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Validation of the Vanderbilt Responses to Your Child's Speech Rating Scale for Parents of Young Children Who Stutter

Cara M. Singer,[a] Ellen M. Kelly,[b] A. Zebedee White,[b] Hatun Zengin-Bolatkale,[c] and Robin M. Jones[d]

[a] Department of Communication Sciences and Disorders, Grand Valley State University, Grand Rapids, MI [b] Arthur M. Blank Center for Stuttering Education and Research, The University of Texas at Austin [c] Department of Communicative Sciences and Deaf Studies, California State University, Fresno [d] Department of Hearing and Speech Sciences, Vanderbilt University Medical Center, Nashville, TN

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ABSTRACT

Purpose: This study reports the development, refinement, and exploration of the psychometric properties of the Vanderbilt Responses to Your Child's Speech (VRYCS) rating scale, a novel measure designed to assess parents' self-perceived responses to the speech of their children who stutter (CWS).
Method: Parents of 214 young (ages 2;4[years;months]–5;11) CWS completed the original 40-item version of the VRYCS. Content analyses and an exploratory factor analysis determined the scale's factors and identified specific items corresponding to each. Items that did not load onto the factors were removed and internal consistency was assessed.
Results: The final 18-item VRYCS rating scale includes five factors relating to parents' responses to the speech of their CWS including (a) Requesting Change, (b) Speaking for the Child, (c) Supporting Communication, (d) Slowing and Simplifying, and (e) Responding Emotionally. Reliability was demonstrated, responses by parents of CWS were described, and a revised scoring form developed.
Conclusions: The VRYCS is a valid and reliable tool for assessing and exploring parents' perceptions of their own responses to the speech of their CWS for clinical and research purposes. Clinical applications of the VRYCS for assessment and treatment of childhood stuttering are discussed.

Stuttering has been theorized to be a multifactorial neurodevelopmental disorder characterized by involuntary disruptions in the forward flow of speech such as repetitions, prolongations, and blocks (American Speech-Language-Hearing Association, n.d.; Smith & Weber, 2017). Stuttering most commonly emerges between the ages of 2 and 4 years, coinciding with a period of rapid growth in which genetic, epigenetic, and environmental factors influence children's development across domains (e.g., Smith & Weber, 2016, 2017). Beyond disruptions in speech fluency, stuttering has been shown to increase risks for negative affective, behavioral, and cognitive experiences for people who stutter. These include negative listener perceptions (Ambrose & Yairi, 1994; Weidner et al., 2017), heightened risk for social anxiety (Bernard et al., 2022; Iverach et al., 2016, 2018), restricted educational and career opportunities (Boyle, 2017; Connery et al., 2020; Gabel et al., 2004), and adversely impacted quality of life (Beilby, 2014; Blumgart et al., 2010; Craig et al., 2009; Guttormsen et al., 2021; Klompas & Ross, 2004; Yaruss & Quesal, 2006). Early assessment and treatment are often sought to avert potential negative consequences of stuttering (Franken & Putker-de Bruijn, 2007; Kelman & Nicholas, 2008, 2020; Onslow et al., 2003).

Parents are known to significantly influence their children's development of various skills, including communication abilities (e.g., Fabiano-Smith & Goldstein, 2010; Huttenlocher et al., 2002; Morris & Jones, 2007; Pancsofar & Vernon-Feagans, 2006; Tamis-LeMonda et al., 2004). Relatedly, parents are frequently implicated in models and

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Correspondence to Cara M. Singer: singerca@gvsu.edu. ***Disclosure:*** *The authors have declared that no competing financial or nonfinancial interests existed at the time of publication.*

theories of stuttering development and are included in treatment approaches for managing early childhood stuttering (e.g., Franken & Putker-de Bruijn, 2007; Healey & Trautman, 2004; Jones et al., 2005; Kelman & Nicholas, 2020; Starkweather & Gottwald, 1990; Wall & Meyers, 1995).

Modifications of Parents' Speech

Investigators have studied whether parental adjustments of temporal and/or linguistic variables in their own speaking models might influence the speech, communication, and/or stuttering of their children who stutter (CWS). In several studies, parental rate reduction has been associated with significant reductions in some children's disfluencies (Cardman & Ryan, 2007; Jones & Ryan, 2001; Ratner, 1992; Starkweather & Gottwald, 1984; Stephenson-Opsal & Ratner, 1988; Zebrowski, 1995; Zebrowski et al., 1996). Zebrowski (1995), for example, trained five mothers of CWS to decrease their speaking rates by pausing within and between utterances, resulting in stuttering behaviors decreasing for three of the children and increasing for two. In a recent investigation, 17 caregivers (15 mothers, one grandmother, and one father) of 2- to 5-year-old CWS, trained to reduce their speech rates, were successful in doing so and these reductions were associated with significant reductions in their children's stuttering-like disfluencies (Sawyer et al., 2017).

Like speech rate, other parental modifications have been shown to lead to more fluent speech for some children. Winslow and Guitar (1994) found that the purposeful lengthening of parent turn-taking pauses was linked to reductions in children's stuttering frequency for some parent–child dyads. Additionally, Ratner (1992) observed idiosyncratic changes in both temporal (e.g., speech rate, turn-switching pauses) and linguistic (e.g., maternal syntax and utterance length) variables following instruction to mothers to reduce their rates of speech.

Taken as a whole, investigations into parental speech modification suggest that parental changes in rate, pausing, turn-taking, and/or length and/or complexity of utterances may positively impact the speech fluency and communication of CWS, but there are individual differences across parent–child dyads (Ratner, 2004). Such research evidence, combined with extant models and theories of stuttering development, have influenced parent-based, communication-focused recommendations and treatment approaches for early childhood stuttering.

