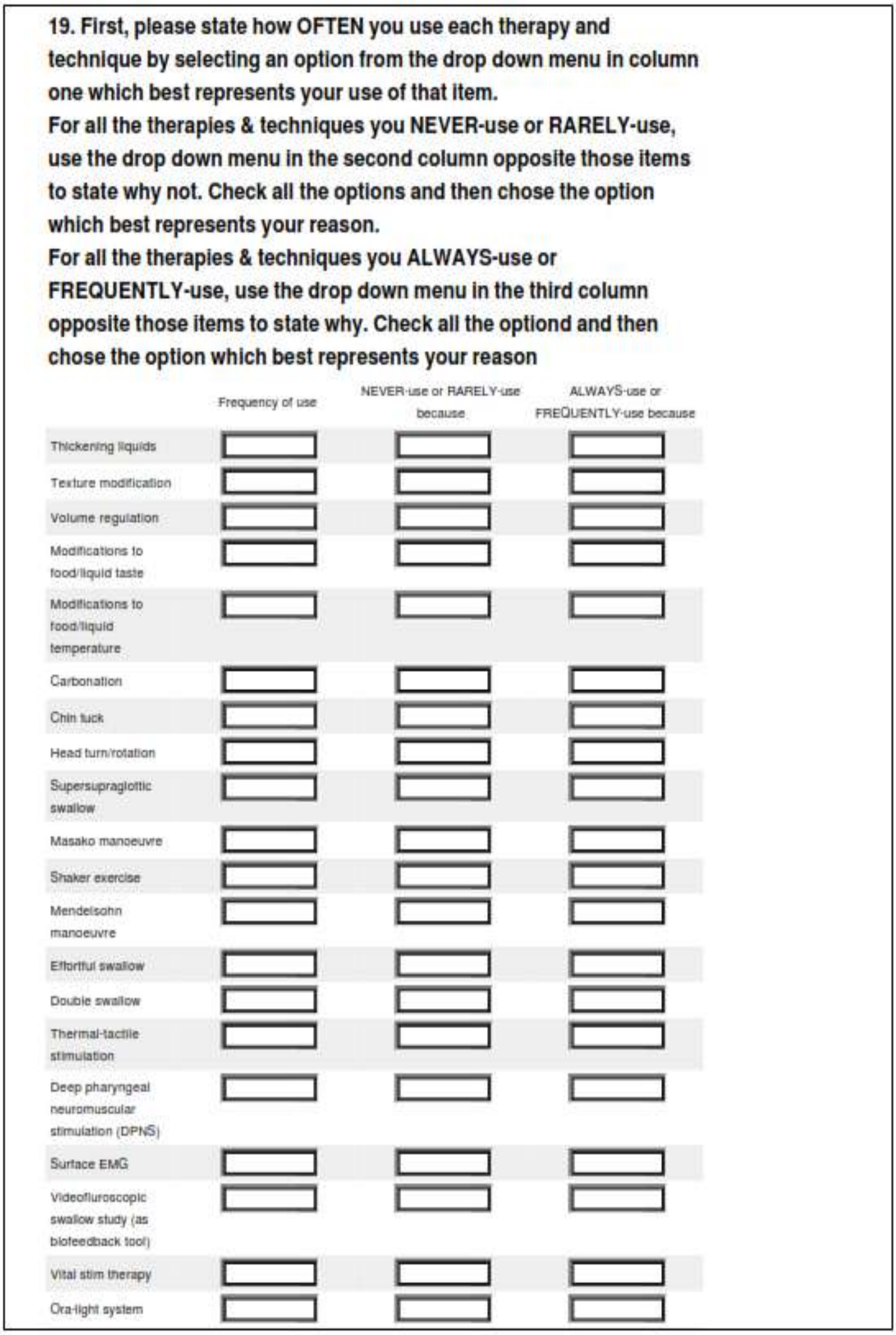
17. How many years have you worked as a speech & language therapist with clients with dysphagia?

	Number of years
Years of experience with clients with dysphagia	

18. What percent of your work time do you estimate is taken up with practice in this area?

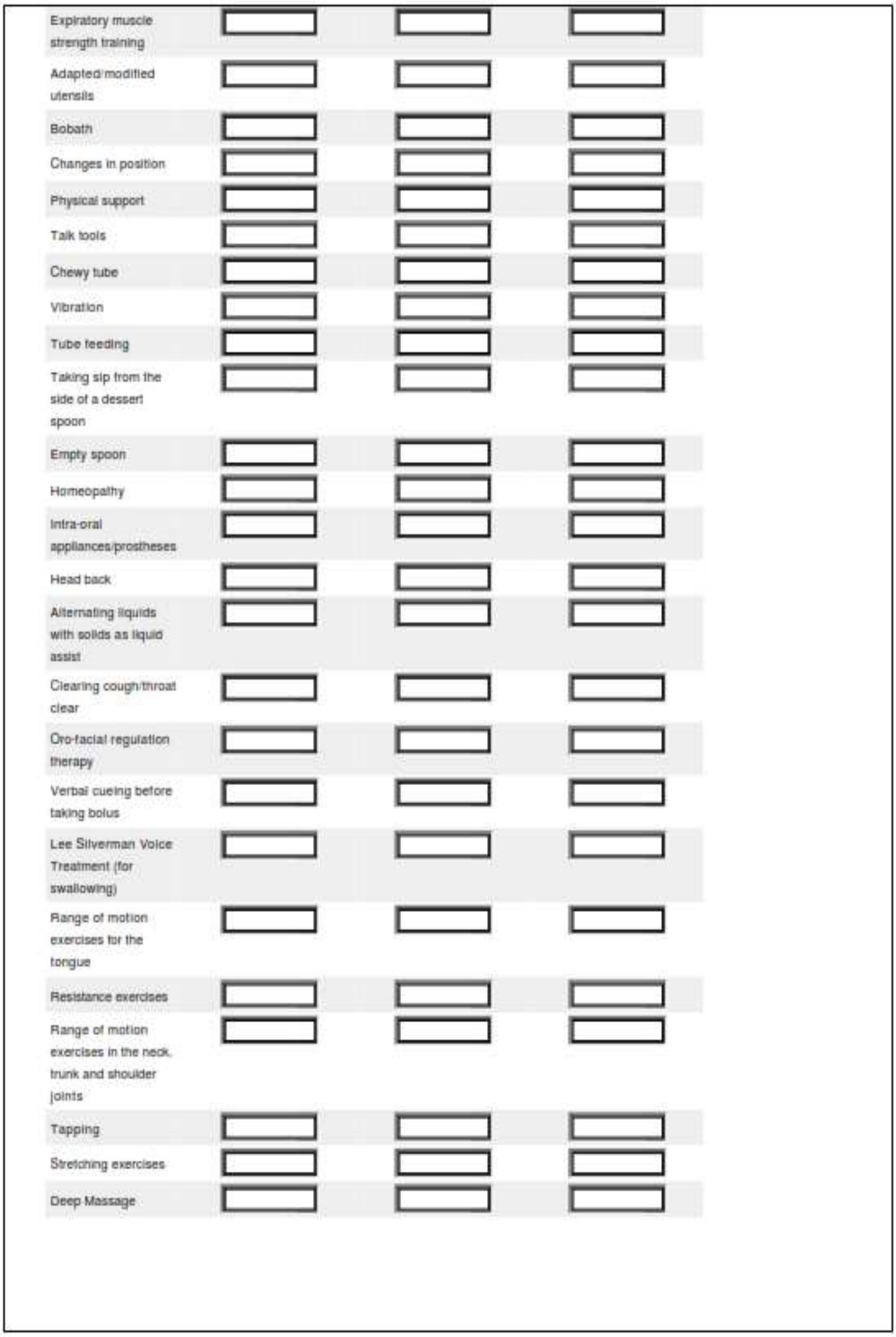
	% of time
% of your time given to dysphagia practice	

Below is a list of some therapies and techniques. Please share your opinions about them.
If you are unclear what a specific item is, you can check the definition provided on the following webpage - www.slt.ul.ie

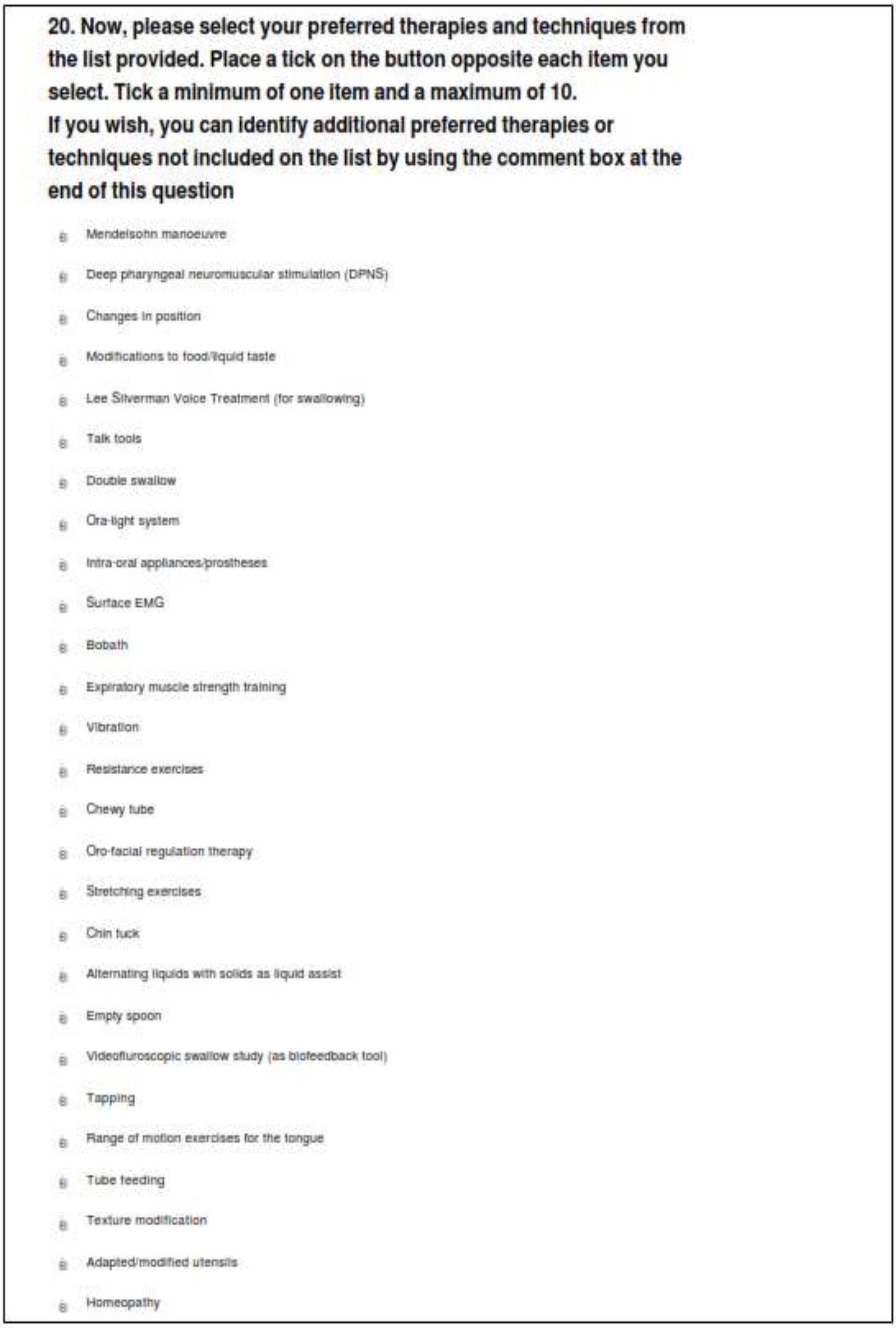


19. First, please state how OFTEN you use each therapy and technique by selecting an option from the drop down menu in column one which best represents your use of that item.
For all the therapies & techniques you NEVER-use or RARELY-use, use the drop down menu in the second column opposite those items to state why not. Check all the options and then chose the option which best represents your reason.
For all the therapies & techniques you ALWAYS-use or FREQUENTLY-use, use the drop down menu in the third column opposite those items to state why. Check all the optiond and then chose the option which best represents your reason

