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Research Article

The Palin Parent Rating Scales: Parents' Perspectives of Childhood Stuttering and Its Impact

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Purpose: The goal of this study is to explore the psychometric properties of the Parent Rating Scales–V1 (S. K. Millard, S. Edwards, & F. M. Cook, 2009), an assessment tool for parents of children who stutter, and to refine the measure accordingly.
Method: We included 259 scales completed prior to therapy. An exploratory factor analysis determined the test constructs and identified the items that had greatest loadings on those factors. Items that did not load on the factors were removed, and normative scores calculated.
Results: The resulting 19-item questionnaire measures three factors: (a) the impact of stuttering on the child; (b) the severity of stuttering and its impact on the parents; and (c) the parents' knowledge about stuttering and confidence in managing it. Reliability was demonstrated, norms established, and an automated online version constructed.
Conclusions: The Palin Parent Rating Scale is a valid and reliable tool, providing a method of exploring parents' perceptions of stuttering, the impact it has on the child and themselves, and the parents' knowledge of and confidence in managing the stuttering. This is an important addition to the existing range of assessments that may be used to evaluate stuttering in children up to age 14;6 (years;months) and allows the wider targets of parent-led therapy programs to be evaluated.

In order to be able to provide treatment for people who stutter, including children who stutter (CWS), Conture (2001) has argued that therapists must understand "the communicative, psychological, physiological, social, etc. whole" (p. 5) of the person and how he or she interacts with the world and the stuttering. The World Health Organization's International Classification of Functioning, Disability, and Health is explicit about the need to consider the individual's experience of any condition and the impact of any disorder (World Health Organization, 2014) and is a framework that has been applied to stuttering (Yaruss, 2010; Yaruss, Pelczarski, & Quesal, 2010). Within this framework, it is the consequence of the impairment and the extent to which it limits activity and the ability to participate that help determine the degree of disability. In the case of stuttering, there is not necessarily a direct relationship between the frequency or severity of the stuttering (the impairment) and the ability to communicate (activity) or take part in life activities (participation). But "to fully understand, evaluate, and treat stuttering, clinicians must become aware of all of the consequences that may result from disrupted speech" (Yaruss, 2010, p. 264) and consider the child's ability to communicate and participate across a range of contexts within and beyond the clinical environment. Further, the consequences of the disrupted speech extend beyond the child, with emotional and behavioral consequences for parents (Plexico & Burrus, 2012) and siblings (Beilby, Byrnes, & Young, 2012).

There is evidence that stuttering affects the ability to communicate and to participate in life situations from an early age. More than half of preschool children are aware of their stuttering and develop negative perceptions about their ability to communicate, which becomes increasingly apparent as age increases (Boey et al., 2009; Vanryckeghem, Brutten, & Hernandez, 2005). Langevin, Packman, and Onslow (2009) have described the interactions of individual preschool children while playing with their peers, observing a number of behaviors adopted by the CWS as a consequence of stuttering. These included increased use of gesture to convey a message, aborting the attempt to convey a message, and withdrawal from play. These avoidance behaviors, coupled with the negative reactions of some peers, led Langevin et al. to conclude that some CWS exhibit reduced communicative competence and limited verbal participation.

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By school age, children are generally aware that they stutter (Boey et al., 2009), have insight into the features of stuttering that characterize their speech, and can describe how the stuttering affects their ability to communicate and to participate in day-to-day situations. Compared with their peers who do not stutter, school-age CWS are more likely to be bullied and to be viewed negatively by their peers (Davis, Howell, & Cooke, 2002), which might help account for the evidence that stuttering can have an impact not just on functioning but on the child's self-esteem, confidence, and affective state (Langevin, Packman, & Onslow, 2010). However, the impact of the stuttering behavior and how it is experienced is not the same for all; it is influenced by a multitude of internal and external variables, including the child's physiology, environment, temperament, and linguistic skills (Conture, 2001; Kelman & Nicholas, 2008).

Interventions therefore need to take into account not only the impairment itself but also the limitations to activity and participation and the disadvantages resulting from stuttering (Yaruss, 2010; Yaruss, Pelczarski, & Quesal, 2010). Yaruss, Coleman, and Quesal (2012), in a letter formally supported by over 100 experts in the field, argued that therapy for school-age CWS should include a number of broader goals to reduce the overall adverse impact on the child's life. These may include minimizing avoidance, improving communication skills, increasing self-confidence, managing bullying effectively, increasing acceptance of stammering, and acknowledging potentially negative emotions that may be associated with stammering.

Therefore, for both preschool- and school-age CWS, therapy needs to address the cognitive and affective aspects of the disorder in addition to the stuttering behaviors, and this therapy should be individualized according to the child's specific needs. To inform these clinical decisions and to evaluate progress over time, researchers and clinicians require a range of assessments which reflect the nature and aims of the therapy itself (Millard, Edwards, & Cook, 2009; Yaruss et al., 2012).

The Impact of Stuttering on Parents

Not only the child but also the parents may be affected by a child's stuttering. Parents describe many emotions associated with having a child who stutters. Some feel anxious, worried, frustrated, helpless, overwhelmed, or guilty affective reactions, which are typical of parents who have a child with difficulties (Douglas, 2005; Kelman & Nicholas, 2008; Langevin et al., 2010; Plexico & Burrus, 2012). There is evidence that having a child with developmental disorders that include communication disorders can have an impact on parental well-being (Mugno, Ruta, D'Arrigo, & Mazzone, 2007). Although there has not been a study evaluating quality of life in parents of CWS, it is clear that having a child who stutters can be a challenging experience that requires increased attention, effort, and patience (Plexico & Burrus, 2012). Parents can find the disorder difficult to cope with because of its high variability, persistent nature, and increasing complexity over time.