Parent-Based Recommendations and Treatment for Childhood Stuttering

Advice to Parents of CWS

Many suggestions to parents of behavioral and environmental modifications to support their children's communication have been made since the 1940s (Johnson, 1949), and echoed in the advice of popular educational and advocacy organizations including the Stuttering Foundation, National Stuttering Association (NSA), National Association of Young People Who Stutter (FRIENDS), and Stuttering Association for the Young (SAY). For example, parents are advised to speak in an unhurried manner, pause before speaking, allow the child ample time to speak without interruption when it is his/her turn, and refrain from finishing the child's sentences or telling the child to slow down, take a deep breath, or relax. Active listening and good turn-taking are also recommended, and parents are encouraged to openly acknowledge stuttering in a supportive manner (FRIENDS, 2020; NSA, 2020; SAY, 2020; Stuttering Foundation of America, 2020).

Treatment Approaches

Formal intervention approaches for young CWS also incorporate parents as principal agents in supporting communication and addressing children's stuttering. Examples of evidence-based intervention approaches include the Rotterdam Evaluation Study of Stuttering Therapy: A Randomized Trial (RESTART; Franken & Putker-de Bruijn, 2007), based on the demands-capacities model (DCM; Adams, 1990), Palin Parent–Child Interaction therapy (Palin PCI; Kelman & Nicholas, 2008, 2020), based on multifactorial models of stuttering (e.g., Smith & Kelly, 1997; Smith & Weber, 2017), the Lidcombe Program (LP; e.g., Jones et al., 2005, 2008; Onslow et al., 2003), incorporating principles of operant conditioning (e.g., Bellack & Hersen, 1977), and the Westmead Program (WP; e.g., Trajkovski et al., 2011), focused on syllable-timed speech. Developers of each approach have demonstrated reductions in stuttering in preschool children (de Sonneville-Koedoot et al., 2015; Guitar et al., 2015; Jones et al., 2008, 2005; Millard et al., 2009, 2008; Trajkovski et al., 2011), and, in some studies, improvements in parents' confidence and knowledge about managing stuttering (Millard et al., 2008, 2009, 2018).

Although RESTART-DCM, Palin PCI, the LP, and the WP differ in their approaches to early childhood stuttering intervention, several similarities exist. In each approach, clinicians educate parents about stuttering and provide a supportive therapeutic environment in which parents receive professional guidance for managing their children's stuttering (Bernstein Ratner, 2018). Additionally, each method requires parents to regularly spend one-on-one time communicating with their CWS and encourages parents to acknowledge stuttering openly and directly (Bernstein Ratner, 2018; Onslow & Millard, 2012). Despite differences in the motivations for and practical applications of these therapy approaches, each includes targeting parents' models and responses to their children's speech for the purpose of improved communication and speech fluency. The focus of the present study was to examine the general communication responses parents may demonstrate, even prior to treatment, that may (or may not) support the ease in which their child communicates.

None of the approaches, however, incorporates an objective tool for assessing parents' self-perceptions of their awareness and/or use of targeted strategies that can be used at initial and follow-up assessment as well as to track therapy progress. The value of parent self-perceptions includes obtaining a window into the daily, real-life behaviors and experiences of parents and children and can, therefore, be used to augment the observations of speech-language pathologists (SLPs) beyond those observed in clinical settings (Clark et al., 2017). This is particularly important given the natural variability of stuttering across contexts (Bloodstein, 1972; Constantino et al., 2016; Tichenor & Yaruss, 2021).

Measurement Tools

Few empirical tools exist that consider the self-perspectives of parents of CWS. Instruments such as the Palin Parent Rating Scales (Palin PRS; Millard & Davis, 2016) and the Impact of Stuttering on Preschoolers and Parents questionnaire (ISPP; Langevin et al., 2010) are primarily designed to assess parents' perceptions of the nature, severity, and impact of stuttering on CWS and themselves. The intended age range for each instrument varies, with the Palin PRS including parents of children between 2;6 (years;months) and 14;6 and the ISPP designed for completion by parents of preschoolers. Each includes open-ended yes/no and/or scaled questions and, along with other information (e.g., stuttering severity, reactions of CWS and peers), probe parents' perceptions of the impact of stuttering on themselves (ISPP), and/or their worries about and confidence with managing stuttering (Palin PRS). In addition to these measures, the Reaction to Speech Disfluency Scale (RSDS) was developed by researchers in Poland to examine parents' perceptions of their cognitive, emotional, and behavioral reactions to their children's speech disfluencies (Humeniuk & Tarkowski, 2016). Whereas a portion of the 31-item questionnaire explores parent reactions, as is true in this study, there are also several questions that address a wide range of topics including parents' opinions about the trajectory of their child's stuttering, causes of stuttering, comparisons of the child with peers, and knowledge about the etiology of stuttering. The authors of the RSDS suggest that the questions may not readily translate into languages other than Polish. Furthermore, the RSDS' limited, 3-point rating scale (i.e., 1 = *no*; 2 = *hard to say*; 3 = *yes*) prevents a more comprehensive examination of the degree to which parents perceive their various reactions.

Existing measures augment direct assessment of the child by incorporating, to varying degrees, the perspectives of caregivers who spend the most time with their CWS. They do not, however, systematically measure parents' perspectives of their own linguistic, temporal, and emotional responses during communication with their CWS as suggested by the frequent advice, recommendations and therapy targets common to parent-based communication-focused treatment programs for early childhood stuttering.

Development of the Vanderbilt Responses to Your Child's Speech Rating Scale

To expand our understanding of the perspectives of parents of young CWS, an initial version of the Vanderbilt Responses to Your Child's Speech (VRYCS; Kelly, 2010) rating scale was developed as part of a longitudinal investigation of the onset and nature of developmental stuttering at Vanderbilt University Medical Center (VUMC). The original VRYCS parent-report measure includes 40 responses parents may have to the speech of their CWS. Parents are asked to indicate how often they responded, as described in each item, over the past 2 months, on a 5-point scale with 0 = *never*, 1 = *rarely*, 2 = *sometimes*, 3 = *often*, and 4 = *always*. Based on advice from treatment approaches and educational and advocacy organizations as well as recommendations rooted in existing research, VRYCS items were selected to reflect a comprehensive range of recommendations including ones that focus on parents' possible temporal (e.g., how often they slow down their speech), emotional (e.g., if they worry about their child's talking), and linguistic (e.g., whether they ask simple questions) responses. Eighteen of the items were considered "positive" because they described parent behaviors (e.g., "Slow down your speech") that are potentially supportive of speech fluency and communication in young CWS based on existing literature (e.g., Ratner, 2004; Sawyer et al., 2017). Twenty-two items were considered "negative" because they described behaviors (e.g., "Finish what your child was saying") that have been suggested to adversely influence the speech fluency and communication of young CWS (e.g., Sawyer et al., 2017). By considering a particular parent's responses to each item, related items (e.g., factors), and the full scale, clinicians, and researchers may gain further insight into parent's perceptions of their interactions with their CWS.

