Attributes that help SLPs make the choice for treatment for pre-school age children who stutter: a cross-sectional study

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Abstract

Background: Little is known about the clinical decision process that speech-language pathologists make when they decide which treatment approach that they will deliver to the pre-school age child who stutters. In this study, we explored which attributes play a role in the complex process that precedes this clinical decision. We also investigated whether the stuttering guidelines that are put in place in the health system of The Netherlands compared to its neighboring country Belgium and the years of experience have an impact on this decision.

Methods & Procedures: This study used a cross-sectional design in which 36 speech-language pathologists, additionally trained in stuttering, completed a questionnaire. The speech-language pathologists spoke Dutch and resided in The Netherlands or in Belgium. They delivered more than one treatment approach to pre-school age children in their standard practice.

Outcomes & Results: About two thirds of the speech-language pathologists take (1) the child’s reactions to the stuttering (being frustrated by the stuttering, being sensitive to reactions of others towards the stuttering and being aware of the stuttering), (2) the child’s language (and speech) skills, (3) the child’s age, (4) the family’s lifestyle, (5) the parent’s intellectual capabilities and (6) the amount and quality of published research-based evidence mainly into consideration during their clinical decision-making process. Stuttering severity and time since onset are taken significantly more into consideration by experienced speech-language pathologists than by less experienced speech-language pathologists when deciding the treatment approach (both *U* = 90, *p* = .05). Besides these two attributes, no significant difference was found for the level of experience or whether speech-language pathologists are expected to follow the recommendations of a stuttering guideline.

Conclusions & Implications: This study was a first attempt to determine which child, family and evidence attributes speech-language pathologists take into consideration when deciding the treatment approach for a child and his family.

Introduction

Stuttering is a speech disorder that appears in 5% to 11% of children by the time they are 4 years old [e.g., 1, 2, 3]. As the World Health Organization defines [4] it: “Stuttering, also known as stammering, is a speech disorder in which the flow of speech is disrupted by involuntary repetitions and prolongations of sounds, syllables, words or phrases as well as involuntary silent pauses or blocks in which the person who stutters is unable to produce sounds”(F98.5).

It is known that most pre-school age children (about 65-80 %) who start to stutter recover without treatment within the first 4 years after onset [e.g., 5, 6, 7]. A period of (active) monitoring is therefore often the first step before initiating treatment. It is not possible to predict which child will recover from stuttering without intervention and which child won’t. Only about 6% of pre-school age children who stutter (PCWS) recover within the first 17 to 19.4 months after stuttering onset [6,8]. It is known that stuttering can be detrimental if it is not being treated timely. In large cohort studies in which also PCWS participated [9, 10], significantly more signs of difficulties in emotional, social and behavioural development and lower wellbeing were observed in PCWS than in their peers who do not stutter. Therefore, waiting too long for natural recovery is not the desired approach. Moreover, studies conducted to investigate the efficacy of stuttering treatment usually report successful outcome for PCWS, often in terms of fluency [e.g., 11, 12]. Natural recovery or recovery without intervention occurs in a large proportion of PCWS [e.g., 6] and may partially explain this successful outcome. The great neuroplasticity in pre-school age children probably explains both natural recovery and recovery through treatment in PCWS [13].

From the reviews of Baxter et al. [14] and Nye et al. [15], it became clear that research with PCWS has been conducted using different treatment approaches. The treatment approaches of nearly all studies with PCWS (18/20 studies, 90%) were labeled as behavior modification [14]. Baxter et al. [14] distinguish behavior modification studies further into those achieving the modification in the child (mainly in the speech) and those achieving the modification in the family (parent behavior and parent-child interaction). Blomgren [16] distinguishes early intervention approaches as either multifactorial treatment approaches, focusing on the environment of the child, or operant conditioning approaches, focusing on the speech of the child. This distinction is frequently used for treatment approaches with PCWS [e.g., 16, 17]. According to Blomgren [17], speech-language pathologists (SLPs) often combine both approaches or start with a treatment approach focusing on the environment and when no sufficient progress is noticeable, continue with a treatment approach focusing on the child’s speech.

From the systematic reviews [e.g., 14, 15, 17], it became clear that most studies with PCWS have been conducted with the Lidcombe Program. The Lidcombe Program is a behavioral program for PCWS that aims at achieving (nearly) zero stuttering by creating practice conversations during which a child speaks mostly without stuttering while receiving praise or acknowledgements. Until now, only one randomized controlled study has been conducted in which two different treatment approaches were compared, the Lidcombe Program and the RESTART-Demands-Capacities-Model (RESTART-DCM) program [11]. RESTART-DCM is a program for PCWS in which the demands towards communicative situations are lowered and the capacities of the child are strengthened in order to achieve a balance between the two which results in (near) zero stuttering. These two treatment approaches are the most frequently delivered approaches in The Netherlands. Both programs in the study have different treatment goals with different criteria. The results of the study must therefore carefully be interpreted, but in general, the results show a similar treatment success. As a result of the study of de Sonneville-Koedoot et al. [11], the revised Dutch stuttering guidelines suggest delivering one of these two treatment approaches as first option for PCWS [18].