	Frequency of use	NEVER-use or RARELY-use because	ALWAYS-use or FREQUENTLY-use because
Thickening liquids			
Texture modification			
Volume regulation			
Modifications to food/liquid taste			
Modifications to food/liquid temperature			
Carbonation			
Chin tuck			
Head turn/rotation			
Supersupraglottic swallow			
Masako manoeuvre			
Shaker exercise			
Mendelsohn manoeuvre			
Effortful swallow			
Double swallow			
Thermal-tactile stimulation			
Deep pharyngeal neuromuscular stimulation (DPNS)			
Surface EMG			
Videofluroscopic swallow study (as biofeedback tool)			
Vital stim therapy			
Ora-light system			

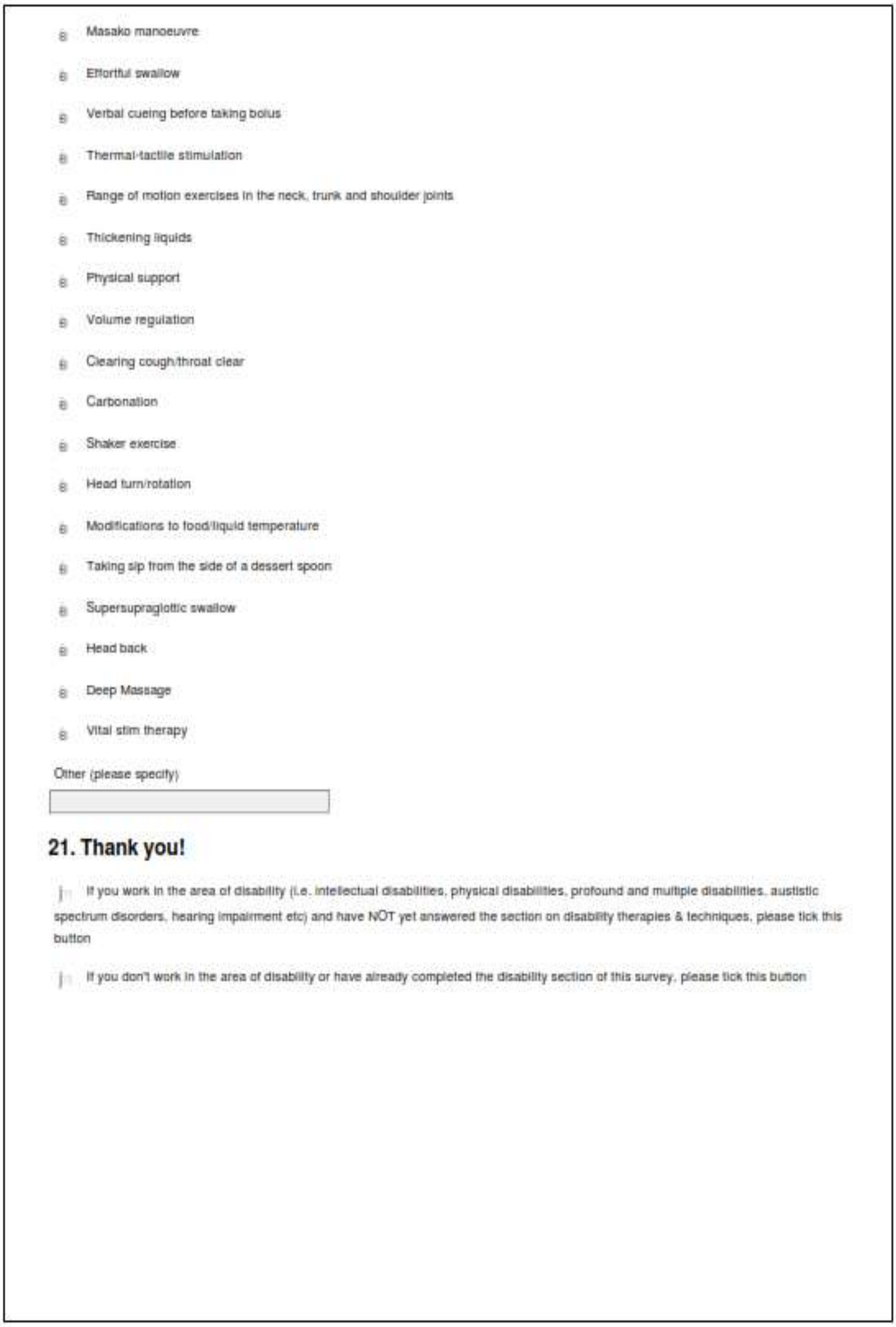


Expiratory muscle strength training			
Adapted/modified utensils			
Bobath			
Changes in position			
Physical support			
Talk tools			
Chewy tube			
Vibration			
Tube feeding			
Taking sip from the side of a dessert spoon			
Empty spoon			
Homeopathy			
Intra-oral appliances/prostheses			
Head back			
Alternating liquids with solids as liquid assist			
Clearing cough/throat clear			
Oro-facial regulation therapy			
Verbal cueing before taking bolus			
Lee Silverman Voice Treatment (for swallowing)			
Range of motion exercises for the tongue			
Resistance exercises			
Range of motion exercises in the neck, trunk and shoulder joints			
Tapping			
Stretching exercises			
Deep Massage			



20. Now, please select your preferred therapies and techniques from the list provided. Place a tick on the button opposite each item you select. Tick a minimum of one item and a maximum of 10.
If you wish, you can identify additional preferred therapies or techniques not included on the list by using the comment box at the end of this question

- ☐ Mendelsohn manoeuvre
- ☐ Deep pharyngeal neuromuscular stimulation (DPNS)
- ☐ Changes in position
- ☐ Modifications to food/liquid taste
- ☐ Lee Silverman Voice Treatment (for swallowing)
- ☐ Talk tools
- ☐ Double swallow
- ☐ Ora-light system
- ☐ Intra-oral appliances/prostheses
- ☐ Surface EMG
- ☐ Bobath
- ☐ Expiratory muscle strength training
- ☐ Vibration
- ☐ Resistance exercises
- ☐ Chewy tube
- ☐ Oro-facial regulation therapy
- ☐ Stretching exercises
- ☐ Chin tuck
- ☐ Alternating liquids with solids as liquid assist
- ☐ Empty spoon
- ☐ Videofluroscopic swallow study (as biofeedback tool)
- ☐ Tapping
- ☐ Range of motion exercises for the tongue
- ☐ Tube feeding
- ☐ Texture modification
- ☐ Adapted/modified utensils
- ☐ Homeopathy



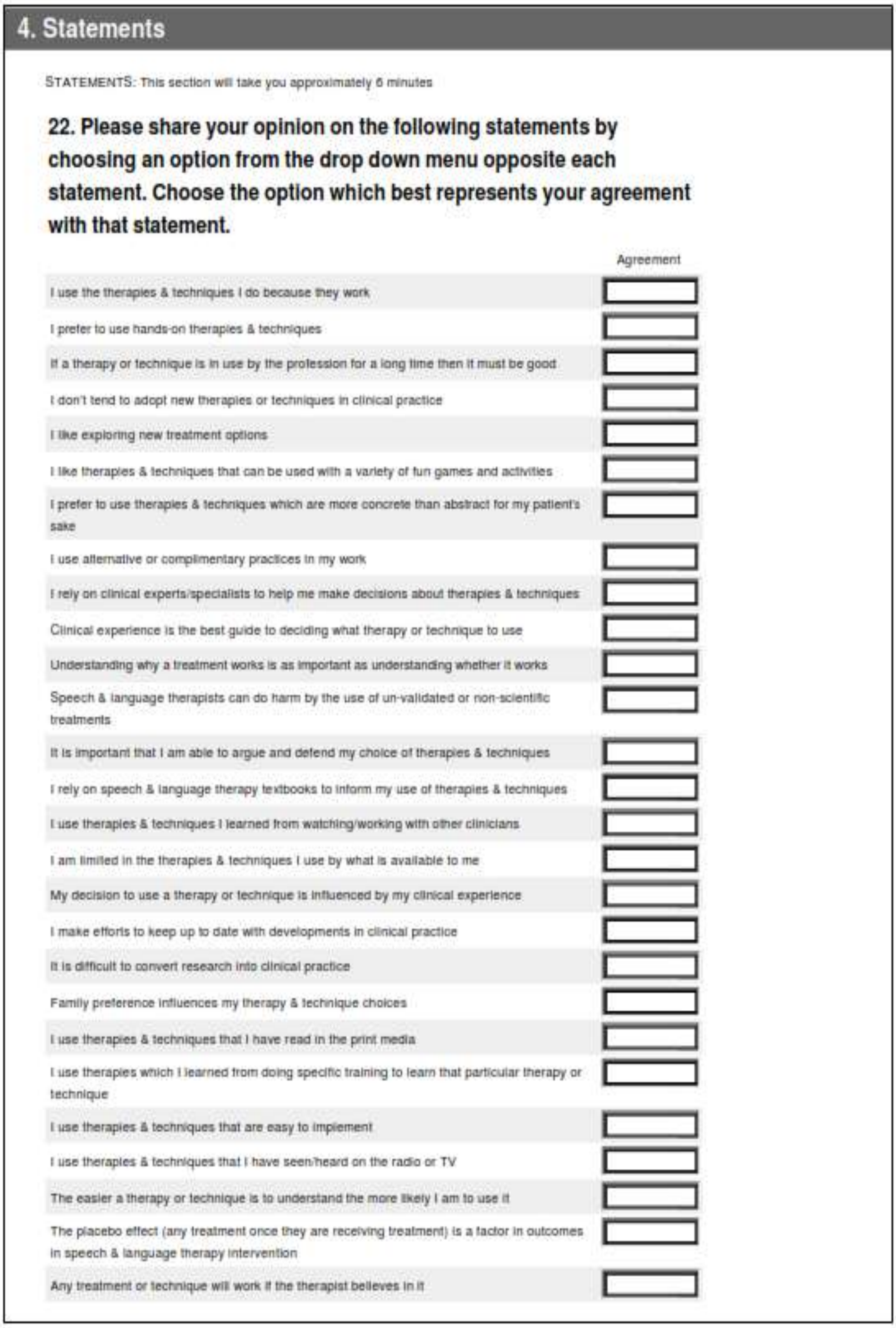
- ☐ Masako manoeuvre
- ☐ Effortful swallow
- ☐ Verbal cueing before taking bolus
- ☐ Thermal-tactile stimulation
- ☐ Range of motion exercises in the neck, trunk and shoulder joints
- ☐ Thickening liquids
- ☐ Physical support
- ☐ Volume regulation
- ☐ Clearing cough/throat clear
- ☐ Carbonation
- ☐ Shaker exercise
- ☐ Head turn/rotation
- ☐ Modifications to food/liquid temperature
- ☐ Taking sip from the side of a dessert spoon
- ☐ Supersupraglottic swallow
- ☐ Head back
- ☐ Deep Massage
- ☐ Vital stim therapy

Other (please specify)

21. Thank you!

○ If you work in the area of disability (i.e. intellectual disabilities, physical disabilities, profound and multiple disabilities, austistic spectrum disorders, hearing impairment etc) and have NOT yet answered the section on disability therapies & techniques, please tick this button

○ If you don't work in the area of disability or have already completed the disability section of this survey, please tick this button

