International Journal of Disability, Development and Education

ISSN: (Print) (Online) Journal homepage: https://www.tandfonline.com/loi/cijd20

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To cite this article: Fatma Canan Durgungoz & Anne Emerson (2021): Decision Making of Speech and Language Therapists: Science or Intuition?, International Journal of Disability, Development and Education, DOI: 10.1080/1034912X.2021.1966759

To link to this article: https://doi.org/10.1080/1034912X.2021.1966759

INTERNATIONAL JOURNAL OF DISABILITY, DEVELOPMENT AND EDUCATION
https://doi.org/10.1080/1034912X.2021.1966759

Decision Making of Speech and Language Therapists: Science or Intuition?

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ABSTRACT

Understanding decision-making as a process is essential in relation to the practice of many professions seeking to improve efficacy. The ideal of evidence-based practice can be challenging to implement in practice. This study is novel in examining the decision-making process (DMP) of Turkish speech and language therapists, through the lens of a decision theory. The cognitive continuum theory (CCT) considers decision-making to span between intuitive and science-based judgments. Sixteen speech and language therapists (SLTs) participated in this study which utilised multiple data collection methods to understand the complexity of their DMP. Participant SLTs were found not to have a specific and uniform way to select an intervention; instead, they had a dynamic DMP determined by multiple factors. Three main themes related to DMP emerged from the data: 'the nature of the resources' that SLTs used; 'the nature of the therapy' that they selected; and 'the role of parents'. We suggest that cognitive continuum theory (CCT) can be a useful tool to address the gap between theory and practice. Awareness of CCT may enhance SLTs awareness of the influences on their decisions so they can move towards balanced, deliberate practice and further offer a higher-quality service.

KEYWORDS

Cognitive continuum theory; decision-making; intervention; speech and language therapy

Introduction

The Complexity of Decision-Making

Decision-making in social science is a multi-faceted process necessitating consideration of multiple and complex factors (Holland & Bloch, 2020). When it comes to decision-making in professional practice, there are differences in approach between disciplines. Professional decision-making has been studied in professions such as nursing (Shaban, 2015; Standing, 2007), medicine (Hamm, 1988), physiotherapy, occupational therapy and psychology which rely on scientific evidence in their clinical decision-making process (Lum, 2013). This is because it is expected that healthcare professionals will take a scientific approach to their DMP, generally referred to as evidence-based practice (EBP) (Bannigan, 2009).

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When it comes to the SLT discipline, although some researchers support the need for EBP and recommend that SLTs increase the use of clinical guidelines (Zipoli & Kennedy, 2005), other studies suggest that adherence to EBP is not enough to explain the DMP of SLTs (McCurtin & Clifford, 2015). Theoretical knowledge is not always applied in practice (Kamhi, 1999) and access to journal articles is problematic for SLTs who work in the field (Goldbart, Chadwick, & Buell, 2014). Additionally, the lack of evidence about the best time to start the intervention process, and for which cases, might lead SLTs to act on their intuition (Roulstone, Peters, Glogowska, & Enderby, 2008). Other researchers claim that clinical decisions are mostly affected by practical knowledge (McCurtin & Carter, 2015; McCurtin & Clifford, 2015).

Although SLTs rely on their clinical experience and the input of colleagues, recent studies show that research and client preferences have increasingly been the main sources that guide their decision-making process (Greenwell & Walsh, 2021). Increased attention has been given to EBP in the SLT profession, e.g. ASHA's EBP committee was restructured and replaced with the Committee on Clinical Research, Implementation Science, and Evidence-Based Practice (CRISP) to broaden the use of EBP in clinical practice (ASHA, 2019). Greenwell and Walsh (2021) underline three evidence-based practice elements; recent research findings, clinical knowledge and the client-centred approach. In contrast to other research cited in this study, Fulcher-Rood, Castilla-Earls, and Higginbotham (2020) found that although recent graduates cannot always identify the components of EBP, they use the principles of EBP in their practice. Contradictory findings regarding SLTs DMP persist, e.g. Thome, Loveall, and Henderson (2020) surveyed 176 SLTs' use of EBP and found that although participants recognised the importance of EBP and its benefits, applying essential components of EBP in clinical practice was challenging. The most important barrier stated was the lack of time and workload during the day to reflect upon the latest research (Thome et al., 2020).

Factors that predict SLTs' decisions include those related to therapists as individuals; parent and child dynamics; parental involvement; practice setting constraints 'related to time, resources, the size and diversity of SLP's clinical caseload' (Furlong, Serry, Erickson, & Morris, 2018, p. 1131). SLTs' assessment and treatment practices for people with progressive dysarthria identified experience, use of best practice guidelines, the workplace and severity of dysarthria as relevant factors (Collis & Bloch, 2012). Additionally, Goldbart et al. (2014) conducted a study to understand SLTs' decision-making in communication interventions for people with profound intellectual and multiple disabilities and found that their interventions were based upon their perceived needs of clients, their own experience and organisational factors. They stated that the EBP framework should be expanded by the inclusion of additional factors (Goldbart et al., 2014).