Health care guidelines formulate recommendations for health care professionals about screening, assessment or treatment and are based on the available published research-based evidence. The research-based evidence is thoroughly appraised by a Guidelines Development Committee. Stuttering specialists in The Netherlands, i.e., SLPs with additional training in the assessment and treatment of stuttering, follow the recommendations outlined in the Dutch stuttering guidelines in their standard practice. Belgium is a neighboring country to The Netherlands with two main regions. People in the northern region speak Dutch as those in The Netherlands. SLPs in Belgium also deliver the Lidcombe Program and the RESTART-DCM program but less frequently than SLPs in The Netherlands. SLPs in Belgium are not expected to follow the stuttering guidelines' recommendations. From a survey we know that SLPs in Belgium additionally deliver (mainly) three other treatment approaches [19]: (1) Mini-KIDS, a treatment approach primarily aimed at desensitizing the child towards moments of stuttering and training the motor fluency loop[20], (2) the social-cognitive behavior therapy, a multifactorial program primarily aimed at preventing or limiting the development of stuttering and at decreasing the symptoms [21] and the (3) Parent-Child Interaction (PCI) program, which focuses on modification of the interaction style of parents, on family strategies to support the management of the stuttering and if necessary on speech management strategies with the child [22]. Besides these programs, Eggers and Van Eerdenbrugh [19] indicated that Belgian SLPs often prefer an eclectic approach. Other treatment approaches, such as the family-focused approach described by Yaruss et al. [23] or the Westmead Program [e.g., 24], are not frequently delivered in The Netherlands and in Belgium. A brief overview of these five treatment approaches follows.

The Lidcombe Program [e.g., 12, 25, 26] is a program that aims to achieve (near) zero levels of stuttering. Parents are intensely involved, but treatment is focused on the child. The child practices each day to speak without or with very limited stuttering for 10 to 15 minutes. This is called a practice session. Parents are shown how they can organize these practice sessions and how they can provide verbal contingencies. Verbal contingencies are a type of verbal feedback. They are given for the stutter-free speech during the daily practice conversations and occasionally during everyday conversations throughout the day. At a later time, if the child responds well to the verbal contingencies and parents give them correctly and adequately, parents also provide verbal contingencies for stuttering. The verbal contingencies for stuttering, however, are given significantly less frequently compared to verbal contingencies for stutter-free speech. In *Stage 1* of the program, (near) zero levels of stuttering are achieved; in *Stage 2* of the program, the (near) zero levels of stuttering are maintained. Parents are prepared to re-initiate treatment in case relapse occurs. Throughout the program, progress is visualized by severity ratings, assigned daily by the parents (after the necessary coaching) and weekly by the SLP.

The Lidcombe Program requires intensive parent involvement for treatment implementation. Not surprisingly, Goodhue et al. [27] mention parent-reported obstacles such as finding the time or forgetting to implement the daily practice conversations with the PCWS and having siblings around when having the practice conversations with the PCWS. They also mention parent-reported benefits of the Lidcombe Program, such as an increase in quality time with the child, an increase of knowledge and management of the stuttering and improved parenting skills. Parents also experience various emotions during the Lidcombe Program delivery, often related to the development of the stuttering, including empowerment versus responsibility, anxiety, guilt, distress and cycles of confidence. The implementation of the Lidcombe program is only successful if parents can make the time for daily practice conversations, are compliant or want to take the responsibility to implement treatment at home.

The Lidcombe Program in the clinic-based format has been investigated extensively for its efficacy [e.g., 11, 12, 28] and its effectiveness [e.g., 29]. It has been trialed in other formats than the clinic-based format such as group format [30], webcam format [31] and formats with less verbal contingencies than standard [e.g., 32]. Besides this, the implementation of the Lidcombe Program has been investigated with several foci such as the relationship between parent and PCWS [33], the speech and language of the parent and child [34], the phonological development of the child [35], Lidcombe Program experiences of parents [27, 36] and challenges of parents and SLPs when delivering or implementing the Lidcombe Program [37]. These studies were preceded by studies about validating the stuttering severity rating scale used in the Lidcombe Program [e.g., 38, 39].