Parents worry about their children's future and fear that a stutter will affect social functioning and prevent the child from reaching his or her potential (Plexico & Burrus, 2012). The presence of parental anxiety has a number of clinical implications. First, heightened parental anxiety may indicate a more severe problem than is evident in the clinic. Second, the parental anxiety may be transferred or apparent to the child, and this may have long-term implications for the child's reaction to the stuttering and how the problem develops over time (Biggart, Cook, & Fry, 2007; Douglas, 2005). Third, parents' behavior may be affected by the stuttering (Kloth, Kraaimaat, Janssen, & Brutten, 1999). Parents want to support their children and want what is best for them (Kelman & Nicholas, 2008; Plexico & Burrus, 2012). This, combined with the affective reactions to the stutter, can lead parents to respond to and interact differently with the child who is stuttering (Kelman & Nicholas, 2008; Kloth, Janssen, Kraaimaat, & Brutten, 1998; Langevin et al., 2010; Plexico & Burrus, 2012). And last, there is evidence from allied fields which shows that having a child who is experiencing difficulties can have a negative impact on parents' confidence and self-esteem (Douglas, 2005: Schmidt, 2005) and that the impact of having a child with additional needs can differ between parents and between mothers and fathers (Mugno et al., 2007). Parents often express uncertainty about their attempts to support their child, and concern about their lack of knowledge about stuttering, as well as expressing dissatisfaction with therapy when they have not been involved in the therapy process (Plexico & Burrus, 2012). For some children who express dissatisfaction with parental attempts to support them during moments of stuttering, this can have negative repercussions for the parent–child relationship (Lau, Beilby, Byrnes, & Hennessey, 2012). For these reasons, Plexico and Burrus (2012) have argued that "addressing the needs and concerns of the parents is as critical as addressing the needs of the child" (p. 286). When therapies attempt to do this, these variables should be measured as part of the evaluation process.

Measuring Stuttering and the Impact of Stuttering in Childhood

There are a number of published measures to assist in the objective measurement of stuttering frequency and severity, including the Stuttering Severity Instrument–4th Edition (Riley, 2008), the Lidcombe Severity Rating Scales (Onslow, Packman & Harrison, 2003), and the Illinois Clinician Stuttering Severity Scale (Yairi & Ambrose, 2005, p. 32). There are also tools specifically targeted to children that can assist in the evaluation of the impact that the stuttering has on activity and participation, the perception of the self as a communicator, and the behavioral and affective responses to stuttering, such as the Communication Attitude Test (Brutten & Vanryckeghem, 2006), its KiddyCAT preschool version (Vanryckeghem & Brutten, 2007), and the child and teen versions of the Overall Assessment of the Speaker's Experience of Stuttering (OASES-S; Yaruss & Quesal, 2001).

Using a combination of these measures, it is possible for a clinician or researcher to determine the frequency and severity of the presentation of the stuttering as well as the child's perception of the presentation and impact of the stuttering.

Parents provide a third perspective to those of the child and clinician and are a critical source of information with respect to the beyond-clinic experience and significance of any therapeutic change (Bothe & Richardson, 2011). Parents have already been demonstrated to be reliable in their evaluation of their children's development, including a child's overt stuttering behaviors (Einarsdóttir & Ingham, 2009), and they provide insight into the child's behavioral and affective reactions to stuttering beyond the clinic context (Boey et al., 2009; Langevin et al., 2010).

A reliable, valid tool that allows evaluation of the stuttering from parents' perspectives has potential, therefore, to provide data regarding the outcome of therapy with respect to parent-related goals as well as the beyond-clinic significance of a range of interventions, and would be a useful addition to the existing battery of assessments available. One tool which has the potential to meet this requirement is the Parent Rating Scales used by Millard et al. (2009).

The Parent Rating Scales–Version 1

The first version of the Parent Rating Scales (PRS-V1; Millard et al., 2009) was developed with the aim of investigating the effectiveness of therapy from the perspective of parents. A Delphi approach was used to seek parents' views of the important outcomes for therapy—that is, the personally or clinically significant outcomes (Bothe & Richardson, 2011) that parents valued—in order to determine the content of the tool.

The process of a Delphi study invites participants to generate statements in response to a question and to rate those statements according to how important each one is. Then the researcher determines which statements have the highest ratings and the greatest consensus (Jones & Hunter, 1995; Mead & Moseley, 2001). During a 1-year period, all parents who attended the clinic for Palin Parent–Child Interaction Therapy (Kelman & Nicholas, 2008) were invited to participate in the study. A total of 40 were contacted and 32 agreed to participate. The question was determined by a group of four parents (Mead & Moseley, 2001): "Looking back on your therapy, what were the signs of change you noticed in your child, in yourself and in your family which indicated that things were getting better?"

The question was posed to all 32 parents, who were each asked to write a series of statements in response to the question; those statements were then returned to the investigators for categorization and reduction (Mead & Moseley, 2001). A total of 22 questionnaires were returned, giving an attrition rate of 31.3%, and a total of 129 statements were generated. Because the tool was intended to be used as a pretherapy assessment, and across a range of interventions, any statements that were specific to the therapy provided were removed (e.g., "Child asks for Special Time"; "I speak more slowly to my child"). Statements that were considered to be critical, judgmental, offensive, or upsetting were amalgamated into more general statements.