Purpose

The purpose of this study was to develop a self-report measure (i.e., the VRYCS) to assess parents' perceptions of their own responses to the speech of their CWS. Specific aims included (a) examining the content validity of the VRYCS, (b) identifying the principal components of the instrument through an examination of the responses of a large sample of parents of young CWS, (c) evaluating internal consistency reliability, and (d) based on the results of the analyses, producing a revised version of the VRYCS with associated scoring methods, for clinical and research use. A tool that measures parents' perceptions of their responses to their children's communication can help SLPs provide individualized recommendations to parents and monitor changes in their perceptions over time.

Method

Participants

Data for this study were obtained retrospectively from 214 parents of young CWS (ages 2;4–5;11) who either participated in studies through the Vanderbilt Developmental Stuttering Project (DSP) laboratory (*n* = 38) or were part of a nonoverlapping sample of clients evaluated at the Vanderbilt Bill Wilkerson Center (VBWC) between 2010 and 2019 (*n* = 176). Children with concomitant speech or language disorders were excluded due to the influence the presence of additional communication challenges may have on parent responses. Participating children had not previously received speech-language therapy for their stuttering. To be considered to be stuttering, a child had to (a) produce an average of at least 3% stuttering-like disfluencies (e.g., whole word repetitions, sound/syllable repetitions, audible prolongations, or blocks) during a play-based speech sample of at least 300 syllables of conversation or receive a stuttering severity score of at least 11 on the Stuttering Severity Instrument–Third Edition or Fourth Edition (Riley, 1994; Riley & Bakker, 2009) based on the same play-based speech sample, and (b) have been identified by a parent as stuttering. Similar diagnostic criteria have been used in previous investigations of young CWS (e.g., Singer et al., 2022) and allows for consideration of caregiver views and clinician ratings of stuttering frequency, the presence of physical concomitants, and stuttering duration.

The 38 parents from the DSP sample completed the VRYCS as part of an ongoing longitudinal study of linguistic and emotional contributors to developmental stuttering. All laboratory participants were parents of monolingual English-speaking children between 3;0 and 5;11. Based on caregiver report, approximately 73% of the children were identified as Caucasian, 9% as Black, and 8% as "other" (as respondents opted not to select from the options provided). The average SSI (3 or 4) score was 16.0 (*SD* = 7.2), corresponding to mild to moderate stuttering severity. When considering the mothers' highest levels of education, approximately 38% of mothers had graduate professional training, 38% had earned a 4-year college degree, 21% had attended college, and 3% had their high school diploma. DSP participants were paid volunteers who learned of the study (a) in a free local monthly parent magazine, (b) were contacted from Tennessee State birth records, or (c) were physician-referred to the VBWC for evaluation but elected to obtain their child's evaluation by enrolling in the DSP study. The CWS among the DSP laboratory participants were verified by parent report and/or testing to have no known or reported diagnoses of nor formal treatment for stuttering or other communication disorders prior to participation, nor any known or reported hearing, neurological, developmental, academic, intellectual, or emotional concerns. The study protocol was approved by the Vanderbilt University Institutional Review Board (IRB). All adult participants provided informed consent and permission for their child to participate, and children provided assent to participate.

An additional 176 parents of 143 CWS (ages 2;4 to 5;11) completed the VRYCS during initial diagnostic visits to the VBWC between 2010 and 2019. Data were identified and extracted during a retrospective review of clinical records as part of the Early Childhood Onset Stuttering (ECHOS) research project (Kelly et al., 2018). In keeping with VUMC protocols, all children were referred by a physician for a speech-language-fluency assessment after their parents expressed concern for stuttering. Vanderbilt University's IRB approved the ECHOS retrospective research protocols, including collection of the data for this study. Limited demographic information was available for the VBWC clinical sample as changes in place of employment prior to preparation of this manuscript ended access to clinical records. Available information about the participants from the laboratory and clinical samples is contained in Table 1.

Procedure

An SLP collected language and speech disfluency samples and conducted comprehensive speech and language testing. Information obtained via parent interview

Table 1. Demographic characteristics of the children who stutter from the laboratory and clinical samples whose parents completed the Validation of the Vanderbilt Responses to Your Child's Speech.

Sample	Gender	*n*	%	M_{age} (months)	*SD*
Clinic	Male	129	73%	49.37	10.17
	Female	47	27%	47.87	11.55
	Total	176	100%	49.97	10.54
Lab	Male	29	76%	48.03	9.35
	Female	9	24%	44.92	7.12
	Total	38	100%	47.29	8.89
All	Male	158	74%	49.13	10.01
	Female	56	26%	47.40	10.96
	Total	214	100%	48.67	10.27

included demographics, history of speech, language, and fluency disorders, any other developmental disorders, delays, diagnoses, or conditions, and parents' concerns about children's speech-language abilities. Parents completed the VRYCS as part of a battery of parent-report measures and surveys. DSP child participants engaged in conversation with the SLP, completed a bilateral pure-tone hearing screening with pure tones presented at 1000, 2000, and 4000 Hz in each ear at 20 dB HL with calibrated audiometric equipment, and parents completed the VRYCS electronically via Research Electronic Data Capture (REDCap; Harris et al., 2009, 2019). In the VBWC, speech samples were collected during play-based interactions between the child and parent and the VRYCS was completed by parents via paper and pencil, along with other case history and parent-report measures.