The RESTART-DCM is a program that is based on the multifactorial Demands and Capacities Model [e.g., 40]. The aim of RESTART-DCM is to reduce the demands of the communicative situations for the child and to promote the capacities to meet the expectations of the communicative situations to achieve a favorable balance between the two with normally fluent speech as a result [41]. Positive changes in the motoric, linguistic, emotional and/or cognitive functioning of a PCWS and his environment tend to lead to (near) zero levels of stuttering. The (near) zero levels of stuttering are achieved by behavior change, emotion coping and skills training. The treatment approach always starts by addressing the environment of the child, mainly to reduce the demands that the environment of the child imposes to communicative situations in which the child is involved. For each child and family, those demands differ. The lowering of the demands is established by counseling and training of the parents, the child and the wider environment like siblings, teachers and significant others. This is mainly done by modelling slower, more relaxed speech with ample pauses between utterances, parallel talk, recasts, describing the child's emotions and adequate turn taking. This is a temporary intervention strategy as it sounds somewhat artificial to communicate in this way. By reducing the demands, the child often becomes more fluent. If necessary, when a child is still stuttering although demands have been successfully reduced, explicit training of relevant capacities of the child is added to the program while the reduced demands are maintained in the communicative situations. Again, only if the child is still stuttering, a third treatment phase will be initiated: enhancing fluency more directly. In this phase, the child will experience other ways of speaking (e.g., slower/quicker rate, with longer/shorter speech movements) and other ways of stuttering (with easy repetitions compared to prolongations, with an easy, slightly prolonged onset compared to a block). Based on these practice experiences, the child may more frequently use other, more effortless ways of speaking. It is never a goal to ask the child to speak this way during everyday situations.

Parents are intensively involved to implement the RESTART-DCM program in the daily home

environment. Therefore, similar parent-associated challenges may apply as mentioned for the Lidcombe Program. It is possible that SLPs find this treatment approach better suited for young PCWS or for PCWS who stutter mildly because the treatment focuses on the environment first. De Sonneville-Koedoot et al. [42] reported that, after the randomized controlled trial [11], six of 13 participating SLPs had a preference for RESTART-DCM for young PCWS, two for PCWS who stutter mildly and two for precocious PCWS.
A small study comparing RESTART-DCM with the Lidcombe Program [43] preceded the extensive randomized controlled trial [11]. In addition, de Sonneville-Koedoot et al. [44] analyzed the economical implications of both treatment approaches and investigated the experiences of delivering the two treatment approaches [42].

The social cognitive behavior therapy is based on the knowledge about the social-cognitive learning theory, behavior therapy, cognition and emotion [21]. The program assumes that stuttering is a complex disorder in which cause, triggers and consequences are often mixed up. Multiple aspects are involved in the onset, the development and the persistence of stuttering. The program aims to prevent or to minimize the development of stuttering and to reduce the stuttering symptoms. It also aims to develop increased competence for speaking and a realistic and positive feeling about speaking in the child. SLPs teach the child skills to deal with diverse communicative situations and to handle diverse listener reactions. For each behavior, a specific aim is formulated with criteria to facilitate evaluation with baseline (e.g., establishing eye contact during the conversation with a criterion % eye contact, desensitizing parents for the stuttering of their child, increasing the competences to deal with teasing and bullying). There is a *treatment phase* and a *follow-up phase*. The treatment phase runs through five modules: (1) conditioning of the speaking situation, to turn around speaking activities into positive experiences and to help the child with techniques that are modelled by the parent, (2) cognitive restructuring focused on emotions, to help children report and vent about emotions, (3) cognitive restructuring focused on cognitions, to turn around negative thoughts by helping the child formulate positive thoughts, (4) emotional restructuring, to create an impact on certain emotions that trigger certain stuttering behavior, and (5) skill training, to use speech and language in different ways in games and functionally for example to ask something, to get something or to explain something. When the goals of the modules are achieved, children move to the follow-up phase. During the follow-up phase, the left-over disfluencies are evaluated for normality. If stuttering persists, the severity is rated, and the existing aspects are evaluated whether they have a persisting or triggering effect on the stuttering. The social cognitive behavior therapy also includes a parent program, for which the SLP organizes ten parent group meetings spread over several months in which they receive information about stuttering and meet other parents.

Because the social cognitive behavior therapy focuses on dealing with emotional and cognitive reactions towards the stuttering, it is possible that SLPs prefer this treatment approach especially for PCWS who react emotionally or negatively towards their stuttering. This treatment approach is investigated as a topic of a doctoral dissertation and was only published in a book, written in Dutch [21].