Once this process was complete, 41 statements remained. These were then returned to the parents, who were asked to rate each item according to "how important it is that the item is included in a questionnaire to measure the effectiveness of therapy." A 5-point Likert rating scale was given, with 1 equaling *not important at all* and 5 equaling *extremely important*. A total of 14 questionnaires were returned.

For each statement, the mean, median, and standard deviation of the ratings were calculated in order to retain those considered most important by the majority of the group—that is, those rated highest—with a small standard deviation (Jones & Hunter, 1995). It is for the researchers to determine the level at which these should be set (Beretta, 1996). In the development of the PRS-V1, any statements with a median of 3 or less were removed, so that items rated 4 (*important*) or 5 (*extremely important*) by more than half the respondents were retained. Following this, any statement with an $SD > 1$ was eliminated, meaning that those items which were not closely clustered around the mean (i.e., those with least consensus) were also removed.

Following this analysis, 25 statements remained. These were transformed into questions to allow rating before and after therapy (because the structure of the question yielded statements that reflected positive change following therapy—e.g., "My child became more fluent"; "I was less worried"). Each question was accompanied by a 10-cm visual analogue scale, which when marked could be measured to provide a numerical value. The statements were organized into a questionnaire and ordered according to whether they related to the stuttering behavior, the impact on the child, the impact on the parent, or the parent's knowledge about stuttering and confidence in managing it.

Informal feedback and observation indicated that, in the main, parents could complete the PRS-V1 unaided and within a few minutes, with minimal respondent burden (Franic & Bothe, 2008). Early versions contained varying directionality within the scales, so that some were "best" at 10 and "worst" at 0, whereas others were the opposite. This is recommended in questionnaire development in order to maintain attention and prevent people from just repeating ratings (Oppenheim, 1992). However, it was found that this caused confusion, with parents making frequent errors. Piloting various versions indicated that always having 10 as "best" and 0 as "worst" made the questionnaire simpler both to complete and to interpret clinically, with higher scores always indicating a better state. The impact of a bias in rating that may result from this arrangement may be considered negligible, given that all parents have the same potential bias at any given time. Any effect is therefore constant and should not affect comparisons within and between participants.

Strengths and Limitations of the PRS-V1

"The variables thus nominated, selected by individual clients as the most important to their own views of meaningful improvements then need to be measured in ways that result in objective, professionally defensible data of demonstrable reliability, validity, and other important psychometric features" (Bothe & Richardson, 2011, p. 239). The attrition of participants from the Delphi study was clearly of concern and is a frequent weakness of studies that have used this methodology (Beretta, 1996), although the clinical application of the PRS-V1, along with evidence from other studies, provided support for the validity of the content. The PRS-V1 was used clinically for a number of years to inform therapists about parents' perceptions of their child's stuttering as part of an initial assessment and to monitor change over time for individual families. It has also been used to evaluate the effectiveness and efficacy of interventions with preschool-age (Millard et al., 2009), and school-age children (Millard, 2011), demonstrating that the tool is sensitive to change.

In these studies, the scores of individual scales were combined to give a total score, as well as subscores in four areas: severity of stuttering, impact on the child, impact on the parents, and parents' knowledge about stuttering and confidence in managing it. These four categories were identified from the broad themes that appeared to exist within the tool. Each of the individual rating scales was assigned to one of these four categories on the basis of which category it seemed logically to fit into. However, there was no evidence to support the categorization of the individual scales in this way, or even the notion that the PRS-V1 is made up of the four components identified. Further, this scoring system assumed that each of the scales had the same weighting and contributed equally to the overall score and the subscores of the categories. By logic, it would seem unlikely that this would be the case. There was a clear need to establish the validity and reliability of the tool and to subject it to psychometric evaluation in accordance with the requirements stipulated by Franic and Bothe (2008) and others.

In the absence of normative data, there were also some problems with interpretability (Franic & Bothe, 2008). To be specific, it is not clear what degree of change would be required in parents' ratings to reflect a significant change either positively or negatively. In order to make judgments about scores obtained at a given time point and differences in scores over time, normative data are required. Further, the resulting measure must be easy and quick to complete as well as simple to score and interpret (Franic & Bothe, 2008). The aims of the present study were thus to explore the construct validity and reliability of the PRS-V1, to refine the tool on the basis of these findings, and to establish normative data.

Method

A file audit of all current and former clients with available records at the Michael Palin Centre were searched for PRS-V1 questionnaires that had been completed as part of the pretherapy assessment process. A total of 259 questionnaires were identified, completed by 146 mothers and 113 fathers. These were parents of children aged between 2;6 (years;months) and 14;6, with a male-to-female ratio of 3:1. The children were referred from all over the United Kingdom, although predominantly from the southeast of England. Children were referred by speech-language therapists for advice regarding management and/or specialist intervention to take place at the center.

Each question was accompanied by a 10-cm visual analogue scale which parents were required to mark. To score the PRS-V1, each individual scale was measured to the parent's mark to provide a score between 0 and 10. The data were analyzed using SPSS.

Analysis

Item Content Analysis of the PRS-V1

The 25 items that make up the PRS-V1 were subjected to an exploratory factor analysis with varimax rotation. The aim of exploratory factor analysis is to interpret a data set by looking for groupings of variables that correlate highly with each other but poorly or not at all with other variables outside that group. Those that correlate highly with each other may be interpreted as reflecting one underlying construct known as a *factor*, and the analysis can reveal constructs that were previously unknown. To more clearly reveal patterns in the data, we used varimax (orthogonal) rotation procedures with the assumption that the variables were statistically independent (i.e., uncorrelated). It is generally agreed that varimax rotation is the most appropriate selection in these circumstances (Brown, 2009; Kline, 1994).