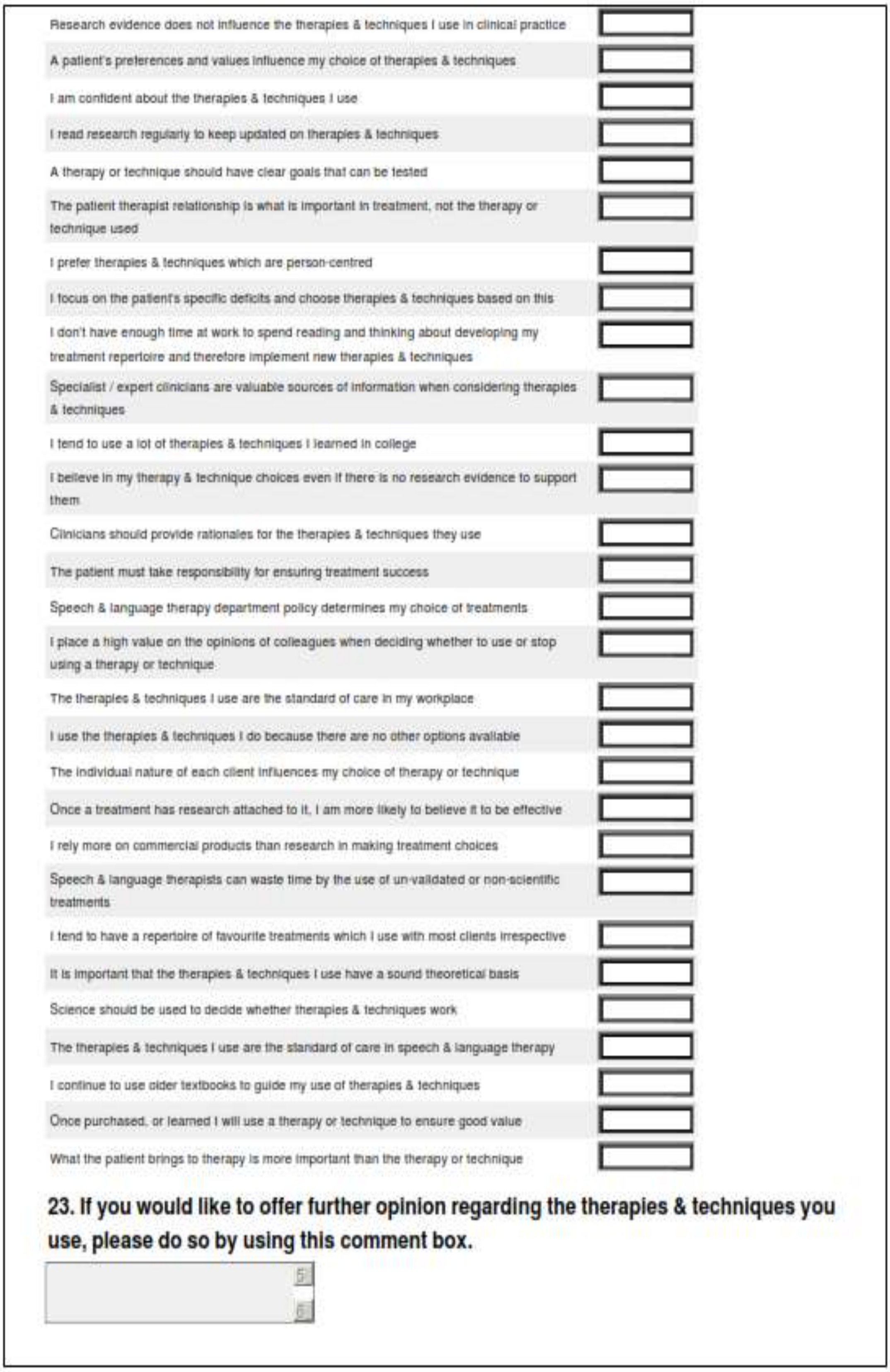


4. Statements

STATEMENTS: This section will take you approximately 6 minutes

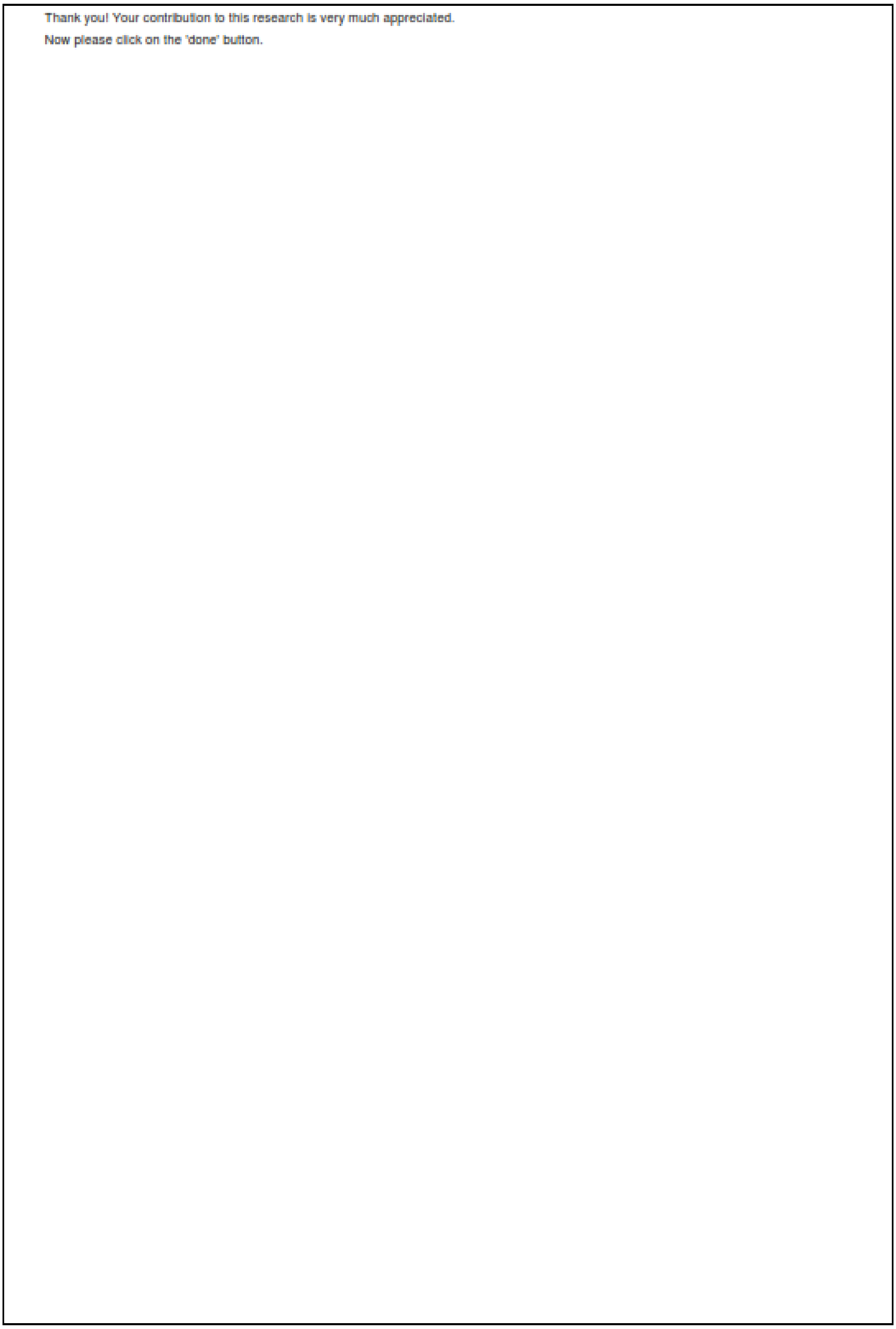
22. Please share your opinion on the following statements by choosing an option from the drop down menu opposite each statement. Choose the option which best represents your agreement with that statement.

	Agreement
I use the therapies & techniques I do because they work	☐
I prefer to use hands-on therapies & techniques	☐
If a therapy or technique is in use by the profession for a long time then it must be good	☐
I don't tend to adopt new therapies or techniques in clinical practice	☐
I like exploring new treatment options	☐
I like therapies & techniques that can be used with a variety of fun games and activities	☐
I prefer to use therapies & techniques which are more concrete than abstract for my patient's sake	☐
I use alternative or complimentary practices in my work	☐
I rely on clinical experts/specialists to help me make decisions about therapies & techniques	☐
Clinical experience is the best guide to deciding what therapy or technique to use	☐
Understanding why a treatment works is as important as understanding whether it works	☐
Speech & language therapists can do harm by the use of un-validated or non-scientific treatments	☐
It is important that I am able to argue and defend my choice of therapies & techniques	☐
I rely on speech & language therapy textbooks to inform my use of therapies & techniques	☐
I use therapies & techniques I learned from watching/working with other clinicians	☐
I am limited in the therapies & techniques I use by what is available to me	☐
My decision to use a therapy or technique is influenced by my clinical experience	☐
I make efforts to keep up to date with developments in clinical practice	☐
It is difficult to convert research into clinical practice	☐
Family preference influences my therapy & technique choices	☐
I use therapies & techniques that I have read in the print media	☐
I use therapies which I learned from doing specific training to learn that particular therapy or technique	☐
I use therapies & techniques that are easy to implement	☐
I use therapies & techniques that I have seen/heard on the radio or TV	☐
The easier a therapy or technique is to understand the more likely I am to use it	☐
The placebo effect (any treatment once they are receiving treatment) is a factor in outcomes in speech & language therapy intervention	☐
Any treatment or technique will work if the therapist believes in it	☐



Research evidence does not influence the therapies & techniques I use in clinical practice	
A patient's preferences and values influence my choice of therapies & techniques	
I am confident about the therapies & techniques I use	
I read research regularly to keep updated on therapies & techniques	
A therapy or technique should have clear goals that can be tested	
The patient therapist relationship is what is important in treatment, not the therapy or technique used	
I prefer therapies & techniques which are person-centred	
I focus on the patient's specific deficits and choose therapies & techniques based on this	
I don't have enough time at work to spend reading and thinking about developing my treatment repertoire and therefore implement new therapies & techniques	
Specialist / expert clinicians are valuable sources of information when considering therapies & techniques	
I tend to use a lot of therapies & techniques I learned in college	
I believe in my therapy & technique choices even if there is no research evidence to support them	
Clinicians should provide rationales for the therapies & techniques they use	
The patient must take responsibility for ensuring treatment success	
Speech & language therapy department policy determines my choice of treatments	
I place a high value on the opinions of colleagues when deciding whether to use or stop using a therapy or technique	
The therapies & techniques I use are the standard of care in my workplace	
I use the therapies & techniques I do because there are no other options available	
The individual nature of each client influences my choice of therapy or technique	
Once a treatment has research attached to it, I am more likely to believe it to be effective	
I rely more on commercial products than research in making treatment choices	
Speech & language therapists can waste time by the use of un-validated or non-scientific treatments	
I tend to have a repertoire of favourite treatments which I use with most clients irrespective	
It is important that the therapies & techniques I use have a sound theoretical basis	
Science should be used to decide whether therapies & techniques work	
The therapies & techniques I use are the standard of care in speech & language therapy	
I continue to use older textbooks to guide my use of therapies & techniques	
Once purchased, or learned I will use a therapy or technique to ensure good value	
What the patient brings to therapy is more important than the therapy or technique	

23. If you would like to offer further opinion regarding the therapies & techniques you use, please do so by using this comment box.



Thank you! Your contribution to this research is very much appreciated.

Now please click on the 'done' button.