Mini-KIDS is a program that is based on the techniques of stuttering modification [45]. Waelkens [20], a Belgian stuttering specialist, developed and structured the program for PCWS, based on her long-term practice experience. The program consists of three or four stages, depending on the age and progress of the child. The stages consequently follow each other. In stage 1, *Desensitisation*, SLPs use pseudo-stuttering to desensitize the child and parent for the child's stuttering. Depending on the tolerance of parent and child towards pseudo-stuttering, this stage can take more or less time. The goal of this stage is that the child is not afraid to stutter. Stage 2, *Identification*, is only included in the program for 4-6-year old children (not for younger children). The child uses pseudo-stuttering and describes the type of stuttering (e. g. "long word" = prolongation, "frog word" = repetition, "stuck word" = block) and the quality (e. g. "hard" = for tense sounds, "soft" for relaxed sounds). Parents also use pseudo-stuttering in their speech when talking to the child. Parents and child have daily practice sessions at home. Stage 3, *Modification*, is only necessary for children who still have moments of stuttering with tense prolongations or blocks. The child will morph the tense moment of stuttering into a relax moment of stuttering. Parents and child have daily practice sessions at home or they practise in natural conversations. In stage 4, *Generalisation*, there are two scenarios: (1) The child continues to use the modification techniques if necessary and wanted in other than practice situations. The child does this with an internal locus of control; that is, he wants to use the technique, he thinks about how to use the technique and he decides when to use the technique; (2) The child does not need the technique as the moments of stuttering have disappeared. In both cases, the levels of stuttering are (near) zero. Parents know that relapse can occur and know what to do in case it does. When the SLP concludes that the stuttering has reached (near) zero levels of stuttering, the *Follow-up phase* commences in which the program's defined (near) zero levels of stuttering are maintained.

One stage of the Mini-KIDS program requires sufficient meta-cognitive skills of a child to understand the features of a stuttering moment (such as "frog" word, "long" word). The Mini-KIDS program also focuses on dealing with the left-over stuttering at the end of treatment. It is possible that SLPs consider Mini-KIDS better suited for older PCWS, PCWS who stutter more severely or PCWS with a family member who stutters.

The Mini-KIDS program is described in a book, written in Dutch [20]. No evidence about the treatment outcome or implementation of the Mini-KIDS program is yet available.

The Palin PCI-approach [22] was developed at the Michael Palin Centre in London. Similar to the RESTART-DCM-program, the Palin PCI-approach is based on the premise that stuttering is a heterogeneous, multifactorial condition and that linguistic, physiological, environmental and emotional attributes influence its onset and course [22]. It focuses on adjusting the interaction between parents and children to establish (near) zero levels of stutter-free speech. Both parents are required to attend the clinic-based sessions if possible. SLPs provide interaction strategies and family strategies during six clinic-based sessions. Interaction strategies include reducing parental speech rate, following the child's lead in play and using simplified language. Examples of family strategies are assisting in managing anxiety and children's emotions and setting boundaries and routines. If necessary, strategies focusing on the child's speech, are implemented as well. These strategies include using easy onset, turn-taking and increasing the frequency and duration of pauses. Parents and children are asked to have *Special Times* at home to practice these strategies. Video recordings of the Special Times facilitate identification of correct implementation of the strategies.

Parents implement the treatment at home with the child. Therefore, parent challenges similar as for the RESTART-DCM program and the Lidcombe Program and a preference of SLPs to deliver the Palin-PCI approach for certain PCWS similar as for the RESTART-DCM program is expected.

The Palin PCI-approach has been investigated in a randomized study [22] and a longitudinal study [46]. These studies, however, were always small. A recent experimental study [47] investigated the Palin PCI-approach, the Lidcombe Program and a combined approach indicating that the Lidcombe Program and the combined approach resulted in more fluent speech. Millard and Davis [48] also assessed the psychometric properties of the Palin Parent Rating Scales.

These five treatment approaches have several features in common. The programs (1) intensely involve parents in treatment; (2) require parents to attend the session in the clinic with the PCWS; (3) schedule visits during treatment at a weekly basis; (4) include a treatment and a follow-up phase (except for the Palin PCI-approach); (5) include practice moments at home focused at giving the child the opportunity to experience speaking as a positive experience, with parents organizing them and (6) aim for reduced stuttering as a primary or secondary goal.

The treatment approaches differ in (1) their focus during treatment; (2) how they involve the parents and the PCWS; (3) their primary goals and (4) the starting point for the follow-up phase. In some treatment approaches, achieving occasional stuttering is the starting criterion for the follow-up phase, including mild stuttering moments without tension (e.g., the Mini-KIDS program and the RESTART-DCM-program). In other treatment approaches, achieving no or nearly no stuttering is the aim (e.g. The Lidcombe Program), knowing that this is not feasible for all PCWS. It is likely that because of these differences, SLPs prefer one approach above another for certain PCWS and families.

Not all treatment approaches are evidence-based and the quality (strength) of available evidence differs. Evidence-based practice is based on three pillars [49] (Figure 1). Dollaghan [50] presented the *E^3BP concept* and explained evidence-based practice as: “The conscientious, explicit, and judicious integration of (1) best available external evidence from systematic research, (2) best available evidence internal to clinical practice, and (3) best available evidence concerning the preferences of a fully informed patient” (p. 2). Others refer to the three types of evidence from the E^3BP concept as research evidence, practice evidence and patient evidence [e.g., 51].