The literature shows that the DMP can also vary depending on geographical area (Enderby & John, 1999); the methods of evaluation and reasoning process (Roulstone, 2001); and therapist-parent-child-setting related factors (Furlong et al., 2018). Furthermore, the difficulties in accessing available evidence (Dodd, 2021); providing equitable service delivery (Abrahams, 2019); and using theoretical EBP knowledge in practice (Kamhi, 1999; McCurtin & Carter, 2015; McCurtin & Clifford, 2015) separates SLT from other disciplines.

Cognitive Continuum Theory

There are two main decision-making theories described and adopted in the literature; System 1 and System 2 (Hammond, 1996). System 1 refers to using scientific methods to make decisions and system 2 describes the decision-making of professionals as an intuitive process where decisions are based on tacit knowledge. These two systems have been seen as contradictory to one another; however, cognitive continuum theory (CCT) suggests that these two poles of DMP can be seen as working in harmony.

Hammond's (1996) CCT was adapted by Hamm (1988) to create modes of clinically related inquiry, subsequently replaced with 'modes of practice', to show their relevance to the medical field. Hamm's (1988) six steps modes of practice, which is illustrated in Figure 1, shows how professionals' decisions can be positioned within the CCT. One pole of the cognitive continuum represents intuitive judgment (step 6), and the opposite pole scientific reasoning (step 1). According to Hamm (1988), a DMP towards the intuitive pole (step 6) suggests that professionals face an ill-structured task so that they rely on their intuition to make an intervention decision, which means that the process is less visible and less time is required to come to a decision. Intuitive reasoning is ill-structured as it is based on professionals' instincts and beliefs and cannot be explained scientifically.

Decisions that are based on scientific reasoning (step 1) are well structured with research evidence feeding into decision-making, which is observable and analytical. This enables the process to be more visible, but the time required for administrating such processes is high (Hamm, 1988). Steps 3 and 4 represent the middle ground, or as Hammond names it 'common sense', where both intuition and scientific reasoning processes work together to come to a decision about a specific case. Such middle ground is also called 'quasi-rationality', where CCT differs from other notions that intuition and scientific reasoning are contradictory (Hammond, 1996, pp., p.184). Quasi-rational DMP may be an ideal point at which professionals might reach a quality decision about a case (Hammond, 1996).

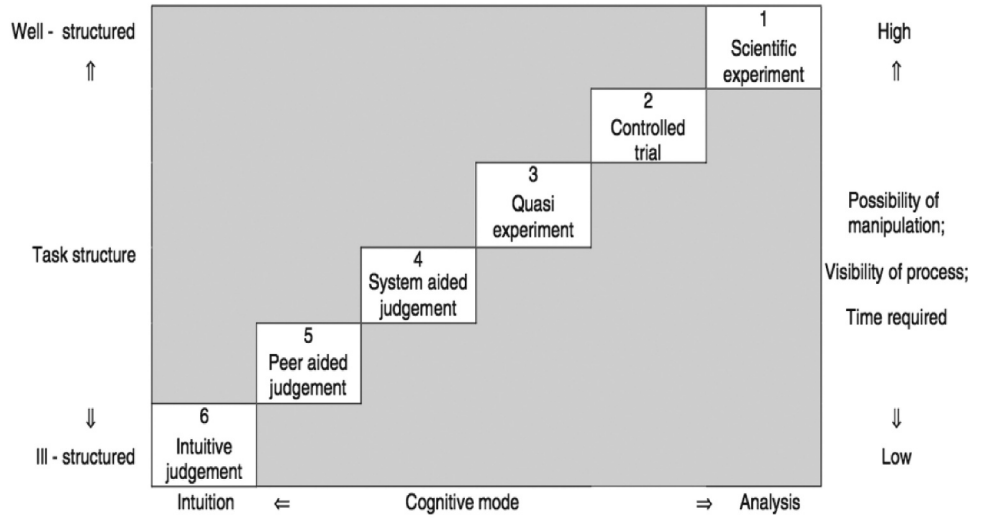

Figure 1. Six modes of CCT (Hamm, 1988).