Appendix 4 Therapies rating scale

Scientific intervention	1. Weight of evidence positive 2. Evidence tends to be high level evidence 3. Volume of evidence – more than 2 positive studies 4. High level experts commentary in peer reviewed publications positive; and 5. Sound theoretical basis 6. Non-singular research sources
Probably scientifically based intervention	1. At least 1/2 of the criteria for scientific intervention demonstrated 2. Being tested and open to testing but requires further study to corroborate and across populations 3. Although research source tends to be singular 4. Absence of negative commentary
Neither scientific nor unscientific Intervention – case not proven	1.Evidence sufficiently inconsistent /low level to prevent determination of weight of evidence 2.More research required of higher standard to supplement low level research findings 3. Insufficient research being carried out on subject 4. Expert commentary not decided 5. Theory may be sound but not proved by research 6. Evidence from non-singular (biased) source not as positive as from invested (biased) source
Probably unscientific intervention	1. Lack of any/sound theoretical basis 2. Not being tested 3. No supporting research evidence 4. Lack of high level expert commentary in support in peer reviewed publications 5. Therapy or technique ignored in literature 5. Evidence tends to be anecdotal
Pseudoscientific intervention	1. Meets pseudoscientific criteria. 2. If studied, weight of research evidence negative 3. If studied, level of evidence tends towards low level 4.Commentary tend to be strongly against intervention 5. Unsound theoretical basis - mechanism of action unclear and therefore hard to falsify or patently inaccurate 6. Not testable
Unknown	1.No evidence 2.No commentaries found 3. Unable to make determination

Appendix 5 Reasons options for using and not using therapies

Reasons for using therapies	Reasons for not using therapies
My clinical experience supports its use It is employer /department policy It motivates patients I read about it in text books I use it because I am familiar with it I use it because I learned it at university or on a course I use it because there are no other options It doesn't matter which treatment I use so I use this It is suitable for my client's needs It makes sense theoretically It is adaptable – it can be used with a lot of patients The specialists /experts in our profession recommend it I believe it should be used It is available in my workplace It claims to work It is a concrete therapy/technique	I have not done training for this specific therapy/technique I am not aware of this treatment It is not suitable for my clients It doesn't work My department doesn't use it It is too impractical It is not an engaging/fun therapy The arguments against its use are sound It is not a treatment SLTs would use It is not easy to use It is not scientific I have tried it and don't like it My clients don't like it Nobody I know uses it The research evidence doesn't support it I don't know enough about this therapy to answer I don't know about this therapy

Appendix 6 Advance contact email (ACE)

UNIVERSITY of LIMERICK
OLLSCOIL LUIMNIGH

ADVANCE NOTICE!

You will be asked to participate in a survey on therapies & techniques used by Speech & Language Therapists in Ireland

Are you interested in what therapies & techniques our profession uses in clinical practice and why?

Are you a qualified **speech & language therapist** *who is* **currently practising***?*

Will you consider sharing your opinion and clinical expertise for research purposes?

What is the research?

The survey is part of a research project which explores what interventions speech & language therapists use, views on those interventions, and the decision making involved in the selection and use of therapies & techniques in clinical practice.

Who is the researcher?

This survey is being carried out by Arlene McCurtin from the Department of Speech & Language Therapy at the University of Limerick.

Who can participate?

Any-one who is a practising speech & language therapist

How are potential participants selected?

Via your membership of an IASLT **Special Interest Group.** Via the University of Limerick **Practice Educator database** if you have previously provided a clinical placement to a UL student. The survey link will also be placed on the **IASLT website.**

Confidentiality

Please be assured the survey has been arranged so your contribution remains anonymous at all stages of the process -your identity is unknown.

When will I be asked to contribute to this research?

In one week's time via a survey link

What will this information be used for?

This survey is part of a PhD research project.

Will the outcomes be disseminated?

It is the intention of the researcher to present this information at a future IASLT conference and/or SIG event where you will be able to see the final results.

This survey has received ethical approval from the University of Limerick Research Ethics Committee. If you have concerns regarding this study, please contact: Chairman, Education and Health Sciences, Research Ethics Committee, EHS Faculty Office, University of Limerick

Appendix 7 Data collection email (ACE)

UNIVERSITY of LIMERICK
OLLSCOIL LUIMNIGH

A survey of therapies & techniques by speech & language therapists in Ireland

Dear speech & language therapist

Are you interested in what therapies & techniques our profession uses and why?
Are you a qualified speech & language therapist who is currently practising?
Will you consider sharing your opinion and clinical expertise for research purposes?

Please consider contributing to this study and be assured your contribution will remain ***anonymous*** *at all stages of the process.*

The survey

This survey has **4** parts as outlined below. Some clinicians will only need to complete **2** parts – this depends on your area of practice.

Some **demographic** questions (this will take about 1-2 minutes)	Opinions about **therapies and techniques** used with clients with **disabilities** (this will take about 10-12 minutes)
General statements which can be completed by SLTs working in all areas of practice (this should take about 10 minutes	Opinions about **therapies and techniques** used with clients with **dysphagia** (this will take about 10-12 minutes)

Directions for use

You can access the survey by using the survey-link in this email. Simply click on the survey-link and start answering the questions. If you prefer to use a hard copy format, please contact Arlene.mccurtin@ul.ie for a copy.

Thank you for participating. Your help is very much appreciated. Any questions about this study can be directed to the researcher at the email highlighted above.

This survey has received ethical approval from the University of Limerick Research Ethics Committee. If you have concerns regarding this study, please contact: Chairman, Education and Health Sciences, Research Ethics Committee, EHS Faculty Office, University of Limerick

Appendix 8 Focus group script

Introduction script:

Introduction

Hi everyone, my name is Arlene McCurtin and I am currently carrying out some research on decision making in clinical practice. Some of you may already know that I have conducted a survey on the therapies & techniques used by clinicians and their reasons for using them. Some of the findings of that study will be further explored through this group which is called 'Perspectives on practice'. The aim of this group is to add depth and richness to the research findings. To do that, I am running a series of focus groups with speech & language therapy departments in different setting, e.g. acute, primary care etc.
The questions will be broad questions in order to elicit your opinion and there is of course, no right or wrong answer – I really just want your perspectives…

Forms

*So what happens now? Well first I need you to read these **information sheets**. Ask me any questions about things which you don't understand or need explaining. You will note the information sheet refers to anonymity and confidentiality. Please note all your responses and data will be both confidential and anonymous (i.e. the group will not be identified in any publications etc., and there will a system in place for ensuring your individual responses are not identifiable to you).*

*Once you have read the information sheet and are happy with that, please read and sign the **consent form**. The consent form enables you to participate and meets ethical requirements. This is voluntary. You don't have to, and if you feel you do not want to participate that is your decision and you will need to leave the group. If you change your mind about participating during the group, that is also your prerogative and you should leave the room.*

*And finally, the third sheet is for **demographic information**. This is to enable data you provide to be put into perspectives in addition to the broad group we see here. It may or may not be used when looking at the data. Please be ensured this data will again be confidential and all responses anonymised.*

*Finally, can I ask you to write your first name clearly in capitals on a **label** and put it on? This will help me when transcribing the data.*

Process

*So thanks for that everybody. Now what happens? Well essentially I will **put statements** or questions to the group and ask you to share your thoughts and opinions about them. I will act as a **facilitator** to ensure the questions are answered and everyone gets a chance to share their perspectives on practice. I have also provided you with pens and **sticky notepads** so you can write down any comments you want to make, either as a reminder to yourself or to give to me after the session so I can add it to the data from the group.*

I would like to acknowledge the number of people who have attended today - thank you.

You will see that there are two ***digital recorders*** *in the middle of the table and with that I will record the session. The data on that tape will be downloaded to computer for analysis of the content, and then deleted from recorder. The recorder is used so that no comments are missed.*

You might also see me ***making notes*** *while you have been reading the information sheets and signing the consent form. This is to ensure reliable and accurate transcription of the data you provide.*

Can I ask you to ***say your name*** *before each comment you make. This also ensures that when transcribing and analysing the data, I know that a different person has entered the discussion. If you forget, I hope you won't mind me just saying your name for the recording…*

Great, then let's start………

Data collection groups script.
Ok. That's great, thanks. I appreciate your participation today. I will be collating the data from today's session which I will summarise. This summary is intended to be a fair and accurate representation of your comments from this session. I would like to send this summary to you in about 2-4 weeks. If you have any comments or feedback on the summary please do let me know. If you would like a copy of the summary, please jot your email on this sheet here. Again confidentiality will be preserved.

Close

Appendix 9 Focus group questions and sample potential probes

Q 1: Concept of 'Client suitability'

Recently, a survey exploring the therapies & techniques speech & language therapists use was conducted. In one part of this survey, Speech & language therapists gave reasons for both using and not using various therapies & techniques. Clients either being "suitable" or "not suitable" was an important concept that arose when deciding on which treatments to use. Please share your ideas on what SLTs were referring to when they talked about client "suitability" and "unsuitability".

Sample probes
So what exactly are SLTs referring to when they talk about 'client suitability'?
Specifically what does a therapy being suitable or not suitable for a client mean?
Why would something be 'not suitable'?
Why would a therapy or techniques be 'client suitable?
Why would a therapy be suitable for one client/client group and not another?
How do you know a client is suitable or not for a particular therapy or technique?

Q2: Concept of clinical experience

'Clinical experience' is also a common reason cited by SLTs for using therapies & techniques. Can you help me understand what exactly do SLTS mean by the term 'clinical experience'?

Sample probes
So if you had to define 'clinical experience' what would you say?
Why is clinical experience important in using therapies & techniques?
Why would you suggest that 'clinical experience' is so important in clinical practice?
What do novice clinicians do when no they have no 'clinical experience'?
What do clinicians do when they transfer to a client group with which they have no clinical experience? How would their decision making be different?
If two experienced SLTs saw the same patient and came to different decisions about treating that patient, and they both explained their decisions by saying they used their clinical experience, what does that say about clinical experience?

Question 3: Concept of training

Being 'not trained' was important to SLTs as a reason for not using therapies and techniques. Why do you think training is so important to SLTs in deciding whether or not to use therapies?

Sample probes

Why is training so strong a reason for not-using therapies?
If SLTs don't get trained, how do they decide what to use?
If SLTs don't get trained, how do they decide on the therapies value?
Does that mean that therapists use therapies mainly because they have been trained on them?
Does it mean SLTs are not using therapies they might want to use, because they have not received training?
How do SLTs decide what training to go on?
How much of what you use (not the clinical skills) is training based? How much not?

Q4: The construction of the profession/practice as scientific

Lum, in a book on the profession in 2002, stated that speech & language therapy is a scientific profession. I'm interested in your thoughts about this.

Sample probes

In a recent survey, very few SLTs proposed scientifically based reasons for either using or not using therapies & techniques. Why do you think that science was not represented in their answers?
Is Speech & language therapy more of an art or a science?
Are there things SLTs do that defines them as scientist practitioners?
Are there any non-scientific practices in your field that worry you? Why? Why not?
So would you say science influences your practice?
If disconfirming evidence for your favourite therapy arose, would you stop using this treatment?

General probes

Why?
Why not?
How did you come to hold that point of view?

Appendix 10 Focus group recruitment email

UNIVERSITY of LIMERICK
OLLSCOIL LUIMNIGH

Dear Speech & Language Therapy Manager

I am writing to invite you and your department to participate in a group discussion - 'Perspectives on Practice'- as part of the following research study:

'Exploring the scientific basis of clinical practice: the use of therapies and techniques by speech & language therapists in Ireland'

- **Would you and your staff be interested in sharing your perspectives on clinical practice?**
- **Is your department made up of at least 7 members who would be willing to take part in a group discussion?**
- **Do you have about an hour and a half to offer sometime between May and July 2011?**

Please find attached an information sheet for you to distribute to your staff.
If your department would like to contribute to 'Perspectives on Practice', we can arrange a date and location of your choosing. Please contact me at Arlene.mccurtin@ul.ie or 061-234180 by March 11th 2011.
Your consideration of this study is very much appreciated.