In a study of McCurtin and Carter [51], 48 SLPs mentioned that practice evidence and research evidence usually support their treatment decisions, whereas patient evidence hardly does. McCurtin and Carter concluded that scientific thinking is a component of decision-making, but it does “not necessarily reflect evidence-based practice as typically constructed” (p. 1148). This may explain why SLPs in Belgium deliver more than the two treatment approaches for the treatment of PCWS [19], despite the recommendations outlined in the Dutch guidelines which are based on research evidence, and why SLPs tend to prefer one program above another. It would be interesting to know if SLPs who are expected to follow the recommendations of the stuttering guidelines consider different child and family attributes to make the clinical decision on the choice of treatment.

The decision when a PCWS needs treatment and when to start it, is preceded by a clinical reasoning process which is out of scope of this study. Once decided that treatment needs to be started, choosing to deliver one treatment approach and not another for the PCWS is the scope of this study. What underpins the SLPs’ clinical reasoning in making this specific decision, however, is unknown. SLPs probably consider different child and family attributes to decide which treatment approach they will start with the PCWS and the family. From extensive research conducted on the delivery of the Lidcombe Program it has become clear that certain child and family attributes may have an impact on treatment duration or may be more challenging for treatment implementation than others. For example, time since onset and pre-treatment stuttering severity were reported to have an impact on the duration of treatment with the Lidcombe Program [52]. The impact of time since onset for treatment duration was not confirmed in later studies [e.g., 53] but the impact of pre-treatment stuttering severity was for the delivery of other stuttering treatments (not specified) for PCWS [e.g., 54] and of the Lidcombe Program [53]. Druker et al. also mention Attention Deficit Hyperactivity Disorder as a child attribute that often prolongs treatment time. None of these, however, are conclusive to predict treatment duration or ease of treatment implementation for a PCWS; that is, they do not apply to all PCWS. Goodhue et al.[27] and Van Eerdenbrugh et al. [37] reported child and family challenges such as PCWS with a (twin) sibling who stutters, perfectionist or sensitive PCWS, a family's busy lifestyle, parents with a learning disorder, weaker intellectual capabilities, feelings of anxiety, a depression, a troublesome relationship with their PCWS, a parent who is stuttering or a divorced family situation. It is important to realize however, that Van Eerdenbrugh et al. reported them as challenges, not as obstacles or problems. That is, if treatment is individualized to the PCWS and family, they can be overcome. They are associated with the Lidcombe Program, but they may as well apply to other treatment approaches. Recently, Park et al. [55] found that parent impulsivity was related to increased drop-out when delivering the Lidcombe Program. Furthermore, they found that higher CELF-core scores were associated with better treatment outcome at 6 to 9 months and easier temperament with better treatment outcome at 12 to 18 months. These findings, however, were statistically, not clinically, significant. That is, they only applied to a small amount of treatment outcome (to 3% and 4%, respectively).

SLPs in The Netherlands and in Belgium make a clinical decision about which treatment approach to start. This clinical decision process involves taking child and family attributes into account. In general, clinical decision-making is a complex process that generally involves two types of processing information. These two types of processing are described as the dual process theory [56]. The first type of processing uses intuition. The retrieval of knowledge through this type of processing is fast, frugal and effortless [57]. It assumes that the brain has constructed mental maps and patterns, a sort of “internalised tacit guidelines” (p. 4) through repetition and rehearsal. The second type uses careful and rational evaluation of the information. This process requires effort and is time consuming. It is generally known that more experienced professionals mainly use the first type of processing, whereas less experienced professionals rather use the second. The study of Dudding and Pfeiffer [58] shows that speech-language pathology students accelerate their clinical reasoning process after more extensive practice. Ginsberg et al. [59] compared the diagnostic reasoning process for two case studies of 15 SLPs with more than 5 years of experience with SLPs just entering the profession. The two groups of SLPs used a different process to take a decision. From these studies, we can expect that the findings of Bate et al. [57] also apply to SLPs. So, it can be questioned if SLPs who just entered the profession consider other child or family attributes than more experienced SLPs.

In this study, we aimed at improving our insight in the attributes that SLPs who deliver more than one treatment approach for PCWS take into consideration when choosing a specific treatment approach for a child. To understand which attributes are taken into consideration when choosing a treatment approach and which attributes are decisive to choose for a specific treatment approach, it was necessary to only include the SLPs who deliver more than one treatment approach. The research questions of this study were:

(1) Which attributes are most frequently taken into consideration by SLPs when deciding which treatment approach to deliver to a PCWS?

(2) Do experience and following the recommendations of the Dutch stuttering guidelines have an impact on which attributes SLPs take into consideration?

Materials and methods

Participants

In this cross-sectional study, the participants were 36 SLPs specialized in stuttering (response rate of 37.5%, see figure 1). Inclusion criteria were: (1) being trained in one or more stuttering programs for PCWS, (2) residing and working in The Netherlands or in Belgium and (3) treating PCWS. Nineteen SLPs delivered only one treatment approach and were therefore excluded from the analysis. Table 1 shows the characteristics of the SLPs. Two SLPs were male. More SLPs from The Netherlands (n = 25) than from the Dutch-speaking region of Belgium (*n* = 11) completed the questionnaire.