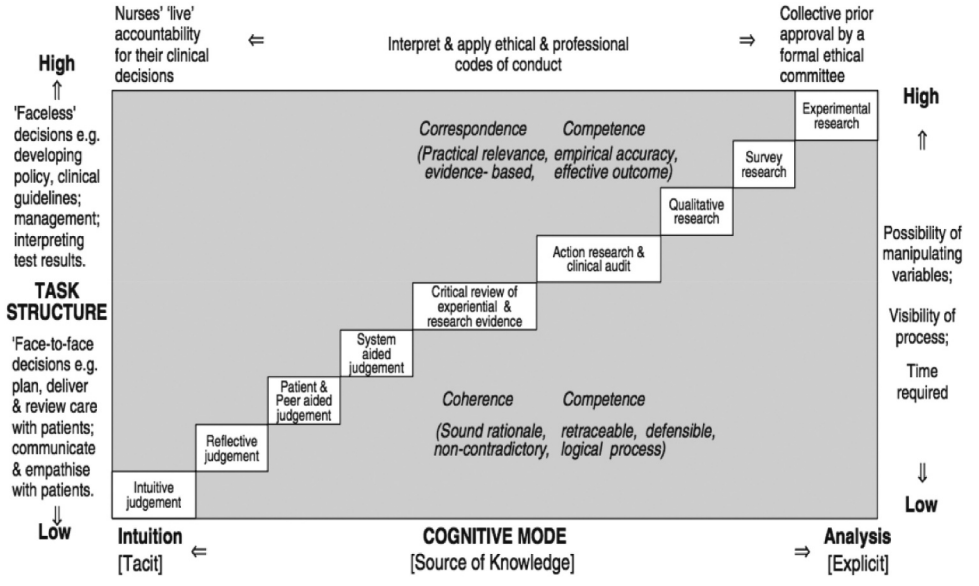

Figure 2. Standing (2008)'s adoption of CCT.

Standing (2008) adapted Hamm's (1988) (see Figure 1) six modes and extended it into nine modes for the nursing discipline (see Figure.2). The three additional modes suggested by Standing (2008) are reflective judgment, action research, and qualitative research. Adding reflective judgment represents how prior experiences have an impact on professionals' DMP. The addition of action and qualitative research relates to how research methods have an impact on professionals' decisions. The nine modes in Standing (2007) CCT were not numbered, unlike in Hamm (1988), to avoid presenting a structured DMP, since decision-making in this framework is a flexible and dynamic process where non-sequential leaps from one step to another might be seen.

SLT in Turkey

Speech and language therapy is a developing discipline in Turkey. There were no undergraduate degrees until 2012 (Topbaş, 2014). Prior to that, in order to work as a SLT in Turkey, it was necessary to complete a MSc degree that lasted three to four years and was only available at one university in the country. Thus, graduates from related departments had to complete intensive masters or PhD programs in order to train. Recently more universities have opened speech and language therapy undergraduate degrees. The first SLTs that completed a bachelor's degree graduated in 2016 from Anadolu University. In 2018, the Speech and Language Therapists Association recorded fewer than 300 SLTs providing services to a population of over 80 million. Furthermore, statistics show that there are approximately one million children (aged 0–18) who have speech and language disorders in Turkey. This puts considerable pressure on the services provided (ibid).

The number of children with speech and language difficulties and the limited number of SLTs in Turkey has made it difficult for parents to source SLT (Dural & Ünal–Logacev, 2018). In some regions of Turkey, the educational level of parents and socio-economic situation is significantly lower than in European countries which can lead to a lack of parent–child interaction and resultant speech and language difficulties compounded by migration leading to a multi-lingual population (Topbaş, 2014). Given that SLT is a developing profession in Turkey, this research seeks to understand what factors impact SLTs' decision-making process and whether their practice can be explained within a decision theory focusing on qualified SLTs working with children with developmental language disorder (DLD). The study is original in two regards. As far as we have been able to establish, there were no previous studies of Turkish SLT's DMP. Secondly, this appears to be the first study of SLT's DMP that utilises a decision-making theory.

Materials and Methods

This study used a qualitative multi-methodological approach to understand the complex nature of clinicians' DMP.

Sample and Recruitment

In order to increase the diversity and representation of different regions, five cities in Turkey were selected and an internet search was conducted to identify SLTs. Nineteen SLTs were contacted via email, with a brief description of the research, participant information form and a consent form. Sixteen participants were selected as being those working with children with DLD.

Procedures and Data Collection

Multiple data collection methods were triangulated to explain the complexity of DMP fully. The methods were; semi-structured interview, vignettes, observations with follow-up interviews, and audio diaries. Interviews were conducted with sixteen participants based on open-ended questions extended by the process of conversation. Five out of sixteen participants also responded to vignettes. Vignettes comprised of three short scenarios. In each of these scenarios, the background to the case of the DLD was different. For example, while in one scenario DLD stemmed from psychological issues in another it originated in socio-economic problems. In this way, SLTs' reasoning process to the same problem (DLD), stemming from different reasons, helped the researchers to understand whether therapists' decision-making is uniform or varies across cases.