Demographic and VRYCS data for all laboratory and clinical participants were entered into REDCap by trained research assistants. All 214 parent participants completed all 40 VRYCS items. Manual entry of the VRYCS data from the paper-and-pencil forms obtained from clinical records was performed using double-entry (i.e., entered into REDCap independently by two ECHOS project staff and compared), yielding 99.65% interrater reliability by item. All discrepancies were resolved by additional review, and 100% agreement was attained.

Item Reduction

Preliminary review of the initial 40-item version of the VRYCS led to elimination of 10 items to enhance item uniformity, as well as reduce the length of the VRYCS for improved clinical and research utility. One of those items, "Smile when your child spoke" was removed because greater than 80% of respondents selected the same answer (i.e., "often"), with the remaining parents selecting "always." The remaining nine were removed because they were opposites of other questions (e.g., "Try not to correct what your child says" was removed; "Correct what your child says" was kept). By eliminating these redundant items, we reduced respondent burden without losing important information. The two reduction processes resulted in a 30-item version of the VRYCS.

Content Validity

To establish content validity and further reduce instrument length, an online REDCap survey was designed and distributed to 10 international speech-language pathologists/therapists (SLP/Ts) who specialize in treating stuttering/fluency disorders (Boateng et al., 2018). They were selected because of their specialized experience working with young CWS across diverse settings. Content validity is the extent to which items represent the construct being measured in an assessment or questionnaire (McDowell, 2006). Specialists were informed of the nature and purpose of the VRYCS rating scale and asked to judge, based on their experience with the assessment and treatment of young CWS and their parents, whether each of the 30 VRYCS items should be included or excluded from the final instrument.

Of the 30 items evaluated, specialists were 100% in agreement that 13 of the items should be included, 90% or greater in agreement for a total of 21 items, and 80% or less in agreement for nine of the items. It was decided that the 21 items achieving 90% or greater agreement would be retained for further analysis, as most strongly reflecting the intended construct of the VRYCS, and as being consistently endorsed by at least nine of the 10 international stuttering specialists. The nine excluded items related to asking the child to talk faster, asking the child to talk more, caregivers speeding up their own talking, rephrasing what the child said, correcting what the child said, frowning, asking the child to breathe, paying attention to the child, and talking less.

Statistical Analysis

The 21 items endorsed by the stuttering specialists were subjected to a principal component analysis (PCA) in which highly correlated variables were grouped to identify the underlying structure of the VRYCS. This form of exploratory factor analysis reduces a larger number of variables to a smaller number of components or factors to aid in the analysis and interpretation of an instrument's underlying constructs (Costello & Osborne, 2005). Prior to conducting the PCA, the suitability of the data for factor analysis was evaluated using the Kaiser–Meyer–Oklin (KMO) Test for Sampling Adequacy and Bartlett's Test of Sphericity (M. O. Kaiser, 1974). The KMO Test measures the proportion of variance among variables that is attributable to common variance, with a KMO value of .5 or greater demonstrating adequate suitability for factor analysis (Cerny & Kaiser, 1977; M. O. Kaiser, 1974). Bartlett's Test of Sphericity tests the degree to which the data are comprised of an identity matrix to determine their suitability for factor analysis (Tobias & Carlson, 1969). A suitable KMO value of .776 was obtained and Bartlett's Test of Sphericity was statistically significant ($p < .001$), thereby supporting the factorability of the present data.

After determining that the data were suitable, a PCA was conducted. A varimax rotation, which does not assume correlation between identified factors, was employed to maximize the clarity with which the strongest indicators of each factor could be identified (Costello & Osborne, 2005). Factors were identified based on evaluation of computed eigenvalues, scree plot analysis, and the values of primary factor loadings. Factors with an eigenvalue (i.e., the amount of variance explained by the factor) greater than 1 and appearing above the natural bend as revealed by visual analysis of the scree plot were retained. To ascertain the most relevant loadings for each item, primary loadings above .4 were used (Costello & Osborne, 2005). Positive loadings indicate the items are consistent with underlying factor constructs. Negative loadings indicate an inverse relationship between the item and the factor construct in the presence of other variables within the component. Items that cross-loaded on two or more factors were eliminated if the loadings were within .1; otherwise, the factor with stronger loading was used (Costello & Osborne, 2005). Internal consistencies for the VRYCS scale and each identified factor were examined using Cronbach's alpha which assesses the extent to which items capture similar information (Miller, 1995; Oppenheim, 1992).

Although rules regarding the appropriate sample size for exploratory factor analysis are not universal (e.g., Rouquette & Falissard, 2011), investigators commonly advise obtaining data from at least 10 subjects per item analyzed (Everitt, 1975). Therefore, the present sample (n = 214) is judged to be adequate for analysis of the 21 items retained for factor analysis of the VRYCS.

Results

Factor Analysis

Five factors with eigenvalues greater than one were extracted via PCA, meeting Kaiser's criterion for inclusion (H. F. Kaiser, 1960). Visual analysis of the scree plot revealed a steep declining slope transitioning to a shallow declining slope between the eigenvalue of the fifth factor (1.257) and the eigenvalue of the sixth factor (1.093), indicating the five factors which explained the greatest variance met Cattell's scree-test for inclusion (Cattell, 1966). The five factors collectively accounted for 59.3% of the total variance. Factor names were then selected with the intent of capturing the nature of the underlying variables. Table 2 provides the factor loadings for all 21 items analyzed.

The first factor, "Requesting Change," accounted for 21.79% of the variance and included the following items: Ask your child to think about what he/she is going to say, ask your child to take a deep breath before speaking, ask your child to slow down while talking, and tell your child to relax. The mean factor loading (i.e., sum of the loadings of each item included in a factor, divided by the number of items) was .837.

The second factor, "Speaking for the Child," accounted for 12.64% of the variance and included the following items: Fill in words for your child, talk for your child, say your child's words for him/her, and finish what your child was saying. The mean factor loading was .738.

The third factor, "Supporting Communication," accounted for 8.70% of the variance and included the following items: Let your child lead the conversation, wait for your child to finish talking before you spoke, and praise what your child said. An additional item (i.e., Talk at the same time as your child), achieved an eigenvalue

Table 2. Factor loadings resulting from the principal components analysis.