FIGURE 1 about here

The SLPs from The Netherlands were significantly older (50.32 ± 10.40) than the SLPs from Belgium (32.18 ± 10.57), $t(34) = 4.80$, $p < .01$. Not surprisingly, they also have significantly more years of experience in treating PCWS (19.32 ± 10.91) than the SLPs from Belgium (8.82 ± 11.07), $t(34)= 2.65$, $p = .012$. SLPs from The Netherlands treated more PCWS per week but the difference is not statistically significant (9.44 ± 7.55 for SLPs from The Netherlands and 5.27 ± 3.29 for SLPs from Belgium, $t(34)= 1.75$, $p = .09$). The number of trained SLPs, the country of residence and the treatment approaches they deliver is shown in Table 1.

TABLE 1 about here

Some of these SLPs mentioned that they also use other treatment approaches for PCWS such as a combination of programs (*n* = 1), relaxation treatment (*n* = 1), play therapy (*n* = 1), parent coaching (*n* = 2) and eclectic work (*n* = 1). Because of the incidental reporting, they were not included in the analysis.

Most SLPs reported deciding in more than one way which treatment approach they will deliver to the PCWS and the family. About two thirds (*n* = 25; 69.4%) reported to decide together with the parents. Almost half of the SLPs (*n* = 16; 43.2%) reported to parents they have a preference for one treatment approach depending on the situation. A minority (*n* = 5; 13.9%) reported that they have a preference for one treatment approach based on their own skills. Three (8.3%) reported that they choose for the parents. Three SLPs (8.3%) reported giving the choice to the parents.

Procedure

Recruitment

SLPs, additionally trained in stuttering, were contacted via email by the authors of this study. Also, a message appeared in the newsletter of the Dutch Association of Logopedics and Phoniatrics (NVLF) and the Dutch Association of SLPs (NVST). Recruitment started in December 2019 and was finalized in July 2020.

The SLPs gave their consent to the study at the beginning of the questionnaire.

Construction of the questionnaire

The questionnaire consisted of a general part with questions about the SLP's age, gender, case load, location of stuttering practice, training and habits related to who is involved in the decision-making process.

The child and family attributes that were questioned were age, gender, language skills, ability to sit still, ability to follow instructions, awareness of the stuttering, frustration by the stuttering, stuttering severity, time since onset, excessive speech rate, extreme sensitivity to the reactions of others to the stuttering, level of perfectionism, bilingualism, experiences with bullying, concomitant speech- or language disorders, Autism Spectrum Disorder, Attentional Deficit Hyperactivity Disorder, behavior problems, easy distraction, part of a twin (both PCWS) and sibling(s) who stutters. Family attributes were lifestyle of a family, ability to steer a conversation with the PCWS, playing habits, stuttering of the parent who is implementing the treatment, stuttering of someone in the family, learning disorder, weaker intellectual capabilities, feelings of anxiety, depression, troublesome relationship with the PCWS and a divorced family situation. These attributes were mentioned either as challenges [37], as obstacles or benefits [27], or were reported in association with stuttering recovery [e.g., 60, 61, 62], treatment duration or treatment outcome [e.g., 52, 53, 54, 55] or drop-out [e.g., 54]. When relevant, a secondary question followed about how the attribute has an impact on the decision (e.g., “if a child is 2-3 years old, you rather decide to initiate ...”; “if a child is 4-5 years old, ...”).

Finally, a question about whether the amount and quality of research-based scientific evidence has an impact on the treatment choice, and two questions giving the opportunity to add additional information about the factors or general information concluded the questionnaire.

The questionnaire was provided in Qualtrics, a software program for electronic questionnaires. Data were transferred from Qualtrics to SPSS.

The STROBE checklist was used to write the report of the study.

Analysis

Descriptive statistics were used to determine which attributes are most frequently taken into account when SLPs decide which treatment approach they will deliver. To determine whether years of experience and having recommendations from stuttering guidelines that need to be followed have an impact on deciding the treatment approach per attribute, Mann Whitney tests were performed. SLPs were grouped into the experienced group if they had ≥ 5 years of experience (n = 26); SLPs with < 5 years (n = 10) in the less experienced group.

Results

Table 2 presents an overview of the child, family and evidence attributes that SLPs reported that can have an impact on the choice for treatment.

TABLE 2 about here

Stuttering severity and time since onset are taken significantly more into account by experienced SLPs than by less experienced SLPs when deciding the treatment approach (both U = 90, p = .05). Of the 26 experienced SLPs, eight take these two attributes into consideration when making the decision versus none of the 10 less experienced SLPs. There is no difference in how SLPs from The Netherlands (who have stuttering guidelines put in place) and from Belgium take any of the attributes into account when deciding the treatment approach (*p* > .05 for all attributes).