Many thanks
Arlene McCurtin

This survey has received ethical approval from the University of Limerick Research Ethics Committee. If you have concerns regarding this study, please contact: Chairman, Education and Health Sciences, Research Ethics Committee, EHS Faculty Office, University of Limerick

Appendix 11

Sample mind map

Appendix 12 Frequency of use of disability therapies

%	Most frequently used (Always/Frequently)	Least frequently used (Never/Rarely)	%
76.7	Hanen	Conductive education	95.8
75	Lamh	Aided language modelling	95
56.7	Communication boards/books	Cranial sacral therapy	94.3
53.3	Derbyshire language scheme (DLS)	Kidspiration/Inspiration	93.3
50	Communication passports	Speechviewer	92.5
49.2	Picture exchange communication system (PECS)	Seescape	92.5
40.0	Objects of reference	Toe by toe	91.7
37.5	Minimal pairs therapy	Nutritional therapies	90
35	Switch toys	Reminiscence therapy	85.8
31.7	Nuffield dyspraxia programme	Listening therapy	85
30.8	TEACCH	Bobath	83.3
30.0	Articulation therapy	Irish sign language	80.8
27.5	Oral motor therapy	More	79.2
27.5	Voice output communication aids (VOCAs)	Early bird parent training	78.3
23.3	Talkabout	Reciprocal imitation training	76.7
22.5	Enhanced natural gestures	Prelinguistic milieu training	75.
20.8	Intensive interaction	Pyramid approach to education	70.8
20.	Joint attention training	Applied behaviour analysis	69.2
20.8	Social scripts	Facilitated communication	69.2
20.8	Interactive storytelling	Visualise verbalise programme	63.3
20.0	Talking mats	Metaphon	62.5
19.2	Parent-child interaction therapy	Social use of language programme	60.0
17.5	Sensory integration therapy	Life books, Life stories and Life maps	59.2
15	Talktools	Talking mats	57.5
14.2	Visual timetables	Socially speaking	55.8
12.5	Socially speaking	Narrative therapy	55
11.7	Floortime	Sensory integration therapy	54.2
11.7	Early bird parent training	Floortime	51.7
11.7	Life books, Life stories and Life maps	Tactile sensory stimulation	50
10.8	Tactile sensory stimulation	Parent-child interaction therapy	49.2
10.8	Social use of language programme	Intensive Interaction	45.8
10.8	Facilitated communication	Joint attention training	45.8
9.2	Pyramid approach to education	Enhanced natural gestures	45.0
9.2	Narrative therapy	Social scripts	44.2
9.2	Visualise verbalise programme	Interactive storytelling	44.2
9.2	Aided language modelling	Talktools	44.2
6.7	Metaphon	TEACCH	39.2
6.7	Applied behaviour analysis	Voice output communication aids	36.7
6.7	Reciprocal imitation training	Talkabout	35.0
5.0	More	Oral motor therapy	29.2
4.2	Bobath	Switch toys	29.2
1.7	Nutritional therapies	Minimal pairs therapy	28.3
1.7	Kidspiration / Inspiration	Articulation Therapy	28.3
1.7	Prelinguistic mileau training	Nuffield dyspraxia programme	26.7
1.7	Irish sign language	Communication passports	20.8
1.7	Reminiscence therapy	Derbyshire language scheme	20.0
1.7	Toe by toe	Objects of reference	18.3
0.8	Listening therapy	PECS	16.7
0.0	Speechviewer	Communication boards/books	13.3

0.0	Seescape	Hanen	13.3
0.0	Conductive education	LAMH	8.3
0.0	Cranial sacral therapy	Visual timetables	0.8

Appendix 13 Frequency of use of dysphagia therapies

%	**Most frequently used (Always/Frequently)**	**Least frequently used (Never/Rarely)**	%
80	Texture modification	Surface electromyography (SEMG)	92.5
76.6	Thickening liquids	Vitalstim therapy	92.5
70	Changes in position	Homeopathy	92.5
44.2	Double swallow	Deep pharyngeal neuromuscular stimulation (DPNS)	89.2
42.5	Adapted/modified utensils	Intra-oral appliances/prostheses	89.2
41.6	Volume regulation	Ora-light system	84.2
38.3	Verbal cueing technique	Head back	84.2
33.3	Physical support	Bobath	80.8
33.3	Empty spoon technique	Deep massage	80.8
30.8	Videofluroscopic swallow study	Expiratory muscle strength training (EMST)	76.6
29.1	Alternating liquids with solids as liquid assist	Lee Silverman Voice Treatment (LSVT)	75.5
29.2	Range of motion (ROM) exercises for the tongue	Sip from side-spoon technique	74.2
27.5	Chin tuck	Range of motion (ROM) exercises in the neck, trunk and shoulder joints	74.2
26.6	Modifications to food/liquid taste	Tapping	72.5
21.6	Effortful swallow	Oro-facial regulation therapy	70.0
20.8	Clearing cough/throat clear	Carbonation	67.5
20.0	Tube feeding	Vibration	66.6
19.2	Modifications to food/liquid temperature	Stretching exercises	66.6
17.5	Chewy tube	Talk tools	65.0
15.8	Resistance exercises	Thermal-tactile stimulation	64.2
10.8	Head turn/rotation	Supersupraglottic swallow	63.3
10.8	Masako manoeuvre	Mendelsohn manoeuvre	57.5
10.8	Talk tools	Masako manoeuvre	56.6
10.0	Shaker exercise	Shaker exercise	55.8
7.5	Mendelsohn manoeuvre	Chewy tube	53.3
7.5	Vibration	Head turn/rotation	47.5
5.8	Thermal tactile stimulation	Resistance exercises	45.8
5.8	Bobath	Videofluroscopic swallow study biofeedback (VFSSB)	40.0
5.0	Supersupraglottic swallow	Tube feeding	35.8
5.0	Carbonation	Effortful swallow	34.2
5.0	Deep massage	Modifications to food/liquid temperature	30.0
3.3	Sip from side-spoon technique	Range of motion (ROM) exercises for the tongue	29.2
3.3	Lee Silverman Voice Treatment (LSVT)	Modifications to food/liquid taste	26.6
2.5	Expiratory muscle strength training (EMST)	Clearing cough/throat clear	24.16
2.5	Oro-facial regulation therapy	Chin tuck	23.3
2.5	Range of motion (ROM) exercises in the neck, trunk and shoulder joints	Alternating liquids with solids as liquid assist	23.3
2.5	Stretching exercises	Empty spoon technique	20.8
1.6	Tapping	Physical support	20.0

0.8	Vitalstim therapy	Adapted/modified utensils	12.5
0.8	Ora-light system	Double swallow	11.6
0.8	Intra-oral appliances/prostheses	Verbal cueing before taking bolus	11.6
0.8	Head back	Volume regulation	7.5
0.0	Deep pharyngeal neuromuscular stimulation (DPNS)	Changes in position	4.2
0.0	Surface electromyography (SEMG)	Thickening liquids	2.5
0.0	Homeopathy	Texture modification	0.0

Appendix 14 Identified therapy clusters for dysphagia and disability clients

Area	Clusters	Therapies & techniques
Disability	Language cluster	Hanen Derbyshire language scheme
	AAC cluster	Visual timetables PECS Lamh
	Adult AAC cluster	Communication boards /books Communication passports Voice output communication aids Objects of reference Intensive interaction
	Speech cluster 1	Nuffield
	Speech cluster 2	Nuffield Articulation Minimal pairs Metaphon Talktools Oral-motor therapy + Floortime
	Lesser-used cluster	All other identified therapies
Dysphagia	Bolus modification cluster	Thickening liquids Texture modification Volume regulation
	Adapting physical cluster	Position changes Adaptive utensils
	Swallow cluster	Lee Silverman voice therapy Thermal tactile stimulation Supersupraglottic swallow Head turn Masako manoeuvre Shaker exercise Cough/throat clear Effortful swallow Double swallow Range of motion-tongue
	Extended swallow cluster	Videofluroscopic swallow study - biofeedback Chin tuck Alternating liquids
	Lesser bolus modification cluster	Temperature modification Taste modification
	Lesser-used cluster	All other identified therapies

Appendix 15 Selected significant findings for experiential demographics and disability therapies

Experiential demographics and use of the disability therapy communication boards /books

Experiential variable for communication boards/books	**Use p value**
Years of experience	.024
Years disability experience	.012
Professional qualification	.039
Dedicated time	.000
Self-determined skill	.046
Grade	.008

Dedicated time and significant use of disability therapies

Therapies used more with more dedicated time	**Use P value**	**Choice P value**
AAC therapies		
Communication passports	<.001	<.001
Objects of reference	<.001	.004
VOCAs	.002	
Talking mats	.005	
Switch toys	.02	
PECS	.001	.001
Non-AAC therapies		
Social scripts	.009	
Lifebooks/Lifestories	.013	
Interactive storytelling	.018	
Derbyshire Language Scheme	.036	
ABA	.036	
Intensive interaction	.012	.027
Sensory integration therapy		.022

Appendix 16 Selected significant findings for experiential demographics and dysphagia therapies

Experiential demographics and use of the swallow and swallow related techniques

Swallow /swallow related technique	**Use P value**	**Choice P value**	**Demographic**
Effortful swallow	.002 .002	<.0001	Most dedicated time Middle specialised experience
Masako manoeuvre	.004	.002	Most dedicated time
Mendelsohn manoeuvre	.014	.005	Most dedicated time
Shaker exercise	.006	.006	Most dedicated time
Double swallow	<.0001 .051	.048	Most dedicated time Most experienced
Cough/throat clear	.036		Most dedicated time
VFSS Biofeedback	<.0001 .055		Most dedicated time Seniors
Thermal tactile stimulation	.008		Most dedicated time
Alternating liquids	.041		Most dedicated time
Head turn	.022		Most dedicated time

Appendix 17

Use of client suitability and clinical experience as a main reason for disability and dysphagia therapies

Disability therapy	**Client suitability %**	**Disability therapy**	**Clinical experience %**
AAC		More	54.5
Irish Sign Language	80.0	Talktools	44.8
Voice output communication aids	63.8	Oral motor therapy	42.9
Objects of reference	63.6	Metaphon	42.1
Facilitated communication	57.9	Toe by toe	40.0
Lamh	56.2	Sensory integration therapy	36.0
Communication boards /books	55.7	Hanen	34.9
Communication passports	52.2	Derbyshire Language Scheme	30.9
Visual timetables	50.5	Listening therapy	30.0
Picture exchange	49.2		
communication system	43.8		
Switch toys	41.4		
Talking mats	39.6		
Other			
Prelinguistic mileau training	71.4		
Enhanced natural gestures	59.0		
Social scripts	57.1		
Reciprocal imitation training	55.6		
Lifebooks/Lifestories	52.0		
Applied behaviour analysis	50.0		
Intensive interaction	47.5		
Aided language modelling	47.4		
Tactile sensory stimulation	45.2		
Parent-child interaction therapy	41.9		
Floortime	41.7		
TEACCH	40.5		
Joint attention training	40.5		
Nuffield	39.6		
Socially speaking	39.1		
Articulation	37.8		
Social use of language programme	36.0		
Pyramid approach	31.3		

Dysphagia therapy		**Dysphagia therapy**	
Head back	50.0	Alternating liquids	49.0
Tube feeding	47.2	Cough/throat clear	46.2
Physical support	46.0	Empty-spoon technique	44.2
Adapted utensils	45.2		
Texture modification	44.9	Chewy tube	43.3
Positioning	44.7	Carbonation	40.9
Thickening liquids	44.4	Temperature modification	40.0
Intraoral appliances	40.0		
Verbal cueing technique	39.3	Side-spoon technique	37.5
Taste modification	37.3	ROM other	36.4
Talktools	35.3	Vibration	35.3
Bobath	33.3	VFSS biofeedback	31.8
Stretching	30.8	Oralight	31.3
Orofacial regulation therapy	30.8	Tapping	28.6
Deep massage	30.0	Effortful swallow	26.2
Chin tuck	23.5	ROM tongue	26.0

Appendix 18 Significant therapies and experiential demographics for main reasons for always-use

Experience variable	Therapies	P value
Years of experience	Thickening liquids	.000
	Oral motor therapy	.011
	Thermal tactile stimulation	.011
	VFSSBiofeedback	.011
	Intensive interaction	.016
	Enhanced natural gestures	.020
	Texture modification	.020
	Facilitated communication	.026
	Carbonation	.031
	Lamh	.042
Years of specialised experience	Oral motor therapy	.002
	Floortime	.018
	Intensive interaction	.018
	Switch toys	.035
Grade	Oral motor therapy	.020
	VFSS biofeedback	.024
	Enhance natural gestures	.027
	Voice output communication aids	.037
	Lamh	.048
Skill	Floortime	.014
	Parent-child interaction therapy	.014
	Facilitated communication	.017
	Vibration	.022
	Hanen	.025
	Applied behaviour analysis	.027
	More	.030
Dedicated-time	Joint-attention training	.013
	Side-spoon technique	.025
	Visualise-verbalize	.031