	Factor					
Item	**1**	**2**	**3**	**4**	**5**	**6**
Ask your child to take a deep breath before speaking.	**.859**	.054	.038	.016	.034	.041
Ask your child to slow down while talking.	**.846**	.150	–.023	–.175	.013	–.048
Tell your child to relax.	**.823**	.114	.012	–.143	.149	–.097
Ask your child to think about what he/she is going to say.	**.819**	.174	–.060	–.055	.013	.108
Fill in words for your child.	.103	**.821**	.138	–.061	–.067	.177
Say your child's words for him/her.	.130	**.810**	.165	–.048	.129	.062
Finish what your child was saying.	.281	**.753**	.108	–.150	–.080	.190
Talk for your child.	.043	**.569**	.057	–.047	.198	–.214
Wait for your child to finish talking before you spoke.	.101	.233	**.703**	.012	–.058	–.099
Praise what your child said.	–.088	–.044	**.603**	.228	–.081	.014
Let your child lead the conversation.	–.033	.082	**.594**	.153	.324	–.232
Talk at the same time as your child.	–.008	.289	.585	–.113	.153	.235
Use simpler language when your child was talking.	–.131	–.330	.092	**.700**	.083	.146
Pause before responding to your child.	–.048	.151	.030	**.683**	–.154	–.176
Ask simple questions.	.028	–.251	.176	**.672**	.017	–.037
Slow down your speech.	–.312	.027	–.087	**.549**	–.165	.057
Become tense when your child was speaking.	.120	.042	.094	–.149	**.795**	.140
Worry about your child's talking.	.183	.277	–.331	.057	**.613**	–.243
Remain relaxed when your child was speaking.	–.054	–.050	.443	–.121	**.609**	.094
Ask complex or open-ended questions.	–.021	.091	–.071	.001	.025	.856
Interrupt your child.	.131	.310	.435	–.088	.241	.423

Note. Extraction method: principal component analysis. Rotation method: varimax. Bold denotes items with factor loadings > .40 with > .10 difference between factors included in final instrument. Factor 1 = Request Change; Factor 2 = Speak for Child; Factor 3 = Support Communication; Factor 4 = Slow and Simplify; Factor 5 = Respond Emotionally.

greater than 0.4; however, it had the weakest loading on this factor and was removed because of a lack of association with the rest of the items. The mean factor loading for the third factor was .633.

The fourth factor, "Slowing and Simplifying," accounted for 7.98% of the variance and included the following items: Slow down your speech, use simpler language when your child was talking, ask simple questions, and pause before responding to your child. The mean factor loading was .651.

The fifth factor, "Responding Emotionally," accounted for 5.98% of the variance and included the following items: Become tense when your child was speaking, remain relaxed when your child was speaking, and worry about your child's talking. The mean factor loading was .672.

Two items did not satisfy the stated inclusionary criteria for factor loadings: Ask complex or open-ended questions; interrupt your child. These items were removed, yielding a final instrument with 18 items.

Reliability

Internal consistency for each factor (based on the related items) and the full 18-item VRYCS rating scale was evaluated and demonstrated with Cronbach's alpha: Factor 1, 0.880; Factor 2, 0.772; Factor 3, 0.516; Factor 4, 0.615; Factor 5, 0.528; full VRYCS rating scale, 0.645. Although Cronbach's alpha is known to be reduced in instruments with fewer items (e.g., the 3 or 4 items per factor in the present instrument; Tavakol & Dennick, 2011), all factors and the full VRYCS demonstrated alphas greater than 0.5 (Nunnally, 1978; Taber, 2018), indicating the VRYCS has acceptable reliability when administered to the parents of young (ages 2;4 to 5;11) CWS.

Record Form and Scoring Form

Appendix A contains the final, 18-item VRYCS record form. Appendix B contains a scoring form and directions to assist in calculation of an overall VRYCS score and scores for the five VRYCS factors (i.e., Requesting Change, Speaking for the Child, Supporting Communication, Slowing and Simplifying, Responding Emotionally). During scoring, ten of the items are reverse scored so that higher scores for the total VRYCS and individual factors reflect more positive responses by parents. For example, if a caregiver reported they always (i.e., "4") asked their child to slow down, their score for the item would be reversed to a "0," indicating that they rarely provide the supportive response. Each of the five factor means are computed by averaging the mean ratings for items within each factor (after item reversals). The total VRYCS score is derived by averaging responses to all 18 items (after reversals).

Descriptions of Individual Items and Factors

Descriptive statistics for the individual VRYCS items are presented in Table 3. Lower scores indicate a positive response occurs less frequently (e.g., 0 = *never*); higher scores indicate the positive response occurs more frequently (e.g., 4 = *always*). Higher scores reflect more supportive responses. Means for individual items ranged from 1.09 (Say your child's words for him/her) to 3.21 (Wait for your child to finish talking before you spoke).

Table 3. Descriptive statistics for all Validation of the Vanderbilt Responses to Your Child's Speech items.

Item	Label	Mean	*SD*	Min	Max	Median
1	Slow down your speech.	2.10	1.07	0.00	4.00	2.00
2	Become tense when your child was speaking.	1.34	1.06	0.00	4.00	1.00
3	Fill in words for your child.	2.58	0.97	0.00	4.00	3.00
4	Talk for your child.	1.43	1.22	0.00	4.00	1.00
5	Say your child's words for him/her.	1.09	0.89	0.00	4.00	1.00
6	Ask your child to think about what he/she is going to say.	1.53	1.23	0.00	4.00	2.00
7	Ask your child to take a deep breath before speaking.	1.33	1.27	0.00	4.00	1.00
8	Finish what your child was saying.	1.29	0.92	0.00	4.00	1.00
9	Pause before responding to your child.	1.99	1.00	0.00	4.00	2.00
10	Remain relaxed when your child was speaking.	3.06	0.79	0.00	4.00	3.00
11	Let your child lead the conversation.	2.95	0.66	1.00	4.00	3.00
12	Ask your child to slow down while talking.	1.93	1.38	0.00	4.00	2.00
13	Use simpler language when your child was talking.	2.02	1.01	0.00	4.00	2.00
14	Ask simple questions.	2.43	0.93	0.00	4.00	2.00
15	Worry about your child's talking.	2.59	1.08	0.00	4.00	3.00
16	Wait for your child to finish talking before you spoke.	3.21	0.69	0.00	4.00	3.00
17	Praise what your child said.	2.96	0.88	0.00	4.00	3.00
18	Tell your child to relax.	1.76	1.31	0.00	4.00	2.00

Note. Values reflect nonreverse scoring (i.e., for all items, 0 = never, 4 = always). Min = minimum; Max = maximum.