Eight out of sixteen participants agreed to be observed conducting therapy sessions. This helped the first author to understand their evaluation, the nature of the therapy and make detailed inferences about their DMP. After each session, a follow-up interview was conducted, and therapists were asked to explain the reasons for administration of a particular method, why s/he had used specific materials, to elaborate on their DMP.

Eleven out of sixteen participants agreed to send audio diaries. Audio records provided an opportunity to understand whether SLTs' decisions changed over time and which

factors impacted on their decisions. For example, it was revealed from the data that parents' motivation and willingness have a significant impact on the consistency of SLTs' practices.

Data Coding and Analysis

Given the specific situation in Turkey, it was important to explore this research in its context and culture. The first author of the paper is a Turkish researcher and therefore able to interpret the data in their context. An inductive thematic analysis was adopted to collate the data from different sources. Analysis followed the systematic steps outlined by Braun and Clarke (2006). Familiarisation with the data, through repeated listening and transcription, led to the generation of initial codes by organising data into categories using Nvivo software. Initial codes were compared across participants to search for themes, and these themes were cross-checked in relation to the coded extracts.

Ethics

The British Educational Research Association's (BERA) ethical guidelines and university ethical guidelines were closely followed. Consent to conduct the study was sought and received from the Turkish Ministry of Health and Education and governors of relevant hospital/clinic/institution. The SLTs and children's parents who were issued with information sheets and required to complete consent forms. The vulnerability of child participants was considered, and extra precautions were taken during the process of observation and data collection. SLTs were sent transcriptions of interviews, follow-up interviews and observation notes and asked to confirm their own statements.

Results

Overview of Themes

The themes emerging from the data indicated the complexity of participant SLTs' decisions about therapy. Participant SLTs did not have a uniform way to evaluate and design their therapies. Each therapist had a dynamic DMP that shifted according to multiple factors. Three main themes emerged from the data: how SLTs evaluated a case (Formal/Informal); the nature of the therapy that they designed (child-centred/therapist-based); the nature of parental involvement in their therapies (*see* Table 1).

Table 1. Main themes emerged from the data.

Theme 1 NATURE OF THE RESOURCES	• Practices stem from Formal/Impersonal Resources • Habitual, Intuitive and Past Practices: Informal/Personal Resources
Theme 2 NATURE OF THE THERAPIES	• Child-Centred Approach • Administrating a Therapist-Based Intervention
Theme 3 PARENTAL INVOLVEMENT	• Parental Willingness and Expectations • How to consult Parents: Involving Parents in the Practice

Nature of the Resources

The nature of resources that the participant SLTs used seemed to influence their intervention decision. Formal resources such as standardised tests and tools, guidelines and protocols, theoretical knowledge, academic courses/training seemed to help participants to be confident about their decisions and able to convince parents about the accuracy and quality of their practice. However, although they stated in the interview that their practices were evidence-informed and that they followed guidelines and protocols, it was revealed from observation of practice that this was not always the case. For example, although participants underlined the importance of using formal resources such as theories, techniques and approaches based on their education and subsequent training in the interview, it was seen in observed sessions that there were cases where participants were using informal resources. After the observed session, follow-up interviews were conducted and participants referred to previous experience, trial and error method and instinct to explain their reasoning. Their instincts and previous experiences also impacted their decisions.

Formal/Impersonal Resources Impacted SLTs' Intervention Decisions

Participants described using formal evaluations, such as standardised tests and assessments, as they thought they were a 'good reference' (P4) and a kind of 'confirmation' (P2). They also used these resources 'to be sure' (P12) and 'feel safe' (P5). They found these resources to be 'more scientific' (P5) and 'reliable' (P14), which helped them feel comfortable when they designed their therapy. Formal resources also helped the SLTs 'to see the language level of the child' (P1), 'to have an idea of the general development of the child to design the therapy' (P3).

Another important reason for using such tests was to build parental confidence. Participants stated that 'parents want to see something official, formal evaluations and results rather than just our thoughts' (P11) and they thought 'these tests are a good reference point' (P4) for them when they explained their reasoning to parents. They said this gave them confidence and helped them 'to convince the parents as they tend to believe these kinds of scientific tests' (P12).

They also revealed that in formal education and training they learnt guidelines and protocols, and EBP and theoretical knowledge also played a central role in the process of choosing an intervention method. Participants stated that their practices were based on 'university education' (P9), 'training' (P11), 'practice unit named DILKOM' (P9), 'MA degree' (P2) and 'internship' (P6). They also referred to some theoretical methods and techniques to explain their practices such as 'extension method' (P2), 'child-centred approach' (P11) 'focused stimulation' (P2), 'play therapy' (P9), 'prompting technique' (P1).