Table 3 presents what SLPs tend to prefer as treatment option for the most frequently reported attributes. SLPs did not always report that they have a treatment preference for each attribute and often did not specify how they take the attribute into account.

TABLE 3 about here

The majority of SLPs who are trained in the RESTART-DCM program prefer this program for PCWS who are sensitive to reactions of others, who are perfectionist or who have weak language skills. Nearly half of them prefer the RESTART-DCM program for young children. Also, about one third of the SLPs trained in the Palin-PCI approach prefer this program for younger children. The majority of the SLPs who are trained in the social cognitive behavior therapy prefer to deliver this program to PCWS who are frustrated by their stuttering or to PCWS with concomitant speech or language disorders. Nearly half of them prefer the social cognitive behavior therapy for perfectionist PCWS. About one third of the SLPs trained in the Mini-KIDS program and about one fifth of the SLPs trained in the Lidcombe Program prefer these programs for children who are aware of their stuttering. Nearly half of the SLPs trained in the RESTART-DCM program prefer to deliver this program to families with a busy lifestyle, to parents who have a troublesome relationship with their PCWS or parents with lower IQ. Nearly a third of the SLPs who are trained in the Mini-KIDS program prefer this program for parents with lower IQ. Other than these, there is a lot of variation in the responses and many SLPs did not indicate to have a preference for treatment approach for most of the attributes.

Discussion

This study tried to gain insight in how SLPs, specialized in stuttering, make decisions when they start treatment with a PCWS and their family. The attributes that are most frequently taken into consideration are whether children are sensitive to reactions of others towards their stuttering (72.2%) or feeling frustrated about their stuttering (58.3%). It is known that PCWS can experience varied feelings about their stuttering [63, 64]. The majority (77.4%) of the SLPs that are trained in the RESTART-DCM program prefers to deliver this program to PCWS who are sensitive to reactions of others. The majority of the SLPs that are trained in the social cognitive behavior therapy (60%) prefers to deliver this program to PCWS who are frustrated towards their stuttering over other treatment programs. It is possible that SLPs have this preference because a child is not directly treated for stuttering in these programs. Or, being frustrated may correspond with certain temperament features such as negative reactivity. It could be possible that some SLPs think that a direct treatment approach is not the most suitable treatment approach for such children if there are other treatment approaches available to them.

Temperamental aspects, mainly emotional reactivity and self-regulation, get increasingly more attention in research with PCWS the past decade [e.g., 65, 66, 67, 68]. Jones et al. [67] claim that they could have an impact on long-term treatment results. This increased research attention and consequent findings may be reflected in the daily practice of the SLPs who responded to the questionnaire in this study.

Furthermore, most SLPs take concomitant language or speech problems (66.7%) and language skills (63.9%) into consideration when choosing a treatment approach for the PCWS. Again, about half of the SLPs trained in the RESTART-DCM program have a preference for this program for PCWS with weak language skills and about half of the SLPs trained in the social cognitive behavior therapy prefer this program for children with concomitant speech and language disorders. It is possible that SLPs believe it a benefit if language demands in the environment are lowered for children with weak language skills. Research, however, shows that language development does not stagnate when a direct treatment program such as the Lidcombe Program is implemented, on the contrary [e.g., 34, 69]. Many PCWS present with concomitant speech or language difficulties [e.g., 70, 71]. Already in a practical sense, SLPs need to take the existing speech and language skills into consideration to decide whether they treat both disorders in the PCWS concurrently (blended approach), sequentially (cyclic) or in another way [e.g., 70]. Research on differences between language and speech skills in PCWS and in pre-school age children who do not stutter generate, however, mixed results: in some studies group differences were found for phonology skills [72] and language skills [73]. In other studies, no differences were found for articulation skills [73, 74,75] or phonology skills [72, 76, 77, 78, 79, 80].

Most SLPs take age, awareness of stuttering and level of perfectionism (all 55.6%) into consideration when making a choice for treatment. Again, about half of the SLPs trained in the RESTART-DCM program and one third of the SLPs trained in the Palin-PCI approach would deliver the RESTART-DCM program or the Palin-PCI approach to younger children. Possibly, SLPs prefer treatment that do not directly involve the child for younger PCWS. On the other hand, as many SLPs would deliver one of the programs focusing on the speech of the child (the Lidcombe Program or the Mini-KIDS program) similarly to younger as to older PCWS.

The same indecisive preference was found for the attribute busy lifestyle for all treatment programs except for the RESTART-DCM program. Most SLPs (63.9%) take the attribute of having a busy family life into account when choosing the treatment approach. The impact of this attribute on the implementation of the treatment has been reported for the Lidcombe Program [e.g., 27, 37]. Given the active involvement of parents that is required in the treatment of the PCWS, regardless of the choice of treatment approach, it is not surprising that family attributes such as lower intelligence or a disturbed parent-child relationship are attributes that are also taken into account by many SLPs (63.9% and 55.6%) when deciding the stuttering treatment approach for the PCWS. Van Eerdenbrugh et al. [37] reported them anecdotally as potential challenges that can be overcome by appropriate individualization of certain treatment components of the Lidcombe Program such as practice sessions.