These means indicate that caregivers reported they wait for their child to finish talking before speaking more often than they say their' child's words for them. Standard deviations ranged from 0.66 (Let your child lead the conversation) to 1.38 (Ask your child to slow down while talking). Responses to 17 of 18 items ranged from 0 (never) to 4 (always), and responses to Let your child lead conversation ranged from 1 (rarely) to 4 (always). While the ranges indicate that some parents endorsed "never" or "always," they were never the most frequent responses to any items. As indicated by median values, "sometimes" was the most typical response for seven items (1, 6, 9, 12, 13, 14, 18), "often" was the most typical response for the six items (3, 10, 11, 15, 16, 17), and "rarely" was the most often response for five items (2, 4, 5, 7, 8).

Table 4 displays descriptive statistics for the VRYCS Total and Factor Scores. Means for the five factors ranged from 2.13 (Slowing and Simplifying) to 3.04 (Supporting Communication), and the mean Total VRYCS score was 2.50 (SD = 0.39).

Discussion

In this study, the perspectives of 214 parents of young (2;4–5;11) CWS were obtained using the VRYCS rating scale, a novel parent-report measure designed to capture parents' self-perceived responses to their children's speech. Items that were less consistent with the overall instrument or endorsed less frequently were eliminated following initial examination and subsequent content analysis by an expert panel (*n* = 10) of stuttering specialists. A PCA of the remaining 21 items yielded a five-factor solution and identified 18 items demonstrating the underlying structure of the VRYCS, with item sorting yielding five factors fitting the following descriptive categories: (a) Requesting Change, (b) Speaking for the Child, (c) Supporting Communication, (d) Slowing and Simplifying, and (e) Responding Emotionally. These factors reflect meaningful patterns observed in parents' perceptions of their responses to their CWS that are consistent with extant clinical recommendations and treatment methods for young children, suggestions from educational and advocacy organizations, and research findings. Each factor, along with the final 18-item VRYCS instrument, demonstrated adequate internal consistency reliability.

VRYCS Factors

The use of PCA imposes structure on scale items; however, it is through the subsequent application of clinical insights shaped by models, theories, research findings, and treatment practices, that the utility of the resultant components are to be examined in relation to the instrument's purpose. Thus, the five-factor solution for the VRYCS was explored with these influences in mind, resulting in the refinement of the instrument and descriptive labels selected for each of the five factors in the final version of the VRYCS.

Examination of parents' responses showed they perceived themselves as "often" supporting the communication of their CWS (Factor 3) by letting their children lead the conversation, waiting for their children to finish before speaking themselves, and/or praising what their children have to say. In contrast, parents perceived themselves as "sometimes" slowing and simplifying their own speech when communicating with their CWS (Factor 4), suggesting that they were less likely to support their CWS by slowing their speech rates, pausing, using simpler language, and/or asking simple questions. While results for individual parents varied, in general, these findings might suggest that parents of CWS are aware of the need, and/or find it easier and/or more natural to wait, listen, and (less frequently) praise the content of the speech of their young CWS than to alter their own speaking patterns by slowing and/or simplifying.

Parents also generally rated themselves as "sometimes" or "often" speaking for their CWS (Factor 2) by filling in, saying words, or talking for them, and by finishing what their children were saying. One might speculate that parents are attempting to "help" their CWS by supplying or filling in words when their children are stuttering and seemingly having difficulty finishing what they are saying. This is often a quandary for parents who are conflicted between waiting for their child to communicate

Table 4. Descriptive statistics for Validation of the Vanderbilt Responses to Your Child's Speech factor scores and total score.

Factor	Label	Mean	*SD*	Min	Max	Median
Factor 1	Requesting Change	2.36	1.11	0.00	4.00	2.50
Factor 2	Speaking for the Child	2.69	0.78	0.00	4.00	2.75
Factor 3	Supporting Communication	3.04	0.53	0.67	4.00	3.00
Factor 4	Slowing & Simplifying	2.13	0.68	0.00	3.75	2.25
Factor 5	Responding Emotionally	2.38	0.71	0.67	4.00	2.33
	Total Score	2.50	0.39	1.39	3.50	2.50

Note. Values reflect reverse-scoring (i.e., for all factors, 0 = *least helpful*; 4 = *most helpful*). Min = minimum; Max = maximum.

their thoughts and jumping in to "help" them by talking for them when they are struggling (e.g., Adams, 1990; Millard et al., 2018; Starkweather & Gottwald, 1990).

Parents were similarly inclined to "sometimes" request their children change their talking (Factor 1) by asking them to think about what they want to say, take a deep breath before speaking, slow down, and/or relax. They also "sometimes" responded emotionally when their CWS were speaking (Factor 5) by remaining relaxed or, conversely, becoming tense when their children were speaking, and/or by worrying about their children's talking. These responses may reflect the natural concerns parents have when their children are stuttering, their attempts to remain relaxed externally while, perhaps, tensing internally, and their efforts to "help" by suggesting their children alter their own communication by slowing, pausing to think, taking a deep breath, and/or relaxing. Relatedly, Millard et al. (2018) found that children of parents who, at the start of intervention, were more worried and lacked knowledge about stuttering and confidence with their abilities to respond helpfully, made greater improvements in response to Palin PCI therapy once parental responses (e.g., telling their child to take a deep breath) were addressed. Thus, the provision of educational information and tailored suggestions for responding supportively to CWS' communication (e.g., refrain from corrections, wait, and listen) may positively impact parents' responses (e.g., encourage waiting and listening and decrease worrying) and children's stuttering.