Analysis of the Resulting 19 Items

For the second stage, a principal-components factor analysis of the remaining 19 items was conducted, using varimax and oblimin rotations. The aim is to find the best fit for the data and resulting factors, and so it is common to use both varimax (orthogonal) and oblimin (oblique) rotations, although Brown (2009) has argued that there is little difference in the results obtained from the two rotation methods or the test selected.

Internal consistency for each of the scales was examined using Cronbach's alpha. Items that measure the same construct would have a positive correlation, and $\alpha \geq .7$ would be considered reliable (Oppenheim, 1992).

Results

Item Content Analysis of the PRS-V1

Three factors were extracted. In test construction, only items that load highly on the factors are retained, and each should load on only one factor (Kline, 1994). In this case, items with loadings above .4 were retained; six items that did not reach this criterion and therefore did not add to the individual factors were removed. As can be seen in Table 1, each of the items that were retained had high loadings on only one of the factors, with loadings on the

Table 1. Rotated component matrix for 25-item analysis (Parent Rating Scales–Version 1).

	Factor		
Item	**1**	**2**	**3**
How often does your child stammer?	.236	**.798**	.102
How severe is your child's stammering?	.263	**.809**	.106
How much is your child struggling?	.385	**.705**	.040
Does your child have fluent times?	.279	**.559**	.025
How worried are you about stammering?	.080	**.799**	.161
How anxious are you about your child's future?	.015	**.780**	.173
How much does the stammering impact your family?	.220	**.426**	.090
Does your child speak less because of the stammering?	**.752**	.101	.066
How frustrated is your child about his/her speech?	**.775**	.284	−.120
How upset is your child by the stammer?	**.788**	.248	−.130
How anxious is your child about his/her speech?	**.783**	.325	−.132
How confident is your child in speaking situations?	**.746**	.236	.141
How happy is your child generally?	**.586**	.047	.268
How well can your child express how he/she feels?	**.517**	.084	.292
How well do you understand what influences stammering?	−.031	.279	**.406**
How confident are you in responding to stammering?	.054	.183	**.774**
How confident are you in encouraging fluency?	.042	.088	**.874**
How confident are you to deal with your child's concern/awareness of stammering?	.026	.047	**.882**
How confident are you to encourage your child's confidence?	.220	.090	**.836**
How confident is your child generally?	.198	.293	.170
How well does your child take turns in conversation?	.364	.092	.341
How well does your child take turns generally?	.229	.044	.366
How confident are you in the therapy you have received?	.061	.246	.387
How relaxed are things at home generally?	.192	−.083	.250
How well do you and your partner work together?	.235	−.205	.350

Note. Extraction method: principal-components analysis. Rotation method: varimax with Kaiser normalization. Bold denotes greatest loading for each item that has a loading > .4. Factor 1 = Impact of Stuttering on the Child; Factor 2 = Severity of Stuttering and Impact on the Parents; Factor 3 = Parent's Knowledge and Confidence in Managing the Stuttering.

other two factors being considerably below the threshold. The data largely fit with the broad criteria for simple structure described by Kline (1994). When simple structure can be attained, then the factors that are extracted are replicable (Kline, 1994, p. 65). The following items were removed:

- How confident is your child generally?
- How well can your child take turns in conversation?
- How well can your child wait for a turn in conversation generally?
- How confident are you in the therapy you have received?
- How relaxed are things at home generally?
- How well do you and your partner work together?

An oblimin rotation provided the best defined factor structure, with all items having a primary loading over .4 and three factors showing eigenvalues of 1 or greater. Factor 1 was named Impact of Stuttering on the Child, Factor 2 was named Severity of Stuttering and Impact on the Parents, and Factor 3 was named Parent's Knowledge and Confidence in Managing the Stuttering. Together, the three factors explained 57% of the variance. The factor-loading matrix for this solution is presented in Table 2. (The study was conducted in the United Kingdom, where the term *stammer* is used rather than *stutter*. This has been retained to report these results accurately.)

The final 19-item paper version that resulted from this analysis is in the Appendix. This refined version has been named the Palin Parent Rating Scales (Palin PRS) to distinguish it from the earlier version.

Reliability

Internal consistency for each of the scales was examined and demonstrated using Cronbach's alpha—Factor 1: $\alpha = .865$; Factor 2: $\alpha = .863$; Factor 3: $\alpha = .838$. Separate reliability scores for each of the factors were calculated for parents of children under 7;0 ($n = 166$) and those of children aged 7;0 and above ($n = 93$). For parents of children under 7;0: Factor 1: $\alpha = .843$; Factor 2: $\alpha = .873$; Factor 3: $\alpha = .858$. For parents of children aged 7;0 and above: Factor 1: $\alpha = .872$; Factor 2: $\alpha = .853$; Factor 3: $\alpha = .826$. This indicates that the Palin PRS is reliable with parents of children aged under 7;0 and aged 7;0–14;6.

Normalizing and Scaling the Factor Scores

On the basis of the factor analysis of the 19 items, for each of the three factors the raw score for each item is multiplied by the factor loading on the item, ensuring that the items with the highest loading have the most influence

Table 2. Results of the principal-components factor analysis of 19 items.