Another formal resource revealed by participants was ongoing learning. 'We should follow research to learn novel practices. Being a SLT necessitates learning continuously. Research, articles, journals are easy to access in today's world otherwise our practice becomes dull … ' (P7). Thus, participants reported keeping up-to-date with current research and theories through attending 'seminars and conferences' (P2, P3) and 'workshops' (P2, P3, P12, P15, P16) and reading journal articles in order to 'learn and follow the latest practices' (P6).

Habitual, Intuitive and Past Practices: Informal/Personal Resources

Although there was a common agreement that formal tests and assessments yield absolute and reliable results, conversely, a lack of trust in formal tests was also reported. Participants said 'the data that we get from formal tests are not trustworthy' (P1). The reason is that as these tests originally come from English speaking countries, there could be standardisation problems because 'there are phonological contradictions between Turkish and English' (P1). They believed that 'gathering detailed knowledge about the child from the parents is as important as conducting standardised tests' (P9). This view lead participants to be impacted by informal resources as well, and data showed that they gave importance to their informal observations (P4, P9), 'self-prepared checklists and information sheets' (P1).

There were other informal factors that had an impact on participants' decision-making. For example, it was seen that 'previous experience' (P16) and practical knowledge gave the participants ideas about their approach when they were faced with a child who had similar difficulties to the ones with whom they had engaged before: 'The more experience you have, the easier to decide on an action' (P11). It was also found that participants used a trial and error method. They stated that 'we try something and if it does not work, we try another' (P12); 'I try a method; if the outcome of the method is fruitful I keep on … If not, I change it' (P3); 'if it does not work for the child that I work with, then I look for other things' (P6). This gave them 'confidence for future practice if I face similar things with different children' (P8). Moreover, it was seen that choosing an intervention method became automatic after a particular time for participants. They stated that 'it is just about feeling' (P11) and they knew what to do by synthesising all information and practical knowledge that they held. They often used terms like 'I feel' (P2), 'I am sure … he will like it' (P16), 'I know somehow … ' (P4) when they explained their reasoning process.

Moreover, sharing opinions with other professionals seemed to be quite common; but this was usually informal as participants were found to talk about a child's issue one to one with friends rather than arranging a formal and detailed opinion-sharing meeting. Participants also reported they 'do not want to share' (P1, P11) their knowledge with their colleagues because they 'want to be unique about what they are doing and that is how they are marketing themselves' (P3).

Nature of the Therapy

All participants in this research stated the importance of considering children's interests and needs when administering an intervention program; however, data from observations of practice showed that SLTs applied more structured, therapist-based intervention methods in some cases. It was seen that, in these cases, participants were administering strictly structured, pre-planned therapy where the flow of therapy, chosen material and what to do were all controlled by the SLTs. Thus, observation data and follow-up interviews brought new insight into this study as what some participants said they did contradict what they were seen to do.

Child-Centred Approach

The creation of this theme is based on the data that reflected the centrality of individual needs and priorities of every single child. When participants designed a therapeutic

approach, they took into account each 'individual child's personality' (P10), 'age, language development, source of language issues, environmental factors' (P10) and other 'special, specific' (P11) factors, then they structured an environment to support the child and provide some guidance. They stated that 'every single child has something special, specific which cannot be seen by others' (P11). The content of the intervention method 'depends on the child . . . we would not be trying to put the child into therapy; instead, we make therapy for the child' (P7) and they 'focus on individuals' (P9). This lead participants to create a 'unique' (P10), 'special, specific' (P11) approach and 'mixed methods' (P3).

Therapist-Based Intervention

This theme mainly emerged from the observation and follow-up interview data. It was seen that although SLTs stated the importance of using a child-centred approach, observations of practice showed that this is not always the case.

Past practices, therapists' beliefs, parents' expectations, fulfiling goals, and time pressure made participants administer more therapist-based intervention methods. They explained this situation as 'theory does not always work in practice' (P15). According to them, 'when it comes to practice, it is sometimes difficult to control the session. Especially when you think you have limited time and lots of activities in your schedule' (P15). Also, 'parents really look forward to seeing their children's improvement' (P3) within a short time. These factors lead participants to administer more structured, therapist-based intervention.

As a result, it was found that the nature of their therapy found its place somewhere between child-centred and therapist-based intervention depending on the specific case.

The Role of Parents

Parents had a significant impact on participants' intervention decisions. Data indicated that parents' motivation and willingness to learn and support their child at home affected participants' motivation and their therapy choices.

Decisions Affected by Parental Willingness

Parents' motivation and willingness lead participants to find novel and useful approaches, as well as activities to do at home. They described parents: 'most of them are not aware of their child's needs. Alternatively, they are aware, but lazy when it comes to playing with them . . . when you see such a motivation, of course, you feed the parents in terms of applying different intervention methods . . . You cannot do this with parents who are not interested or so busy' (P2).