It is interesting that, while parents might be less inclined to slow and simplify their own talking (Factor 4), they are more inclined to suggest that their CWS make changes to the way they communicate and, presumably, to their stuttering (Factor 1). During initial evaluations and/or contacts with parents of young CWS, they often share that they respond in these ways to "help" their CWS. As described by Langevin et al. (2010), parents of young CWS report engaging in many such behaviors and do so inconsistently and, perhaps, idiosyncratically. One might speculate that parents may do and/or advise their CWS to do (or not do) what they think will help, based on their own intuitions, and/or others' influence (e.g., family members, professionals such as pediatricians or SLP/Ts), often receiving mixed messages about best practices (e.g., Byrd et al., 2020; Winters & Byrd, 2020). Parents may report that they were "doing everything wrong" (e.g., telling their child to stop, think, start over, take a deep breath, or slow down) until they accessed information from educational/advocacy websites such as the Stuttering Foundation (http://www.stutteringhelp.org). Other parents have had similar reactions when comparing what they shared in the parent interview to what was discussed and suggested at the end of their children's evaluations. Thus, providing specific recommendations tailored to parents' own perceptions of their responses to their CWS, as well as the observations of clinicians during assessments and treatment, are well-motivated (e.g., Franken & Putker-de Bruijn, 2007; FRIENDS, 2020; Kelman & Nicholas, 2020; Millard et al., 2018; NSA, 2020; Stuttering Association for the Young, 2020; Stuttering Foundation of America, 2020).

Targeted Clinical Applications

Attention to the frequency with which parents engage in these (and other) responses, as self-judged using the VRYCS and as observed during parent–child communication interactions, is potentially useful for assessment and monitoring of parental changes and children's responses (including their speech fluency) at initial assessment and over time (e.g., pre- and posttreatment) and may provide additional support for and/or contribute to elaboration of models and theories of stuttering development.

Assessment

The VRYCS rating scale augments assessment practices with young CWS and their families. Administration and scoring of the VRYCS during initial evaluations of young CWS (as was done in this study) provides clinicians with insights into parents' perceptions of their responses to their CWS in everyday communication contexts outside of the clinical environment (e.g., what they ask their CWS to do or not do, what they change in their own talking, and/or what they might be feeling when engaging with their children who may be struggling with communication). Parents' perceptions also may be discussed and explored during the parent interview and compared with what the clinician observes during parent–child and clinician–child interactions (e.g., initial play-based conversation samples). Through this combination of data sources (i.e., the VYRCS, parent interview, and observations of parent–child interactions), the clinician will be better prepared to provide tailored information, goals, and recommendations to help parents enhance or modify their responses to their CWS.

Inclusion of parents in evaluating the utility of both what they have tried and what is being suggested by SLP/Ts also will contribute to the establishment and strengthening of therapeutic relationships that will facilitate engagement in and implementation of any recommended strategies or therapeutic approaches (e.g., Croft & Watson, 2019; Kelman & Nicholas, 2020). The clinician may begin this process by identifying areas of strength for parents, highlighting ways in which they are already supporting the communication and fluency of their CWS. For example, a parent may be pausing before responding to the child (as observed by the clinician and reported on the VRYCS) and refraining from corrective requests for change (i.e., saying "slow down, take a deep breath" when the child stutters;

Factor 1). In keeping with solution-focused models of behavior change, the clinician would praise these responses, provide the rationales, and encourage the parent to continue them (Burns, 2006; Nicholas, 2015).

Conversely, clinicians may use the VRYCS to identify responses by parents that are less helpful or contraindicated by evidence-based treatment approaches (Franken & Putker-de Bruijn, 2007; Kelman & Nicholas, 2008, 2020; Yaruss et al., 2006). For example, a parent may report speaking for their child (Factor 2) by filling in words and finishing the child's sentences. While intended to "help" the CWS communicate more easily/fluently, the parent may instead interfere with the child speaking independently, convey impatience with the child's speech, and/or indicate to the child that stuttering is "not okay" (e.g., Johnson, 1959; Millard et al., 2018; Starkweather & Gottwald, 1990). Specific recommendations motivated by the VRYCS could be supplemented by handouts and online educational/advocacy materials that provide further explanation and support for the parents to implement these suggestions (e.g., "Tips for Talking with the Child Who Stutters," http://www.stutteringhelp.org). Within this framework, education includes facilitating parents' understanding that (a) most parents (and adults, in general), are uncertain how to respond when young children are stuttering; (b) their efforts to help do not cause their child's stuttering; and (c) there are many ways they can support their child's communication, some of which they already are demonstrating.

Treatment

After the initial assessment, administration of the VRYCS can help clinicians select targets and assess progress in parent-based, communication-focused early stuttering intervention. Consistent with practices described in Palin PCI, RESTART-DCM, and family-focused treatment approaches (de Sonneville-Koedoot et al., 2015: Franken & Putker-de Bruijn, 2007; Kelman & Nicholas, 2008, 2020; Yaruss et al., 2006), young CWS benefit from parent involvement, especially in day-to-day, real-life communicative interactions and contexts. The VRYCS may be used by clinicians applying these approaches to assess parents' perceptions of targeted changes they are asked to make in therapy before, during, and after intervention concludes. Parents' responses on the VRYCS also could be compared to clinician's observations of targeted behaviors in samples of parent–child conversations. For example, if a parent is targeting Factor 3, Supporting Communication, objective analyses of the parent's waiting or interrupting/overlapping the child's talking, praising the content of the child's utterances, and/or following the child's lead in conversation could be made from parent–child conversational samples, and compared to pretreatment levels. Changes in parents' responses also could be investigated relative to like behaviors in CWS and to speech, language, and stuttering characteristics (e.g., Sawyer et al., 2017). Regardless of treatment approach, the VRYCS may be useful in bringing awareness to and changing behaviors that will ultimately impact the communication and stuttering of CWS.