Item	Factor 1	 2	 3
How often does child stammer?		.797	
How severe is your child's stammering?		.807	
How much is your child struggling?		.703	
Does your child speak less because of the stammering?	.751		
Does your child have fluent times?		.558	
How frustrated is he/she about speech?	.775		
How upset is he/she by the stammer?	.786		
How anxious is your child about his/her speech?	.783		
How confident is your child in speaking situations?	.747		
How happy is your child generally?	.590		
How well can your child express how he/she feels?	.525		
How worried are you about stammering?		.798	
How anxious are you about your child's future?		.779	
How well do you understand what influences the stammering?			.408
How confident are you in responding to stammering?			.771
How confident are you in encouraging fluency?			.873
How confident are you to deal with child's concern/awareness?			.882
How confident are you to encourage child confidence?			.836
How much does the stammering impact your family?		.424	

Note. Rotated component matrix. Extraction method: principal-components analysis. Rotation method: varimax with Kaiser normalization (rotation converged in six iterations). Factor 1 = Impact of Stuttering on the Child; Factor 2 = Severity of Stuttering and Impact on the Parents; Factor 3 = Parent's Knowledge and Confidence in Managing the Stuttering.

on the factor score. The total weighted factor score is divided by the number of responses to produce a final factor score. The final factor scores were normed ($N = 259$) to percentiles and stanine ratings. The factor scores, percentile ranks, stanine scores, and corresponding category ratings are reported for Factors 1 and 2 in Table 3, and the data for Factor 3 are provided in Table 4.

Palin PRS Self-Calculating, Online Version

Because the conversions from raw scores to weighted factor scores and category ratings are complex and time consuming, a free online version of the Palin PRS was developed to automate the process.[1] In this online version, parents select a number from 0 to 10 on the 10-cm scale. This differs from the paper version, which has an unmarked scale. This change in format was necessary for technical reasons. In order to determine whether this would influence the outcomes of the previous analyses, the data were reanalyzed using the rounded-up or rounded-down whole-number equivalent for the original scores. This modification made no difference to the outcomes of the analyses previously conducted.

Clinicians and researchers first register on the website and then register individual children. As parents complete the questionnaire, the analyses of individual parental responses are conducted automatically and emailed to the clinician. Longitudinal data may be accessed for individual children in table or graph formats. Data may only be accessed by the registering clinician.

Case Example

The following is an example of the data that are available in graphical form. The parents of a 13-year-old boy completed the Palin PRS 3 months prior to the start of therapy; immediately before they attended therapy; immediately afterward; and 6 weeks, 3 months, 6 months, and 1 year after therapy.

Figure 1 shows that before therapy, both parents rated the impact of the stuttering on the child as very high, with an increased rating from the mother between 3 months pretherapy and immediately pretherapy. There was a reduction in the impact over the course of therapy that continued to reduce for 1 year after therapy, reaching low impact as rated by the parents. A similar pattern can be observed in Figure 2, with the parents' ratings of the severity of the stutter and the impact it had on them reducing over time from high–moderate to low. In Figure 3, the graph line moves upward to reflect an increase in the parents' knowledge about stuttering and confidence in managing it. In this example, there is a difference in the parents' ratings, with the mother starting the process moderately knowledgeable and confident, although this lessens prior to the start of therapy. In contrast, the father begins with very low levels of knowledge and confidence prior to therapy. Both parents' scores indicate increased levels of knowledge and confidence over the course of therapy. The father's knowledge and confidence lessen in comparison to immediately postcourse levels

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[1] For registration, instructions, and access to the Palin PRS, see https://secure.psych.lse.ac.uk/palin_parent_rating_scales/pprs_connect.php. To complete forms, parents and guardians can access https://secure.psych.lse.ac.uk/Palin_Parent_Rating_Scales.

Table 3. Weighted factor scores, stanine scores, and percentile ranks for Factors 1 (Impact of Stuttering on the Child) and 2 (Severity of Stuttering and Impact on the Parents).

Weighted factor score (Factor 1)	Weighted factor score (Factor 2)	Percentile rank	Stanine score	Category
0.0–1.9	0.0–1.1	1–4	1	Very high
2.0–2.7	1.2–1.7	5–11	2	Very high
2.8–3.4	1.8–2.1	12–23	3	High
3.5–4.1	2.2–2.7	24–40	4	High
4.2–4.9	2.8–3.3	41–60	5	Moderate
5.0–5.5	3.4–4.1	61–77	6	Moderate
5.6–6.1	4.2–4.9	78–88	7	Low
6.2–6.6	5.0–5.3	89–95	8	Low
6.7 and up	5.4 and up	96–99	9	Very low

immediately following therapy but then increase to reach the same levels as the mother. Both parents continue to develop their knowledge and confidence over time to reach very high levels 1 year posttherapy.

Discussion

The first aim of this study was to extract the factors or constructs explored by the PRS-V1 and to refine the questionnaire by retaining the items that loaded onto those factors. The exploratory factor analysis identified three component factors that make up the Palin PRS, each with high internal consistency and reliability. On the basis of the individual items within the three factors, these were labeled Impact of Stuttering on the Child (Factor 1), Severity of Stuttering and Impact on the Parents (Factor 2), and Parent's Knowledge and Confidence in Managing the Stuttering (Factor 3). These factors were similar to the four original categories assumed to be present in the PRS-V1, which had been proposed without any scientific exploration. The constitution of Factor 2 was the main difference: It had not been anticipated that the severity of stuttering and impact on the parents would comprise the same component. Although a causal relationship has not been established, the results indicate that the items that are considered to relate to stuttering frequency and severity correlate with the same underlying variable as the items that relate to the impact that the stuttering has on the parent.

Table 4. Weighted factor scores, stanine scores, and percentile ranks for Factor 3 (Parent's Knowledge and Confidence in Managing the Stuttering).