Appendix 19 Therapies of significance for work context demographics

Demographic	Therapies	P value
Work setting	Visual timetables	0.000
	Enhanced natural gestures	0.001
	Communication boards /books	0.001
	Communication passports	
	Narrative therapy	0.002
	Social use of language	0.008
	programme	0.014
	Texture modification	
	Intensive interaction	0.016
	Side-spoon technique	0.021
	Lifebooks/Lifestories	0.025
	Derbyshire language scheme	0.032
	Nuffield dyspraxia programme	0.037
	Lamh	0.041
		0.052
Region	Thermal tactile stimulation	0.029
Population	Enhanced natural gestures	0.002
	Metaphon	0.014
	Floortime	0.018
	Applied behaviour analysis	0.024
	Talktools	0.024
	Intensive interaction	0.028
	Oral motor therapy	0.033
Population age	Ora-light	0.025
	Deep massage	0.025

Appendix 20 Use of main never-use reasons for disability and dysphagia therapies

Main reason for never-use	Disability therapy	%	Dysphagia therapy	%
Lack of suitability	Visual timetables	100	Texture modification	100
	Articulation	88.9	Effortful swallow	89.5
	Communication boards/books	88.2	Double swallow	85.7
			Head turn	82.4
	Minimal pairs	88.2	Chin tuck	80.8
	Lamh	81.8	Cough / throat clear	73.9
	Voice output communication aids	80.0	Verbal cueing	72.7
			Supersupraglottic swallow	72.1
	Nuffield dyspraxia programme	68.8		
			Head back	67.5
	Switch toys	65.6	Thickening liquids	66.7
	Communication passports	63.0	Masako manoeuvre	64.5
	Metaphon	57.7	Mendelsohn manoeuvre	61.9
	Talkabout	54.1		
	Picture exchange communication system	47.6	Shaker exercise	60.0
			Volume regulation	55.6
	Derbyshire language programme	44.4	Alternating liquids	55.0
			Resistance	46.0
	Reminiscence therapy	43.9	Chewy tube	46.0
	Objects of reference	43.5	ROM-tongue	42.9
	Visualise verbalise	41.2	Changes in position	40.0
	Lifebooks /Lifestories	37.9	Physical support	36.8
	Narrative therapy	37.3	Thermal tactile stimulation	32.8
	Social scripts	30.0		
	Interactive storytelling	29.4	Stretching	32.8
			Intraoral appliances	31.1
			ROM-other	30.0
			Tube feeding	27.0
Lack of training	Early bird programme	72.7	Bobath	74.2
	Sensory integration therapy	71.0	Lee Silverman voice training	72.6
	Floortime	70.0	Deep pharyngeal neuromuscular stimulation	55.6
	Bobath	66.7		
	Tactile sensory stimulation	61.5		
			Surface electromyography	55.4
	TEACCH	59.1		
	More	54.4	Vitalstim	55.4
	Hanen	52.9	Expiratory muscle strength training	48.1
	Irish sign language	49.4		
	Intensive interaction	47.2	Orofacial regulation therapy	43.2
	Listening therapy	46.4		
	Parent-child interaction	44.4	Ora-light	37.1

	therapy		Deep massage	32.9
	Applied behaviour analysis	43.6	Homeopathy	31.0
	Cranial-sacral therapy	40.2		
	Talking mats	39.7		
	Pyramid approach	38.5		
	Nutritional therapies	38.2		
	Joint attention training	37.3		
	Enhanced natural gestures	34.7		
	Socially speaking	33.3		
	Conductive education	33.3		
	Facilitated communication	28.4		
Lack of awareness	Kidspiration	48.6	Side-spoon technique	41.7
	Toe by toe	47.0	Tapping	28.6
	Seescape	45.8	Empty-spoon technique	26.8
	Reciprocal imitation training	43.0	Vibration	26.1
	Prelinguistic mileau training	42.4	Carbonation	26.0
	Speechviewer	31.5		
Don’t know enough	Aided language modelling	39.4		

Appendix 21 Significant therapies in disability and dysphagia by experiential demographics

Experience variable	**Therapies**	**P value**
Years of experience	Conductive education	.0001
	Ora-light	.007
	Communication passports	.008
	Temperature modification	.008
	Double swallow	.014
	Shaker exercise	.028
	Masako manoeuvre	.029
	Bobath	.031
	More	.039
	Cranial sacral therapy	.039
	Lifebooks /Lifestories	.039
	Seescape	.050
	Switch toys	.051
Specialised experience	Conductive education	.0001
	Shaker exercise	.0001
	Masako manoeuvre	.0001
	Supersupraglottic swallow	.002
	Ora-light	.003
	Lifebooks/ Lifestories	.012
	Double swallow	.024
	Effortful swallow	.037
	Thermal tactile stimulation	.041
Per-cent time in practice	Head turn	.007
	Enhanced natural gestures	.021
	Expiratory Muscle Strength Training	.024
Grade	Cranial sacral therapy	.002
	Expiratory Muscle Strength Training	.006
	Switch toys	.023
	Social use of language programme	.029
	Parent child interaction therapy	.032
	Lifebooks / Lifestories	.035
Skill	Conductive Education	.001
	Shaker exercise	.003
	Tube feeding	.004
	Bobath	.014
	More	.014
	Supersupraglottic swallow	.020
	Masako manoeuvre	.026
	Irish sign language	.027
	Carbonation	.036
	Lifebooks	.040
Highest	Double swallow	.011

qualification	Stretching	.027
	Lifebooks / Lifestories	.029
Years since highest qualification	Conductive education	.001
	TEACCH	.003
	Temperature modification	.009
	Shaker exercise	.010
	Communication passports	.020
	Bobath	.034
	Reciprocal imitation therapy	.040
	PECS	.047

Appendix 22 Therapies of significance by work-context demographics

Experience variable	**Therapies significant**	**P value**
HSE region	Switch toys	.019
	Pyramid approach	.049
Work setting	Deep Pharyngeal Neuromuscular Stimulation	<.0001
	Range of motion-tongue	.001
	Vibration	.0020
	Lee Silverman Voice Training	.036
	Range of motion-other	.036
	Narrative therapy	.048
Population	Expiratory muscle strength training	.000
	Deep pharyngeal neuromuscular stimulation	.005
	Range of motion-tongue	.005
	Visualise-verbalise	.013
	Ora-light	.015
	Applied behaviour analysis	.022
	Surface electromyography	.023
	Side-spoon techniques	.027
	Enhanced natural gestures	.032
	Talking Mats	.045
Population age	Sensory Integration Therapy	<.0001
	Kidspiration	<.0001
	Early bird training	<.0001
	Aided language modelling	.001
	Floortime	.001
	Parent-child interaction therapy	.003
	Surface electromyography	.008
	Deep pharyngeal neuromuscular stimulation	.009
	Prelinguistic milieu training	.009
	Metaphon	.015
	Enhanced natural gestures	.018
	Expiratory muscle strength training	.020
	Homeopathy	.020
	Nuffield dyspraxia programme	.027
	Lifebooks /Life stories	.029
	Hanen	.039
	Intensive interaction	.042
	Derbyshire language scheme	.050

Appendix 23 Agreement with patient statements

Patient statement	% agreement	Trend	P value
The individual nature of each client influences my choice of therapy or technique	95.5	-	
I prefer therapies & techniques which are person-centred	89.5	Mid-time – dysphagia disagree more	.021
		Voluntary setting agree most	.012
I focus on the patient's specific deficits and choose therapies & techniques based on this	78.5	Early years group most likely to agree Later years group most likely to disagree	.028
		Adult-acquired most likely to agree. Disability least likely to agree and most likely to disagree	<.0001
		Least dedicated time – dysphagia	<0.0001
		Hospital /rehabilitation setting agree most	.007
A patient's preferences and values influence my choice of therapies & techniques	77.1	Seniors are least likely to agree	.039
		Disability most likely to agree.	
		Community paediatrics least likely to agree	.038
		Experts disagree most	.014
		Most experienced disagree more	.036
The patient must take responsibility for ensuring treatment success	53.2	Early years group most likely to agree Later years group most likely to disagree	<.0001
		Basics most likely to agree	.036
		Managers most likely to disagree	
		More than professional qualification less likely to agree and more likely to disagree	<.0001
		Early years –dysphagia agree most	.010
		Least dedicated time dysphagia	.054
		Community agree most	.045
		Paediatric agree most	.043
Family preference influences my therapy & technique choices	49.2	Mid years group are most likely to agree and disagree	.047
		Paediatric agree most	.007
What the patient brings to therapy is more important than the therapy or technique	30.9	Mid years group are most likely to agree. Later years group most likely to disagree	.033
		More than professional qualification less likely to agree and more likely to disagree	.025
		Experts less likely to agree	.003

Appendix 24 Correlation between selected therapies and selected attitude statements

Therapy	Did not choose	Agreed %	Disagreed %	Choose this	Agreed %	Disagreed %	Fishers exact p value
Science should decide							
Facilitated communication	n = 97	55.7	9.3	n =6	83.3	16.7	0.259
Talktools	n =82	59.8	11.0	n=21	47.6	4.8	0.279
Hanen	n =23	60.9	13.0	n=80	56.3	8.8	0.689
I use CAMs in work							
Facilitated communication	n =97	7.1	73.5	n=6	0.0	33.3	0.051
Talktools	n = 83	6	72.3	n =21	9.5	66.7	0.834
Hanen	n =24	16.7	62.5	n =80	3.8	73.8	0.082
Any treatment will work if a therapist believes							
Facilitated communication	n = 96	5.2	82.3	n = 6	16.7	83.3	0.320
Talktools	n =81	82.7	6.2	n = 21	81.0	4.8	1.000
Hanen	n =23	4.3	82.6	n = 79	6.3	82.3	1.000
Once research attached to a treatment more likely to believe'							
Thickening liquids	n = 15	66.7	13.3	n=86	75.6	7.0	0.785
Masako manoeuvre	n =77	74.0	7.8	n =24	75.0	8.3	1.000
Thermal tactile stimulation	n =91	72.5	8.8	n =10	90.0	0.0	0.544
Waste time with unvalidated treatments							
Facilitated communication	n =98	60.2	17.3	n =6	50.0	16.7	0.841
Listening therapy	n=101	59.4	16.8	n =3	66.7	33.3	0.604
Do harm unvalidated treatments							
Facilitated communication	n=98	53.1	16.3	n=6	50.0	16.7	1.000
Listening therapy	n=101	53.5	16.8	n =3	33.3	0.0	0.436

Appendix 25 Agreement with practical statements

Practical statements	% agreement	Trend	p value
I don't have enough time at work to spend reading and thinking about developing my treatment repertoire and therefore implement new therapies & techniques	45	Early years agree most. Mid and later years disagree most	.003
		Basics agree most, seniors and managers disagree most	<.0001
		West and Dublin north east agree most	.040
		Community agree most	.009
		Community paediatric agree most	.007
It is difficult to convert research into clinical practice	42	Early years agree most and later years disagree most	.001 .006
		Emergents agree most experts least	<.0001
		More than professional qualification disagree most	.006
		Later years-disability disagree most	.005
		Later years-dysphagia disagree most	.004
		Longest qualified disagree most	
I am limited in the therapies & techniques I use by what is available to me	39	Adult-acquired agree most, disability least	.019
		Early years – dysphagia agree most	.034
		More than professional qualification disagree most	.053 .012
		Adult clinicians agree most	.012
		Disability disagree most	
Once purchased, or learned I will use a therapy or technique to ensure good value	24	Community paediatrics agree most, disability disagree most	.004
		Community agree most	.012

Appendix 26 Agreement with statements by areas of practice

Dysphagia	**P value**	**More or less likely to agree**
I use alternative or complimentary practices in my work	0.011	less
Understanding why a treatment works is as important as understanding whether it works	0.044	more
The patient must take responsibility for ensuring treatment success	0.002	less
I am limited in the therapies & techniques I use by what is available to me	0.031	more
Any treatment or technique will work if the therapist believes in it	0.010	less
I use the therapies & techniques I do because there are no other options available	0.00	more
Speech & language therapists can do harm by the use of un-validated or non-scientific treatments	0.002	more
The therapies & techniques I use are the standard of care in my workplace	0.010	more
Disability		
I believe in my therapy & technique choices even if there is no research evidence to support them	0.048	less
A patient's preferences and values influence my choice of therapies & techniques	0.008	more
Family preference influences my therapy & technique choices	0.003	more
I focus on the patient's specific deficits and choose therapies & techniques based on this	0.009	less
The patient must take responsibility for ensuring treatment success	0.002	less
Once purchased, or learned I will use a therapy or technique to ensure good value	0.028	less
The patient therapist relationship is what is important in treatment, not the therapy or technique used	0.001	more
The therapies & techniques I use are the standard of care in my workplace	0.006	less
Statement-only group		
I use alternative or complimentary practices in my work	0.025	more
I believe in my therapy & technique choices even if there is no research evidence to support them	0.0018	more
A patient's preferences and values influence my choice of therapies & techniques	0.033	less
The patient must take responsibility for ensuring treatment success	0.000	more
I use the therapies & techniques I do because there are no other options available	0.000	less
Speech & language therapists can do harm by the use of un-validated or non-scientific treatments	0.001	less