> . . . parents are the most important factor that affects my therapy . . . Because no matter how good you are as a therapist and no matter how effective the intervention methods you know, if parents do not collaborate, you have no choice but to adjust yourself accordingly and try to find a solution (P5).

Participants also reported deciding not to administer some specific intervention methods with 'parents who are not motivated' (P3). They stated that they 'had to find

something else to do' (P11). When they faced such a situation, it also affected the SLTs' motivation and the method that they used. ' . . . if I do everything and parents are still not willing to do anything, then I have to do it myself in the therapy. I must find a different approach or a different intervention method that parents would find it easier to apply' (P9).

Families' attitudes were found to be an important factor for participants in choosing an intervention method and could have a counter-productive effect on children.

' . . . when I compare parents who follow our suggestions and repeat my actions at home with those parents who do not consider my suggestions, I can say that there is a big difference between these children in terms of improvement' (P4) and 'children progress quickly' (P2) if their parents are supportive and motivated.

The Changing Role of Parents in Therapy Sessions

All participants stated the importance of involving parents/caregivers when interviewed; observations and follow-up interviews showed that they involved parents in their therapy in different ways depending on the case. In some cases, they actively included parents in therapy; in some cases, passively. In some therapy, they did not want to include parents in the therapy process and in some cases, they used online consultation. All participants showed a diverse pattern in their practices depending on the case, parents' motivation and willingness.

Participants stated that they 'prefer to work as a team with parents in therapy' (P6) and they felt like it was their 'responsibility to train and make them active' (P6). They reported that 'it is the parents who make the difference, we just need to guide them and scaffold the necessary intervention decisions in accordance with their personal lives' (P5); 'if a child does not have a family member to join in my sessions, this changes everything, so parents' absence not a simple thing' (P1).

It was also reported by participants that there were some cases when involving parents in the session 'distracts' (P9) the SLTs' attention as 'they start chatting' (P8) with them or they 'tell their child "well done" or give them a high five or a kiss after every correct expression that a child can do' (P9) which 'makes the session counter-productive' (P9) so they involved parents into their sessions as 'passive observers' (P8, P9). Participants also stated that 'some kids are more attentive without parents' (P2) so that they preferred to meet and discuss the child's situation 'at the end of the session' (P3). Furthermore, in some cases, the SLTs used 'WhatsApp' (P7, P15), or 'email' (P14) to send parents 'photos and videos' (P15) from their therapy and expected parents to send them 'videos and photos about what they do at home' (P15).

Discussion

An essential element of the inductive approach is to explore whether the findings of a study confirm or contradict theories in a particular area. In this study, CCT (Standing, 2008) shows relevance and utility for SLT in Turkey. Data support the application of CCT to explain Turkish SLTs' DMP. The themes that emerged highlighted various factors, both internal and external, that influenced the SLTs' reasoning process.

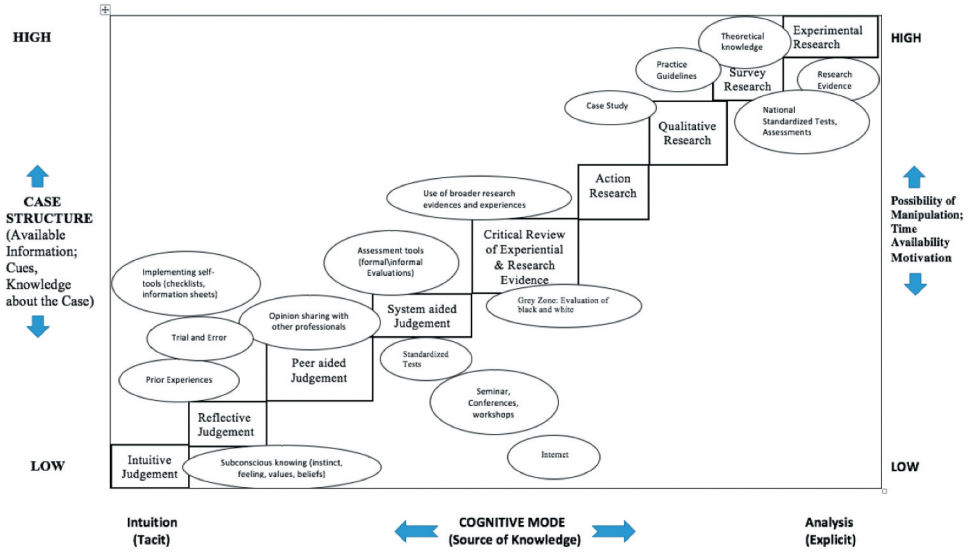

Figure 3. SLTs' Decision process within CCT.