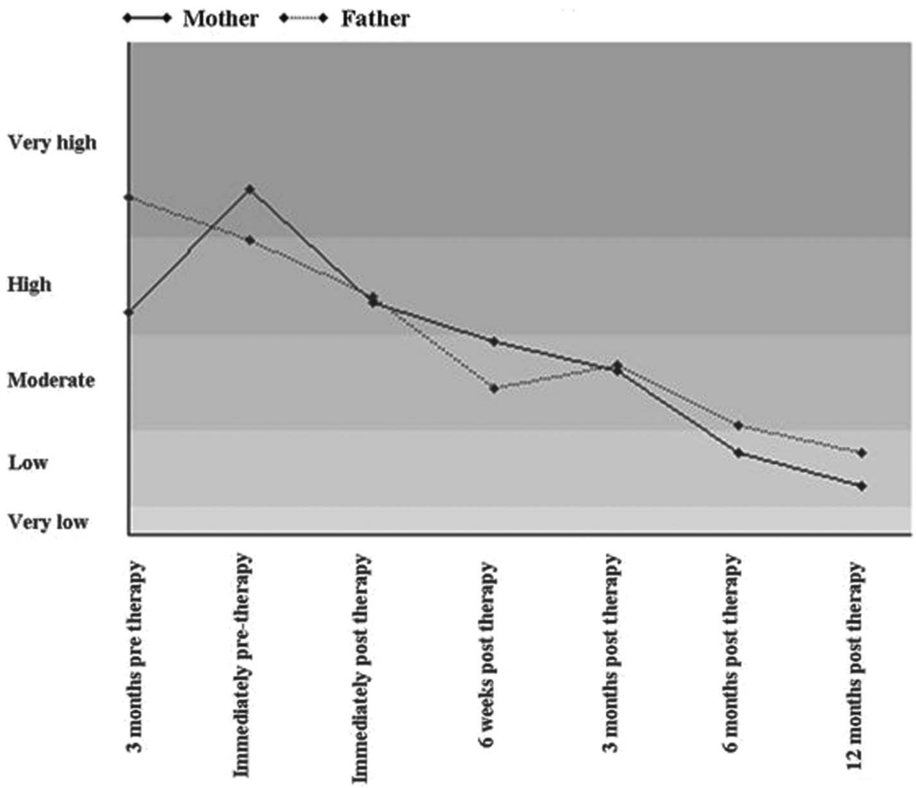
Weighted factor score	Percentile rank	Stanine score	Category
0.0–1.6	1–4	1	Very low
1.7–2.1	5–11	2	Very low
2.2–3.1	12–23	3	Low
3.2–4.0	24–40	4	Low
4.1–4.9	41–60	5	Moderate
5.0–5.5	61–77	6	Moderate
5.6–6.1	78–88	7	High
6.2–6.5	89–95	8	High
6.6 and up	96–99	9	Very high

The findings support the method that was used to determine the content of the tool (the Delphi approach). This approach resulted in high content validity, and the exploratory analysis supported the importance of the contribution of the individual items. Although the six items removed on the basis of the exploratory factor analysis may have been considered important by the original group of parents in the Delphi study, they did not contribute to the main constructs (factors) being evaluated by the Palin PRS. Removing such items is not only relevant from a psychometric point of view but is important from an administration perspective. It is important that any questionnaire or assessment contain only essential items, in order to maintain maximum participation and attention and take the minimum time to complete (Oppenheim, 1992).

The visual analogue scales in the paper version of the Palin PRS (see the Appendix) allow a clinician to make quick judgments and comparisons about ratings, but the ability to interpret this information is limited. The second aim of the study was to establish norms so that raw scores could be converted into standard scores and interpreted. Parents who had attended a specialist clinic for support for their child's fluency completed the PRS-V1 as part of the pretherapy assessment process. Both mothers and fathers were included. Raw scores are obtained from the paper version by measuring the distance in centimeters from the zero end of the line. These raw scores are then converted into weighted scores. This means that one scale is not given too much or too little weighting within the component factor. From the weighted factor scores, it is then possible to determine the stanine score and percentile rank from the tables. The normative scores can be considered within the bands of very high, high, moderate, low, and very low. This makes it possible to interpret the scores obtained and make some judgments about the parent's perception of the degree of impact, severity, and parent confidence, and to interpret any change in the normal range of responses expected from parents prior to therapy.

However, the numerical scoring system is complex, time consuming, and highly burdensome to administrators, and is ultimately unrealistic as a clinical process, thereby reducing the value of the tool (Franic & Bothe, 2008; Oppenheim, 1992). It was clear that these issues need to be

Figure 1. Change for one child with respect to Factor 1 (Impact of Stuttering on the Child) over time. A decrease in scores indicates a reduction in the impact of the stutter on the child.



addressed if the Palin PRS is to have any clinical applicability. These limitations were addressed by developing an open-access, online version that automatically converts the scores, so that clinicians and researchers may analyze and interpret data quickly and accurately.