Appendix 27 13 dimension output for rotated-solution factor analysis

Factor	Factor label	Factor statements
1	**Uncomplicated practice**	S4 Rely on commercial products S6 Research doesn't influence S18 Don't have enough time to develop S20 Once purchased will use S35 Tend to have a repertoire S36 Make efforts to keep up to date (reversed) S49 If in use long time must be good S51 Easy to implement S52 Easier to understand more likely to use S54 Variety of fun games and activities
2	**Scientific practice**	S1 Goals that can be tested S7 Sound theoretical basis S9 Clinicians should provide rationales S10 Important am able to defend choices S30 Read research regularly S33 Don't tend to adopt new techniques (reversed) S34 Like exploring new options
3	**Ethical scientific practice**	S2 Science should decide S5 Believe in (reversed) S39 Waste time with unvalidated treatments S40 Do harm by unvalidated treatments
4	**Pragmatic practice**	S17 Limited by availability S19 Difficult to convert research into practice S21 The placebo effect S32 I am confident (reversed) S38 No other options available
5	**External influences**	S11 Patient preferences influences S16 Patients must take responsibility S27 Textbooks S43 Watching working with other clinicians S45 Specialist/expert valuable resources S46 Rely on clinical experts
6	**Clinician-client belief dyad**	S15 What patient brings to therapy S22 Patient therapist relationship S31 Any treatment will work once therapist believes
7	**SLT culture**	S47 Standard of care in workplace S50 Standard of care in SLT
8	**Not so scientific sources**	S25 Seen in radio/TV S26 Print media S28 Older textbooks
9	**Clinical experience**	S37 Use because they work S41 My clinical experience influences S42 Clinical experience best guide
10	**Research belief**	S29 Once research attached likely to believe
11	**College learning**	S24 Learned in college
12	**Patient as person**	S13 Individual nature influences S56 Person centred
13	**Specific training**	S8 Understanding why works important S23 Specific training

Appendix 28 Significant demographic findings based on extracted factors

Fac	**Demographics differing**	**P value**	**Significant statements for the demographic finding**	**Direction of difference for statement**	**P value**
1	Mid experience from Most experience	0.05	Don't have enough time to develop	Most experienced disagree most	0.023
	Experts from Emergents	0.05	Long-time use good	Experts disagree most	0.025
	Experts from experienced	0.032			
	Professional qualification from more than professional qualification (PQ+)	<0.0001	Long-time use good	PQ+ less likely to agree	0.004
			Fun games & activities	PQ+ less likely to agree	0.036
			Rely on commercial products	PQ+ less likely to agree	0.004
			Use easy to understand therapies	PQ+ less likely to agree	<0.001
			Use easy to implement therapies	PQ+ less likely to agree	<0.001
			Research influences	PQ+ more likely to agree	0.006
	Community from voluntary	0.001	Use easy to implement therapies	Community least likely to agree	0.049
	Community from hospital /rehabilitation	<0.0001			
			Long-time use good	Voluntary most likely to disagree PCCC most likely to agree	0.025
			Use once purchased	PCCC most likely to agree	0.011
			Fun games & activities	Hospital /rehabilitation least likely to agree	0.006
	Community paediatric from disability	<0.0001	Use once purchased	Community paediatric most likely to agree	0.004
	Community paediatric from adult-acquired	<0.0001			
			Fun games & activities	Adult-acquired least likely to agree	<0.0001
			Research influences choices	Community paediatric less likely to disagree	0.024
	Paediatric from adult clinicians	<0.0001	Long-time use good	Paediatric clinicians agree more	0.024
			Fun games & activities	Paediatric clinicians agree	<0.0001

				more	
			Research influences choices	Paediatric clinicians agree more	0.013
2	Community paediatric from disability	<0.001	Read research regularly	Community paediatric less likely to agree	<0.0001
	Community paediatric from adult-acquired	0.014			
	Least recently qualified from most recently qualified	0.020	Read research regularly	Longest qualified agree more Most recently qualified agree least	0.003
	Least recently qualified from mid recently qualified	0.026			
	Later years – dysphagia from mid years	0.041	none		
	Later years – dysphagia from early years	0.022			
3	Least experience from most experience	0.028	Do harm by unvalidated therapies	Most experienced agree more	0.042
	Managers from Basics	0.0001	none		
	Managers from Seniors	0.024			
	Emergents from experienceds	0.001	Do harm by unvalidated therapies	Emergents most likely to disagree and least likely to agree	0.009
	Emergents from Experts	0.008			
	Least time –disability from mid time	0.002			
	Least time –disability from most time	0.008			
	Early years – dysphagia from mid years	0.013			
	Early years – dysphagia from later years	0.009			
	Professional qualification from more than professional qualification	<0.0001			
	Hospital /rehabilitation from PCCC	0.011	Do harm by unvalidated therapies	Hospital /rehabilitation agree most	<0.0001
	Hospital /rehabilitation from voluntary	0.005			
	Adult-acquired from community paediatrics	0.005	none		
	Paediatric from adult	<0.0001	Do harm by unvalidated therapies	Adult agree more	<0.0001
4	Professional	<0.0001	Not difficult to convert	PQ+ agree more	0.001

	qualification from more than professional qualification		research into practice		
			No other options available	PQ+ disagree more	0.013
			Limited by availability	PQ+ disagree more	0.053
	Adult-acquired from disability	0.040	Limited by availability	Adult-acquired agree more	0.019
			No other options available	Adult-acquired agree more	0.006
	Paediatric from adult	<0.0001	Limited by availability	Adult agree more	0.012
			No other options available	Adult agree more	0.005
5	Least experienced from most experienced	0.001	Patient responsibility	Least experienced agree most	0.036
	Least experienced from mid experienced	<0.0001		Most experienced disagree most	
			Rely on clinical experts	Least experienced agree most Mid experienced disagree most	0.011
	Early years – dysphagia from mid years	0.003	none		
	Basics from Seniors	0.002	Patient preferences influence	Basics agree most	0.037
	Basics from Managers	0.003			
			Patients must take responsibility	Basics agree most	0.043
			Rely on experts	Basics agree most	0.005
	Emergents from experienceds	0.001	Patient preferences influence	Emergents agree more	0.014
	Emergents from Experts	0.001			
			Watching working with other clinicians	Emergents agree more	0.030
			Rely on experts	Emergents agree more	0.007
	Professional qualification from more than professional qualification	<0.0001	Patients must take responsibility	PQ+ less likely to agree	<0.0001
			Watching working with other clinicians	PQ+ less likely to agree	0.005
	Paediatric from adult	<0.0001	Patients must take responsibility	Paediatric agree more	<0.0001
6	Professional qualification from more than professional qualification	0.003	What the patient brings to therapy	PQ+ more likely to disagree	Not significant
	Paediatric from adult	0.029	Patient–therapist alliance	Adult disagree more	0.008
7	Hospital	0.015	Standards in the	Hospital	0.065

	/rehabilitation from community		workplace	/rehabilitation agree more	
9	Basics from seniors	0.036	Use because they work	Seniors agree more	0.046
			Clinical experience best guide	Managers most likely to disagree	0.032
10	-		More likely to believe if research attached	Most time – disability disagree most	0.053
11	-		Colleague learning influences	Most experienced disagree most	0.005
				Seniors disagree most	0.034
				Experts disagree most	0.001
				Emergents agree most	0.001
				PQ+ disagree most	0.030
				Disability clinicians disagree most	0.066
12	Voluntary from community	<0.0001	Person centeredness	Voluntary agree more	0.014
	Voluntary from Hospital /rehabilitation	<0.0001			
	Disability from adult-acquired	0.001			
	Disability from community paediatric	<0.0001			
13	Most time – dysphagia from least time	0.031	none		

Appendix 29 Significant therapies for extracted factors

FAC	Therapies significant	Groups differing	P value	Statements found to be significant	P value
1	Communication boards /books	Never-use and always-use	.001		
	Articulation	Never-use and always-use	<.001	Those not choosing articulation therapy less likely to agree they rely on commercial products	.043
				Those choosing articulation more likely to agree they use therapies because they are fun	.065
				Those always-using articulation more likely to agree they don't have enough time to develop practice	.066
2	Communication boards /books	Never-use and always-use	.019	Those who SU communication boards least likely to agree and NU most likely (100%) with provision of rationales	.020
				Those who AU and SU communication boards agreeing far more than NU that they read research regularly	<.0001
	Texture modification	Always- use and sometimes use	.033	Those who AU texture modification more likely to agree with provision of rationales	.002
				Those who AU texture modification agree more that they read research regularly	.005
				Those who AU texture modification more likely to agree with sound theoretical basis	.002
	Thickening liquids	Always- use and sometimes use	.058	Those who AU thickening liquids agree more with those who NU disagreeing strongly with provision of rationales	.003
				Those who AU thickening liquids agree more with those who NU disagreeing strongly with sound theoretical basis	.001
				Those who AU thickening liquids agree more with those who NU disagreeing strongly regarding goals that can be tested	<.0001
				Those who AU thickening liquids agree more with those who NU disagreeing strongly that they make efforts to keep up-to-date	.058
3	Thickening liquids	Always- use and sometimes use	.037	Those who AU thickening liquids most likely to agree more and those who NU most likely to disagree that time can be wasted by use of unvalidated treatments	.005
				Those who choose thickening liquids more likely to agree and	.033

				those not choosing more likely to disagree that harm can be done by unvalidated treatments	
4	Texture modification	Always- use and sometimes use	.015	Those who AU texture modification more likely to agree they are limited by availability	.006
				Those who AU texture modification more likely to agree that there are no other options	<.0001
5	Double swallow	Always- use and sometimes use	.018	Those who AU double swallow more likely to disagree that they rely on textbooks	.002
				Those who AU double swallow more likely to agree that they rely on clinical expertise	.030
6	Thickening liquids	Always- use and Never-use	.051	Those who AU thickening liquids less likely to agree that any treatment will work if a therapist believes in it	.001
				Those who choose thickening liquids less likely to agree that any treatment will work if a therapist believes in it	.045
				Those who AU texture modification more likely to disagree that any treatment will work if a therapist believes in it	.016
				Those who choose texture modification more likely to disagree and less likely to agree that any treatment will work if a therapist believes in it	.035
	Texture modification	Always- use and sometimes use	0.029	Those who AU texture modification more likely to disagree that what the patient brings influences outcome	.045
8	Derbyshire language scheme	Always- use and sometimes use	.011		
	PECS	Always- use and sometimes use	.052		
	Oral motor therapy	Always- use and sometimes use	.005	Those who do not choose oral motor therapy less likely to agree. Those who choose most likely to agree that they use older textbooks	.063
				Those who NU and SU oral motor therapy less likely to agree. Those who AU most likely to agree that TV/ radio are sources of influence	.011
				Those who do not choose oral motor therapy less likely to agree. Those who choose most likely to agree that TV/ radio are sources of influence	.033
	Talktools	Always- use and	.010	Those who do not choose	.008

		SOMETIMES USE		Talktools less likely to agree that they use older textbooks	
				Those who do not choose Talktools less likely to agree that TV/ radio are sources of influence	.032
9	HANEN	NEVER- USE AND SOMETIMES USE	.013		
		NEVER- USE AND ALWAYS- USE	.019		
12	COMMUNICATION BOARDS /BOOKS	NEVER- USE AND ALWAYS- USE	.045		
13	LAMH	NEVER- USE AND SOMETIMES USE	.024		
		NEVER- USE AND ALWAYS- USE	.006		
	PECS	NEVER- USE AND ALWAYS- USE	.045		
	COMMUNICATION BOARDS /BOOKS	NEVER- USE AND ALWAYS- USE	.045		
	VIDEO FLUOROSCOPIC SWALLOW STUDY BIOFEEDBACK	ALWAYS- USE AND SOMETIMES USE	.032		
	TUBE FEEDING	DID NOT DIFFER	.042		