Limitations and Future Directions

The retrospective nature of this study presented some limitations. Some demographic information about the parents (e.g., which parent responded to the VRYCS, whether any of the parents themselves stutter) was not obtained or extracted from one or both samples for this study. This may have implications due to observed differences between mothers and fathers in their interactions with CWS (Kelly, 1995), and the impact of parents' own experiences with stuttering on their perceptions of themselves and their CWS. Notably, socioeconomic status and race were only available for participants from the research sample. Consistent collection and consideration of these data in future explorations may reveal unique differences in caregiver responses given their cultural and linguistic backgrounds. In addition, because data were not collected prospectively with a randomized sample, it is not known if the sample is truly representative of young CWS. Additionally, the lack of valid English-language measures similar in purpose to the VRYCS prevented an assessment of the concurrent validity of the VRYCS.

Future research could include assessing the test–retest reliability of the VRYCS to examine the stability of parents' reported responses over time. Investigation of differences between responses of fathers and mothers, parents of CWS and parents of CWNS, and parents of children who only stutter and parents of children with concomitant concerns, among other questions, could be examined. Comparison of results for children who only stutter to those with concomitant concerns or to children who do not stutter but have other communication challenges are other possible research directions. Additionally, analyses of relationships between children's speech, language, temperament/emotion characteristics and communication attitudes, and their parents' VRYCS responses, may provide further insights into the factors that may be associated with differing profiles of parental responses and stuttering development. Likewise, variables specific to children's stuttering such as time since onset, stuttering characteristics, severity (as judged by parents and/or clinicians), history of stuttering in the family, and their relation to parents' self-perceptions also warrant exploration. Similarly, parents' own characteristics such as stuttering history/status, language, temperament, or demographics may influence their reported responses. Relations between other parent measures (e.g., Palin PRS, ISPP) and the

VRYCS may also advance our understanding of parents' responses to the speech of their CWS and their perceptions of the nature and impact of stuttering on themselves and/or their children.

Future studies may also examine how parent responses change over time across a variety of early childhood stuttering treatment approaches. Furthermore, researchers could include the VRYCS in studies designed to investigate the relationship between parents' temporal, linguistic, and emotional responses and treatment outcomes (e.g., changes in fluency, quality of life measures, and/or parents' perceptions of successful stuttering management). Additionally, future research may benefit from applying multiple assessment methods to assess parents' responses to their CWS, including self-report, observational, behavioral, and physiological measures.

Conclusions

The VRYCS is a psychometrically sound measure of parents' perceptions and includes five factors relating to their responses to their young (2;4–5;11) CWS: (a) Requesting Change, (b) Speaking for the Child, (c) Supporting Communication, (d) Slowing and Simplifying, and (e) Responding Emotionally. This scale provides an objective means for obtaining and examining these responses from parents of CWS and elucidates their underlying factors. Inclusion of the VRYCS may strengthen assessment and parent-based treatment protocols for young CWS by furthering exploration and understanding of the communicative environments of CWS.

Data Availability Statement

The data sets generated during and/or analyzed during this study are available from the corresponding author on reasonable request.

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Appendix A

Vanderbilt Responses to Your Child's Speech (VRYCS) Rating Scale

Child's Name: ____ Date: _____________
Person Completing Form: ____
Relationship to Child: ____

Item no.	Never	Rarely	Sometimes	Often	Always	In the past 2 months, how often did you:
1.	0	1	2	3	4	Slow down your speech.
2.	0	1	2	3	4	Become tense when your child was speaking.
3.	0	1	2	3	4	Fill in words for your child.
4.	0	1	2	3	4	Talk for your child.
5.	0	1	2	3	4	Say your child's words for him/her.
6.	0	1	2	3	4	Ask your child to think about what he/she is going to say.
7.	0	1	2	3	4	Ask your child to take a deep breath before speaking.
8.	0	1	2	3	4	Finish what your child was saying.
9.	0	1	2	3	4	Pause before responding to your child.
10.	0	1	2	3	4	Remain relaxed when your child was speaking.
11.	0	1	2	3	4	Let your child lead the conversation.
12.	0	1	2	3	4	Ask your child to slow down while talking.
13.	0	1	2	3	4	Use simpler language when your child was talking.
14.	0	1	2	3	4	Ask simple questions.
15.	0	1	2	3	4	Worry about your child's talking.
16.	0	1	2	3	4	Wait for your child to finish talking before you spoke.
17.	0	1	2	3	4	Praise what your child said.
18.	0	1	2	3	4	Tell your child to relax.

Appendix B

Vanderbilt Response to Your Child Speech Rating Scale (VYRCS): Scoring Form

Instructions: (a) Record respondent's ratings in the Rating column, (b) if Reverse indicates Yes, reverse score the original rating as specified in Reverse Score column and record in the "Adjusted Rating" column, (c) in the "Totals" column, sum the Adjusted Ratings for each Factor, (d) divide Factor totals by the number of items to yield average Factor scores, (e) sum the Totals column to yield the Grand Total, (f) Divide Grand Total by 18 to yield Total Score. Higher scores suggest more supportive responses.

Factor	Item no.	Rating	Reverse score?	Adjusted rating	Totals	Factor/total scores
Factor 1: Requesting change	6		Yes		Factor 1 Total: _______	(Factor 1 Total)/4 = _______
	7		Yes			
	12		Yes			
	18		Yes			
Factor 2: Speaking for the child	3		Yes		Factor 2 Total: _______	(Factor 2 Total)/4 = _______
	4		Yes			
	5		Yes			
	8		Yes			
Factor 3: Supporting communication	11		No		Factor 3 Total: _______	(Factor 3 Total)/3 = ________
	16		No			
	17		No			
Factor 4: Slowing and simplifying	1		No		Factor 4 Total: _______	(Factor 4 Total)/4 = _______
	9		No			
	13		No			
	14		No			
Factor 5: Responding emotionally	2		Yes		Factor 5 Total: _______	(Factor 5 Total)/3 = _______
	10		No			
	15		Yes			

Reverse scoring
0 becomes 4
1 becomes 3
2 stays 2
3 becomes 1
4 becomes 0