Clinical Implications

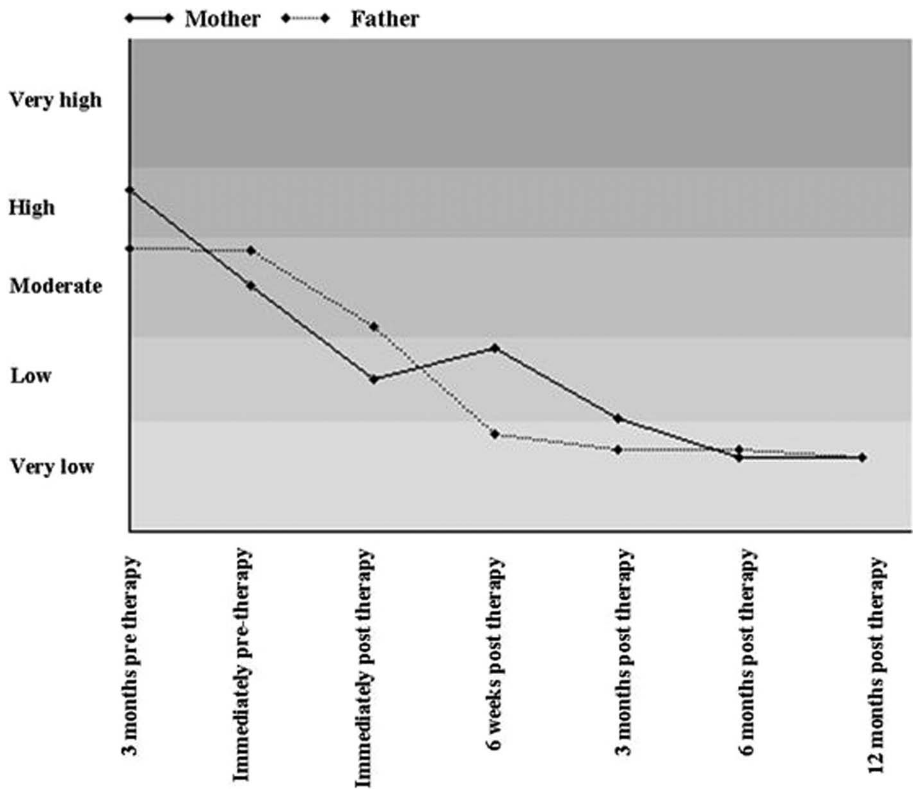
The Palin PRS provides a clinician or researcher with an additional perspective on the child's stuttering. For young children, there are few measures that may be used to explore the psychosocial impact of a stutter. The Palin PRS may be used to generate data that can inform the assessment process and consequently management decisions. This information can support decisions about whether to begin therapy or not, to target therapy to specific needs (such as direct speech management, confidence building, or providing parents with information about the child's stutter), and to evaluate progress over time. The Palin PRS will provide the clinician or researcher with information and data regarding the child's stuttering beyond the clinic. This practice-based evidence can be used not just to support the child but—when obtained from clinical groups—to provide support for clinical services.

For school-age children, the Palin PRS can be used alongside the OASES-S to provide greater insight into the disorder with respect to the affective and behavioral responses to the stuttering. Any discrepancies between parent (Palin PRS) and child (OASES-S) report may be clinically important and have relevance for management planning.

Responses to Factors 2 and 3 will also be clinically important. The parents' worry about the stuttering and anxiety for the child's future are important in relation to the parents' well-being and management of the child and the stuttering (Plexico & Burrus, 2012). The Palin PRS contains items that explore parental anxiety about the stuttering and worry about the child's future, both of which have been identified in other studies as a feature of parents' experience (Biggart et al., 2007; Langevin et al., 2010; Plexico & Burrus, 2012). Supporting parents can reduce anxiety and help to increase their confidence in their parenting skills (Douglas, 2005), and there is early evidence from the PRS-V1 to suggest that this may also be true for parents of preschool-age (Millard et al., 2009) and school-age (Millard, 2011) CWS. The inclusion of a question about the impact on the family as a whole is also validated from evidence that siblings and relationships between family members can be affected (Beilby et al., 2012; Lau et al., 2012).

The refined Palin PRS provides a method of exploring and monitoring the experience of parents in a formal way. The case-study data included in this article demonstrate the ease with which data may be interpreted using the online

Figure 2. Change for one child with respect to Factor 2 (Severity of Stuttering and Impact on the Parents) over time. A decrease in scores indicates a reduction in the severity and impact of the stutter on the parents.



version. With the example presented, the reader can quickly and easily see that the stutter is severe and is having a significant impact on both the parents and child pretherapy. The therapist can use this information to inform therapy. The presentation of the longitudinal data enables long-term progress to be considered. Along with the composite factor scores, it is also possible to explore the responses to individual items and to use these to develop individualized targets, or to consider outcomes or effectiveness on the basis of these specific variables.

Data may be uploaded into data-management packages so that longitudinal and/or group data may be extrapolated. This provides an opportunity for clinicians and researchers to explore treatment efficacy and effectiveness, including the view of the service users. The online version is quick and easy to use for both parents and clinicians and researchers.

Limitations and Future Research

There are a number of limitations with this study. First, the questionnaires were collected through a retrospective audit of case files, and so it is possible that not all parents who attended completed the PRS-V1. Although the figures are comparable with the numbers of children referred, the exact numbers of those who did not complete the measure cannot be established. Second, as with any standardized tool, the user must consider whether the norms can be generalized to the population under study. There are no data regarding the cultural backgrounds of the parents included in this study, and it is possible that people from different cultures may have different perspectives. Therefore, in the future it would be appropriate to establish norms for different languages and populations.