Appendix 30 Development of coding

First order coding

	Group 1	Group 2	Group 3	Total	% of total
Q1	20	52	105	177	21.6
Q2	32	39	67	138	16.8
Q3	40	66	76	182	22.2
Q4	84	85	155	323	39.4
Total	175	242	402	820	
% of total	21.3	29.5	49.0		

First	order	re-coding			
	Group 1	**Group 2**	**Group 3**	**Total**	**% of total**
Q1	63	105	133	301	22.6
Q2	91	76	87	254	19.1
Q3	92	105	85	282	21.2
Q4	194	127	171	492	37.0
Total	440	413	476	1329	
% of total	33.1	31.0	35.8		
Second	**order**				
	Group 1	**Group 2**	**Group 3**	**Total**	**% of total**
Q1	19	32	56	107	13.4
Q2	55	51	59	165	20.6
Q3	53	73	41	167	20.9
Q4	117	93	151	361	45.1
Total	244	249	307	800	
% of total					
Third	**order**				
	Group 1	**Group 2**	**Group 3**	**Total**	**% of total**
Q1	7	8	10	25	23.6
Q2	7	7	11	25	23.6
Q3	9	11	9	29	27.4
Q4	11	7	9	27	25.5
Total	34	33	39	106	
% of total	32.0	31.1	36.8		
Fourth	**order**				
	Group 1	**Group 2**	**Group 3**	**Total**	**% of total**
Q1	3	5	3	11	26.8
Q2	3	3	4	10	24.4
Q3	3	4	4	11	26.8
Q4	3	3	3	9	21.9
Total	12	15	14	41	
% of total	29.2	36.6	34.1		

Fifth	**order**				
	Group 1	**Group 2**	**Group 3**	**Total**	**% of total**
Q1	2	3	3	8	21.6
Q2	3	3	4	10	27.0
Q3	3	3	4	10	27.0
Q4	3	3	3	9	24.3
Total	11	12	14	37	
% of total	29.7	32.4	37.8		
Sixth	**order**				
	Main	**themes**			
Q1	3				
Q2	4				
Q3	3				
Q4	2				
Total	12				
	Super	**themes**			
All data	**3**				
	Meta	**theme**			
All data	**1**				

Appendix 31 Sample of initial coding – Question 4.

Group 1	Group 2	Group 3
What has worked	SLT is a scientific profession	It is scientific
Our own evidence	It’s a combination	Testing hypotheses
Looking at evidence based practice	It’s not just black and white	With a hypothesis
Conflicting evidence	A bit inventive	Isn’t remotely scientific
Lack of scientific research	A bit artistic	That basic bit of it
An amalgamation	That’s science though	Without guidance
Research is happening	That’s research	For some it doesn’t
Went along with it	Experiments	Works
Research is interesting	If its theoretically based	Not in an RCT kind of way
It’s hard to be scientific	Why are those	A lot of other aspects
The client and the relationship	More than other professions	We don’t document
Science is ambivalent	Scope to be creative	About outcome measures
There’s the moral issue	Medicine is very strict	Your research your experiment
Your knowledge from college	Is this working	Prove or disprove
There’s loads of different variables	About evaluating	The hard part for us
Its problem solving so in that sense yes	What the patient wants	Or art
Your personality	Let’s try something else	Being imaginative
It’s not a hard and fast rule	Something like palliative	When the science isn’t directing you
We’re tweaking it	To modify what	Both science and creativity together
You need to apply it	What does the family want	And the reflective
Use outcomes	Videofluroscopies all day	We do assessments
Pilot it	Interpersonal with people	Our own clinical experience
Not a hard medical science	A lot younger	Evidence based research
Our complex children	As the evidence gets stronger	Other team members or colleagues
Throw in a little art	Real evidence	Where there’s human interaction
Learning recording and researching	Like America	Impossible to control
Depends on the setting	We’re very fortunate	More science than art
The child and the family	Foundation of something scientific	Define themselves a little more
The research environment	Follow those protocols	White coats
Finite therapy	Looking at outcomes	We’re reluctant
Go on instinct as well	Figure out why	As something very desirable
Open to slight changes	A different environment	All that concreteness
Scientific meaning quantitative research	Kinda the clinical experience	That kind of research
The patient’s perspective	Just in your head	Doesn’t really speak to what we do
Discuss it with a peer	Just you know	Value of the work
That is a dilemma	More comfortable	Very uneasy relationship
You can’t measure that	We are clinicians	Like to be more scientific
Monumental	Becoming more scientific	We need to tighten up things
Quality of life	Professions are being pushed	Trying to shoehorn
Scientifically we’re huge on diagnosis	I wouldn’t use the word scientific	A bit more confidence
Having an open mind	It’s a different science	A bit more frothy
Looking for different reasons	That’s par for the course	Creative art we do is valuable
It’s personal opinion now	Having funding	For adults anyway
Cures	Other reasons	Better realer more real
The only solution	If there isn’t evidence	Don’t really care about their scores
Practices of concern	Creating the evidence base	Made a difference
Amazing results	Part of us being a scientist	Considered a scientific kind of
Clinician internationally or nationally	To see that its effective	approach
How valid is their research	Everybody has responsibility	Measures that reflect that
That’s not ethical	It wouldn’t put me off	We’re probably more the qualitative
The qualitative aspect	Wasting patients time	side
If they pay for something	Could be a different client group	We’ve probably been shoehorned
Maintain professionalism	Lots of different factors	We work with humans
You don’t know an awful lot about it	Your interpretation of it	We are scientists but
Perceive it to be superior	Not something we do here but	The single case studies
Because it’s a package	Wide different varied practices	Things aren’t as black and white
Just causes problems down the line	Products designed to be	We need to look at the qualitative bits
Mainly pushed by therapists	Instils a certain confidence	Peers who are very scientific
That’s where my concern would be	Yet we provide that service	They expect you to be
Accurate information	For Vitalstim either	Oh my god it doesn’t work
I would go and check it out	A little machine	Colleagues were saying
With research	They know exactly	The same sort of evidence
Might be experience	A more detailed knowledge	We need to be upfront
You’ve tried it	Know exactly what you’re targeting	Worked in a hospital setting

I'd be very open
They'd get suspicious
It's a grieving process
Always be an alternative
To have clear rationale
Following professional guidelines
There's placebos
We gave them the tools
Our professional opinion
The fact that a parent is engaging
Where the idea came from
Just getting anecdotal
Just sell their product
I think I certainly would
Swings and roundabouts
Why did I stop?
Everybody did it
Using bits of it
Their own experience and knowledge
It's all our fault
Wasn't just referring about research evidence
Our practical experience
Fairly recent graduate
Quite an emphasis now
As much about fieldwork
Seeing what works
Actual scientific basis
What you've tried
The actual research
Would be very conscious
Not be very supportive
It's quite neutral
Whether its effective
Lack of research
Evidence base in SLT in general
An awful long time
Delighted in the beginning
A big thing against
Becoming more scientific
Read the research
There's nothing clear
Research is there
It's interesting
Can't be scientific
And myself
How can you scientifically evaluate
Don't see how that can be scientific
Affect the outcome
I try not to let it
Clients we find difficult
Scientific issue in the broader sense
It is a science
The medical background a little bit
Of the school
Factors of the family
Their diagnosis and all that
It's a package then
To suit the needs
Hard to compare them
A particular group
A very broad group
If it's actually appropriate
The person you're working with
Using it as an idea
Or sociology
Not exact science
As a profession
Learning
Recording

A well packaged programme
Its costly
Some kind of quack stuff
Blindly just doing something
I would be worried
Done your university training
Your own clinical judgement
The reimbursement scheme
Evaluate that disconfirming evidence
Start looking harder
Marry the two
Working with your patients
A crap article
A placebo effect
Depends how much the therapy is
Four days a week four weeks a year
Selling a product
There's always going to be evidence
A little bit sceptical
Use it cautiously then
It's just quackery
Formula
Come up with ideas
Quite creative
Let's try it
Our profession is more
A broad range of activities
No real evidence
That leeway
Can be measureable
And research
How do you define art
Your adaptiveness
Undocumented stuff
Lots and lots of practice
A bit more quantitative
Wouldn't use the word scientific
I would say there's no
There was an assumption
Prevent you prior
Evaluating approaches
Balance it out
The published literature
It's your own
Not evidence based
Are packaged products
Yet we provide that
With a training course
Very functional approach
And know exactly
About Talktools
As long as you're scientifically
Marketing things
See how it matched up
No
With previous patients maybe
Thought they were more relaxed
You're not going to jump to
I've ten other patients
Weigh it up
Lots of evidence
It's pretty obvious

Both invaluable aspects
Gone a little bit wrong
So frustrating
We know so little
Such a vast field
It should be case studies
To get to the point where
There not real people
Doesn't actually tell you very much
Cant transfer it
Round and round and round
Research is just kind of stuck
You read something
Much more useful
You have a real picture
Apply to a similar client
That's not what I do
I'm not too bad
Do have scientific knowledge
Very deeply integrated
Learned in college
Read an article
Using it for five years
Clinical experience didn't include
You know actually a lot of stuff
Tend to put down
A pinch of salt
Or actually unpicking
People are critically thinking
Don't think people would deny
More reflective practice
I wouldn't call it quackery
Big concerns
Parents bought into that
Someone else privately
This is the programme
Being sold
It didn't achieve anything
Going to achieve
Maybe they felt it did
Sorry that I didn't
Maybe some of the listening therapies
I'm not trained in them
So I don't know like
We don't know if they work
Will just fix you
Probably fairly unrealistic
Maybe more impairment based therapies
Seen worrying things
Parents wanted a fix
A quick fix
Parents weren't ready
As functional as possible
That isn't going to happen
Things that are expensive
Anything with huge promises
Sometimes you have to travel
One size fits all
If the child failed
It was just awful
Pick up the pieces
It just sounded awful
It was big
Haven't heard of it recently
Poor parents
It didn't turn out to be the holy grail
People play on it
Will do anything
Kind of cynical

And researching Worked in an acute hospital setting Working with say LSVT Evaluate that Population we work with Factors very difficult to control Overall emotional wellbeing The effectiveness of it Not 100% clear Might be easier Idea of finite therapy Lifetime relationship We've trawled the journals Do you not do it Be kind of cognisant That invalidates then Is science not the qualitative research Patient can view therapy You feel something Discuss it with a peer Doesn't necessarily always show up Formal assessments Some therapies you can fix it You're looking for I would have concerns Therapies being sold As the only solution About ABA It's the way to go Generalise or whatever Provide accurate information Unless specifically trained Gains just not there Feel they are suffering A lot against Parents are looking Didn't particularly work They'd get suspicious It's to understand why Always be an alternative Holistic medicine and therapy Following professional guidelines Best for their child You'd do anything yourself Down to choice Or a pushy relative Getting anecdotal Very positive information Need other parents Haven't been qualified all that long An instinctual thing An experience you know Everybody did it Still using their own If the evidence says wrong A bomb went off When you thought about it Don't need to be as rigid A way that can be better Baby out with the bathwater		Continue to use it Clinical effectiveness Depend on the research If you're still happy Look at it You should probably write The time Looking to other opinion I would hope Kind of reinforce it Sometimes there's a danger that The therapeutic relationship Something about the way Stopped using it Maybe people never loved it I never believed it When the research came out I was delighted Changing your practice Whole body of evidence Doesn't mean it's good research Shelve it There was a paper Not be so rigid The underlying issue Test through therapy Then change A lot of bubble blowing Doing an experiment What frustrates us Create solutions We take notes More secure in the medical The medical model Also measureable You take things away from it Find it reassuring Didn't explicitly state If it's completely at odds Are the findings reliable