SLPs did not report a preference for several attributes even though they take them into account for their decision. This indicates that they may not have a preference for a treatment approach but that they individualize a treatment approaches towards certain attributes. Also, SLPs frequently did not have one preference but would deliver more than one treatment approach to a PCWS or a family with a specific attribute.

About two-thirds of the SLPs (69.4%) take the amount and quality of available published research-based evidence into consideration when deciding which treatment approach that they will deliver to the PCWS and the family. Not all SLPs support their choice with existing research evidence even though the Dutch stuttering guidelines [18] based their recommendations on the existing research evidence. Just like McCurtin and Carter [51] concluded, the SLPs do not only support their clinical decision-making process with research evidence. That may be the explanation for the variety of treatment approaches that SLPs from this study deliver. It also explains why there is no significant difference between the SLPs from The Netherlands, who are expected to follow the recommendations formulated by the Dutch stuttering guidelines, and the SLPs from Belgium, who are not.

The more experienced SLPs take severity and time since onset into consideration when deciding which treatment approach that they will deliver to the PCWS and their family. Kingston et al. [52] reported longer treatment time with the Lidcombe Program for PCWS more severely and treatment results that were achieved more quickly for children with longer time since onset (which were typically the older PCWS). In later publications, this latter finding was not replicated [e.g., 53]. De Sonneville et al. [11] also noticed a weak interaction effect between these attributes in both the RESTART-DCM Program and the Lidcombe Program. These attributes, however, were only taken into consideration by about a fifth of the SLPs (22.2%). This difference in reasoning may be explained by the different decision-making systems SLPs use depending on the amount of experience they have [57]. It is also possible that the arbitrary cut-off of five years of experience was not accurate to see the difference between experienced and less experienced SLPs. But then, also the number of children treated per week have an impact on the level of experience built in the treatment of PCWS.

Even though this study is the first to list possible child, family and evidence attributes that may have an impact on the clinical decision of which a treatment approach is chosen to deliver to a PCWS and his family, it has important limitations. The main limitation was that many SLPs did not respond the entire questionnaire. Probably, the questionnaire was too elaborate. Also, this study only provided a global insight in a complex matter. Qualitative interviews could give more information about the clinical reasoning of the SLPs. Also, half of the SLPs reported that they deliver the treatment approaches the same way as they are described in the manuals (*n* = 18, 50%). The other half did not, with the most frequently reported reason that they choose components of the treatment approaches to tailor the individual needs of the PCWS. The non-adherence to the treatment manuals of SLPs was accepted as this study focused on which treatment approach SLPs choose for a certain PCWS and his family and not on treatment fidelity. In future studies, it could be an inclusion criterion to rule out SLPs who select certain components or combine treatment approaches while claiming to deliver a specific treatment approach.

This study should be replicated in other countries to compare whether the same child, family and evidence attributes are taken into consideration by SLPs when choosing how to treat the PCWS because it is possible that the reasoning processes are influenced by local current practice. Knowing which attributes are more frequently taken into account, it is necessary to establish its impact on treatment outcome for the different treatment approaches in prospective, clinical trials. Knowing what suits a specific PCWS or family best may significantly improve clinical service delivery.

Conclusions

The main attributes that SLP take into consideration when deciding the treatment approach for a PCWS are (1) the child’s dealing with the stuttering (being frustrated by the stuttering, being sensitive to reactions of others towards the stuttering and being aware of the stuttering), (2) the child’s language (and speech) skills, (3) the child’s age, (4) the family’s lifestyle, (5) the parent’s intellectual capabilities and (6) the available evidence. Experienced

SLPs more frequently take stuttering severity and time since onset into account when deciding the treatment approach. Besides these two attributes, no significant difference was found for the level of experience or for having to follow recommendations of a stuttering guideline. It is now necessary to evaluate in future research whether these child, family and evidence attributes indicate which treatment approaches suit certain PCWS and families better and are more effective, or whether treatment approaches can sufficiently be individualized to tailor specific needs of a PCWS and his family.

Statements

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Statement of ethics

This study was approved by the Scientific Advisory Board of Thomas More University of Applied Sciences (Department of Speech-Language Pathology).

Conflict of Interest statement

The authors whose names are listed immediately below certify that they have no affiliations with or involvement in any organization or entity with any financial interest or non-financial interests in the subject matter or materials discussed in this manuscript.

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Author contributions

All authors contributed to the design, interpretation of data for the work, revising it critically for important intellectual content, final approval of the version to be published. All authors agreed to be accountable for all aspects of the work.

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