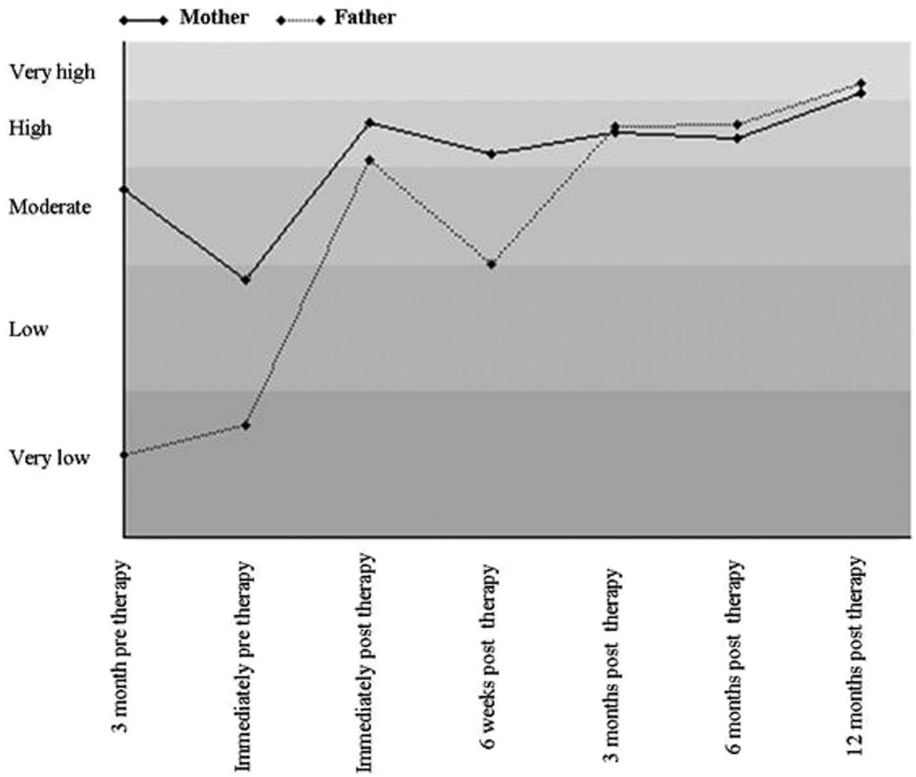
A further consideration relates to the introduction of the online version. The rating method has shifted from marking on an unmarked 10-cm line to associating the mark with a specific number on the line. The data were reanalyzed using the new scoring system (i.e., full numbers compared to those measured to one decimal point), and no differences were found in terms of the test construction or the normative data. However, whether the presence of the numbers influences the ratings given by the parents was not explored, and although it might be predicted that any shift would be minimal, it is possible that this could have an impact on the results.

The Palin PRS has been recommended as an adjunct to existing clinician and child assessment tools. The validation of the tool should be further explored through comparison with those which consider similar constructs.

Conclusions

This study has resulted in a refined tool that consists of 19 items. There are three component factors making up

Figure 3. Change for one child with respect to Factor 3 (Parent's Knowledge and Confidence in Managing the Stuttering) over time. An increase in scores indicates an increase in the parents' knowledge and confidence.



the Palin PRS: Impact of Stuttering on the Child, Severity of Stuttering and Impact on the Parent, and Parent's Knowledge and Confidence in Managing the Stuttering. The reliability of the tool is high, and normative scores have been established. The online version provides quick and easy analysis of parents' ratings. The Palin PRS is a unique measure providing insight and data regarding parents' perceptions not just of the overt stuttering behaviors but also of the impact of the stuttering on the child and themselves. It will be a valuable addition for clinicians and researchers working with CWS up to age 14;6.

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Appendix (p. 1 of 3)

Palin Parent Rating Scales

Name of Parent/Carer………………………………… **Name of Child:**

Relationship to child: **Mum Dad Guardian**

Date: ……………………**Assessment occasion:**

Please rate each of the following by marking on the line as shown below, e.g.
Example
How confident is your child riding a bike?

0	10
(as much as possible)	*(not at all)*

Do not spend much time on each question, go on your gut reaction! If something varies then rate the level according to the last 2 weeks.

Section 1: The impact of stuttering on your child:

1) Does your child speak less because of the stuttering?

0	10
(always)	(never)

2) How frustrated is your child with his speech?

0	10
(as frustrated as he could be)	(not at all)

3) How upset is your child by his stuttering?

0	10
(as upset as he could be)	(not at all)

4) How anxious is your child about his speech?

0	10
(as anxious as he could be)	(not at all)

5) How confident is your child in speaking situations?

0	10
(not at all)	(completely confident)

6) How happy is your child generally?

0	10
(not at all)	(completely)

7) How well can your child express how he feels?

0	10
(not at all)	(completely appropriately)

Appendix (p. 2 of 3)

Palin Parent Rating Scales

Section 2: The severity of stuttering and parent concern:

1) How much does your child struggle when speaking?

0	10
(as much as he possibly could)	(not at all)

2) Does your child have fluent times?

0	10
(never)	(always)

3) How often does your child stutter?

0	10
(as often as possible)	(not at all)

4) How severe is your child's stuttering?

0	10
(as severe as it could be)	(not severe at all)

5) How worried are you about your child's stuttering?

0	10
(as much as I could be)	(not at all)

6) How anxious are you about your child's future because of the stuttering?

0	10
(as much as I could be)	(not at all)

7) How much of an impact does the stuttering have on your family?

0	10
(as much as it could)	(none at all)

Section 3: Parents' knowledge and confidence about managing stuttering:

1) Do you understand what influences your child's stuttering?

0	10
(not at all)	(completely)

2) How confident are you in your knowledge of how to:

a) Respond when your child is stuttering

0	10
(not at all)	(completely)

b) Deal with your child's concern/awareness of stuttering

0	10
(not at all)	(completely)

Appendix (p. 3 of 3)

Palin Parent Rating Scales

c) Encourage confidence in your child

____

0 (not at all)	10 (completely)

d) Encourage fluency in your child

____

0 (not at all)	10 (completely)