Figure 3 shows the adaptation of Standing (2008) CCT for nursing to the SLT profession in Turkey. It indicates how the SLTs made decisions mainly positioned between CCT's five modes in their practice: intuitive judgment, reflective judgment, interdisciplinary collaboration, system-aided judgment and critical review of experiential evidence:

In CCT, 'intuitive judgment mode' represents the beliefs, ideas, and instincts of a professional. In this study, participant SLTs gave importance to their own 'gut' feelings; their motivation and parents' motivation had an impact on their decisions. Moreover, data suggest that the less information about a child's language development background, family's socioeconomic background, the environment in which the child is raised, or health issues that have cognitive or biological roots therapists have the more likely they are to rely on their intuition. They stated that a mixture of knowledge, theory and experience had built their instincts about how to approach and what to do to help a child's language problem. Similarly, Furlong et al. (2018) also underlined the importance of SLTs', parents' and the child's uniqueness, individual differences and their significant impact on designing individualised therapy procedures.

In regards to 'reflective judgment' SLTs' previous experiences and judgements also had an important impact on their therapy decisions. In this study, SLTs tended to stick with a certain method or an activity that worked beforehand for children with DLD. Using reflective judgment might be useful because SLTs' experience and past practices are valuable. Emanuel, Chiat, and Roy (2007) identified that SLTs used informal observations and valued their clinical expertise as they think the scientific evidence is not easy to use in clinical practice. However, as is evident in this study, using clinical experience and over-generalising it to other cases might be counter-productive. In the literature, this is called the 'cognitive illusion' (Kahneman & Tversky, 1982). When a method works, we tend to stick with it. Our minds become resistant to change with the result that intuitive, reflective judgment can cause highly structured and rigid practices, which could be prevented if

professionals were more aware of the sources of their decisions which are reflected in their practice.

Standing's (2008) 'peer-aided judgment mode' refers to SLTs who shared knowledge and benefitted from other professionals' expertise. Findings indicated that the SLTs preferred not to share their knowledge and practices with their colleagues. However, preferably they held informal, one-to-one discussions with other professionals who might be the child's teacher, psychologist or doctor. This finding is important as although they stated the value of collaborative practice and knowledge sharing with their colleagues, they were not doing this in practice. Jago and Radford (2017) found similar results in a study conducted in the UK. They explored effective collaborative practice for newly qualified SLTs to achieve the best outcomes for clients and identified a need for universities to link theory and practice in terms of improving collaborative practice. It therefore seems that teaching about interdisciplinary collaboration and the importance of opinion-sharing with colleagues could be one way to improve practice.

'System aided judgment mode' refers to using tests and tools to decide how to approach a case (Standing, 2008, p. 131). Data showed that in this study participants were using standardised tests which were originally developed in other countries. What we know from the literature is that standardised tests have significant limitations in terms of their sampling and standardisation process (Hegde & Pomaville, 2021). It is also underlined that these tests are 'inappropriate for many ethno-culturally diverse children on whom they are not standardised' (Hegde & Pomaville, 2021, p. 12).

In our study, participants were found to be using standardised tests that were adapted to the Turkish language; but they stated their hesitation about using these tests given that they were not originally developed for the Turkish context. Data showed that participants were only using these tests to support their decisions and as a reference to convince parents by showing them scientific assessments. Likewise, Pascoe and Norman (2011) also claimed that assessment and intervention should be prepared to meet the unique needs of a culture because 'vocabulary, stereotypical concepts, high-frequency words, body language and gestures differ between cultures and languages' (p.3) They also underlined that some intervention tools and strategies that commonly are used with one language might not be appropriate for another language. For this reason, rather than adapting a tool from one context to another, it is possible that developing novel, nationally-based, culturally and linguistically appropriate speech and language tools will increase SLTs confidence in using them (Carter et al., 2005).

'Critical review of experiential & research evidence mode' is the more scientific mode in decision-making where SLTs' make use of the reflective practice, intuition and scientific evidence in harmony (Flemming & Fenton, 2002). It is about mixing and using various methods. Hammond (1996) and Standing (2008) suggested that when this mode is adopted, professionals make use of all knowledge that comes from scientific to intuitive processes in a balanced way. This can lead to better quality decision-making and more outstanding quality of care (Hammond, 1996). In this study, SLTs showed that they used some of the modes together depending on the case. Although this study did not aim to examine which mode yields the most optimal method, it might be interesting to examine in future research, whether using the quasi-rationality mode leads to the best results in children.

Other research-based modes that can be seen in Figure 3 (action, qualitative, survey and experimental research) were not found to have a direct effect on SLTs' decisions in this study. However, institutional factors were likely to have an indirect impact. They are defined in the literature as functioning at an institutional level (Standing, 2010). For example, assessment of children's language development based on standardised tests which arise from action research, qualitative or survey research do not have a direct impact on SLTs' reasoning. However, they instead have an indirect impact on their decisions where they use these institutional-level tools, resources in 'system-aided judgment' mode in CCT.

Identifying different modes does not mean that they cannot be seen together in harmony; they have a close relationship. For example, when the SLTs evaluated a child's language development, they used 'reflective practices' that were partially supported by 'system-aided tools' such as standardised tests and clinical guidelines. This reinforces that SLTs' DMP is flexible and dynamic; both scientific and intuitive factors play an essential role in decision-making. Therefore, it appears that neither intuitive nor scientific decision-making is better than the other; SLTs' experience, instincts that arise from their practical knowledge might be as valuable as theoretical, formal knowledge. The important point is; if SLTs become aware of the sources of their decisions and their advantages and disadvantages, it is suggested that they could balance their thinking and practices, and could offer a better quality service.

This research showed participant SLTs' DMP to be a messy, complicated, individualistic process. Participants reported giving importance to using scientific knowledge and they expressed these as things they 'should do', such as using formal resources, applying child-centred approaches and preparing therapy that involves the family; in practice in some cases they were using informal resources, administering therapist-based approaches and not involving parents in the intervention process. Furlong et al. (2018) stated there is 'a need to rethink the paradigms of clinical practice and consider future models of service delivery that facilitate access to personalised, accessible, effective and efficient therapy' (p.1136). The findings of this study well resonate with the cognitive continuum theory (CCT) which suggests that professionals' reasoning is dynamic and continually changes on a continuum, rather than a static process which is completely, for instance, intuitive or analytical. These findings underline that the decision-making process of the SLT participants in this study drifted within this continuum according to various factors, such as the use of formal/informal resources, parents' motivation, and SLTs' experience or beliefs.

In this study, we have seen that the DMP of the Turkish participants shifted within a continuum. It will be important, in future studies, to examine whether these findings are replicated in other countries. Jones, Cartwright, Whitworth, and Cocks (2018) investigated the factors that influenced SLTs' treatment decisions in Australia and also concluded that SLTs consider a wide range of factors when making decisions. Researchers underlined the impact of client factors, clinician factors and service-based factors when making decisions (ibid). Studies from other countries also showed that both standardised and informal tools and resources (Fulcher-Rood, Castilla-Earls, & Higginbotham, 2018) and different types of family involvement models (Pappas, McLeod, McAllister, & McKinnon, 2008) were used by SLTs. Thus, CCT may offer a tool to investigate SLTs' DMP at an international level to see whether a similar variety of factors are identified.

It is posited that the increase in online EBP sources available to SLTs resulted in more exposure to research, case studies and blog posts about EBP. This exposure has significantly increased during the Covid-19 pandemic. For instance, Thome et al. (2020) found that ASHA resources are increasingly being accessed and found useful by SLTs. The pandemic also enabled SLTs to access free webinars, remote access to continuing education and professional development was possible. Such exposure to EBP practices and the increasing emphasis on the importance of EBP could balance SLTs' clinical reasoning from intuition to scientific thinking. The ASHA Evidence Maps (ASHA, n.d.) that were created to facilitate EBP can be extended based on CCT.

Future Research

In this study, an inductive thematic data-driven approach was used, whereas future studies could adopt a deductive approach, analysing SLTs' reasoning process by taking the CCT as a framework. This study focused on children who have DLD, but obviously decision-making is relevant to a broader range of professional areas. It would be of particular interest to use CCT to examine practice in other countries where the profession is more developed than currently in Turkey. Future studies could then inform changes to CCT to specifically adapt it to the speech and language therapy discipline.

Conclusion

Taking a data-driven approach to investigate SLT's DMP allowed the data to speak for itself, which resulted in the identification of relevant and explanatory theory, i.e. Standing (2008). The application of this model suggested an original framework for the examination of Turkish SLT's DMP, which could be applied in other contexts and this study might be used as a comparative study to see differences from other countries at an international level.

The findings that have been presented in this research are not intended to be definitive explanations of how Turkish SLTs make decisions in their day-to-day practices. However, the research has significant outcomes for both the individual and institutional level.

This study suggests that there is no one recipe that the therapists follow, even though the ingredients are the same. SLTs' decision-making process is quite complex; they have a dynamic decision-making process that is affected by different factors such as intuition or science, which can coexist together.

In order to overcome the gap between a theoretical understanding of decision-making process and practices of SLTs, enhancing awareness of the advantages and disadvantages of each decision-making factors and steps can be a useful resource. The CCT can be used in both educational and clinical settings as a learning tool and a practice guide for SLTs to integrate a broad range of evidence-based and reflective practices, with enhanced awareness of their reasoning process. Increased awareness can enhance decision-making and service delivery.

Acknowledgments

We would like to thank all the speech and language therapists who agreed to participate in this research.

Disclosure Statement

No potential conflict of interest was reported by the authors.

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