

<Original Article>

Evaluation of Speech-Related Attitude by Means of the KiddyCAT, CAT, and BigCAT, within a Larger Behavior Assessment Battery Framework for Children and Adults Who Stutter

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Abstract

The assessment of a child or adult who stutters should not be limited to the investigation of the individual's disfluencies. Given the abundance of data indicating that stuttering is not solely a speech impediment, the constituents that surround stuttering need to be evaluated during the initial assessment. This paper presents information on an assessment battery for school-age children and one for adults, the Behavior Assessment Battery, which investigates the affective, behavioral and cognitive sequelae that frame the stuttering disorder. More specifically, the focus of this paper will be on the cognitive component of the stuttering syndrome, not only among school-age children and adults, but even among the very young, incipient stuturer. The internationally-based research on the KiddyCAT, CAT and BigCAT assessment tools is being summarized. In addition, the current status of studies on attitude toward communication of individuals in Japan is introduced.

Key words: speech-associated attitude, communication attitude, KiddyCAT, CAT, BigCAT

I. Introduction

Whether we are dealing with a child or adult who stutters, through research, clinical experience, anecdotal information and self-report information from the individual, we have learned that talking about “stuttering” does not tell the complete story. Stuttering does not capture what occurs within the *person* who stutters (PWS). It does not give the full picture. The complete story is more complex and encompasses more than just the perceived disfluencies that interrupt the forward flow of speech. It is common knowledge that stuttering is, in most cases, accompanied by preceding or co-occurring events and phenomena. As a result, many co-workers have agreed that this multi-dimensional disorder (Barber Watson, 1995; Brutten & Vanryckeghem, 2003a,b, 2007; Guitar, 2014; Manning, 2010; Van Riper, 1982; Williams, 1979), the stuttering

“syndrome” (Cooper, 1984, 1999), should not be dealt with in a mono-dimensional way, and that one should refrain from seeing stuttering in a “tunnel-vision view” (Conture, 2001, p.126).

The views about the dimensions of this speech disorder, which can have a debilitating impact on a person's quality of life (Yaruss & Quesal, 2006), warrant in the first place a thorough exploration of its elements. Aside from the observation of a person's type and frequency of fluency failures, discovering the all-encompassing aspects of the disorder warrant more than only clinician observation of the visible or audible correlates. Obviously, analyzing the characteristics of the disfluencies, their locus, their acoustical distinctive features, are a vital part of what a thorough evaluation of the PWS should entail. However, as has become more and more evident, it is equally important to incorporate the information provided by the individual suffering from the speech impediment into our assessment of the *person* experiencing it all (Perkins, 1990). This intrinsic

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information can be obtained by engaging the PWS in a detailed interview, and through an anamnestic intake conversation. However, a more thorough and standardized way to obtain this information makes also use of standardized and normed self-report tests.

II. Behavior Assessment Battery

I. Overview

A normed standardized test instrument that aims to obtain information from *within* the individual who stutters, whether a child (CWS) or adult (PWS) is the Behavior Assessment Battery (BAB) (Brutten & Vanryckeghem, 2003a,b, 2007). The BAB's self-report tests tap into the Affective, Behavioral and Cognitive, or ABC, components of this amalgamated speech disorder. Affective reactions are explored as it relates to sounds, words and particular speech situations. The behavioral aspect is not only limited to the speech disruption itself, but also to those behaviors being used in order to cope with the stuttering. A person's cognition, thinking, belief about his or her speaking ability and act of speaking, also warrants exploration. These associated attitudinal and affective reactions, and behaviors of avoidance and escape are seen by many as vital components worth investigating (Barber Watson, 1988, 1995; Brutten & Shoemaker, 1967; Brutten & Vanryckeghem, 2003a,b, 2007; Conture, 2001; Cooper, 1979; Guitar, 1976, 2014; Manning, 2010; Riley, 1994; Smith & Kelly, 1997; Yaruss & Quesal, 2006).

The BAB, is a multi-dimensional and evidence-based approach to diagnostic and therapeutic decision making which uses the "inside view" (2003a,b, 2007) provided by the CWS and PWS. It assists in differential diagnosis of various fluency disorders by pointing to different and differential aspects (Silverman, 2004), helps determine individualized strategies and tactics of therapy, and measures therapeutic effectiveness. For the purpose of this paper, only the venue of self-report will be dealt with. Patient history, clinician observation of speech during reading and extemporaneous speech, interview, etc., which are also intricate elements of a fluency evaluation, will not be described here.

The uniqueness of the BAB lies in the fact that each of its sub-tests, explore the ABC components in a non-confounded way. In other words, each test separately discovers the affective, coping and attitudinal reactions, and their impact on a CWS or PWS. The various reactive and behavioral elements serve to generally profile the distinctive extent to which Affect, Behavior and Cognition plays a role in the disorder that is stuttering. In turn, within this ABC profile, the specific items contained in each test pinpoint to treatment targets.

2. Speech Situation Checklist

The Speech Situation Checklist (SSC), is one of the BAB sub-tests that explores both the affective and behavioral aspects of the stuttering disorder. The first section of this test, Emotional Reaction (SSC-ER) investigates the extent to which negative emotional reaction, such as fear, anxiety, worry, is being reported to 51 (adult test) and 55 (children test) described speech situations. On a five-point scale, ranging from 'not' afraid, no worry to ... 'very much' afraid or worried, the child or adult evaluates speech settings like: talking to someone you don't know, trying to make a good impression, giving your name, reading an unchangeable passage aloud, as it relates to his or her level of negative emotional response. In the Speech Disruption section (SSC-SD), the client rates the extent of speech disruption (part-word and mono-syllabic word repetitions, oral and silent sound prolongations) in the very same speech situations found in the SSC-ER section. The answers range from 'no' speech disruption to speech is 'very much' disrupted. Aside from a total score, which gives a general picture of the extent to which anxiety and speech disruption is present in particular circumstances, each item's score indicates which speech situations need to be targeted in treatment in terms of desensitization and speech practice. The SSC for children and adults has a wide range of psychometric data. Repeatedly, it has been shown that CWS and PWS score statistically significantly higher on this test compared to their nonstuttering peers. Also the validity and reliability measures are solid (Brutten & Vanryckeghem, 2003a,b, 2007; Vanryckeghem & Verghese, 2004).

3. The Behavior Checklist

The other branch of the behavioral dimension encompasses those behaviors that are secondary to the stuttering. The Behavior Checklist (BCL) is the test that provides information about a client's speech-associated avoidance and escape behaviors specific to sounds, words and situations. The BCL lists 50 (children test) and 95 (adult test) behaviors that might be associated with or exhibited during the act of speaking to avoid or escape negatively charged speech situations and/or words. It explores the number and type of coping behaviors that a client reports to employ as a means of aiding speech. The test deals with the use of word substitutions, interjections, bodily adjustments, breathing patterns, just to name a few. The BCL has shown to differentiate individuals who stutter from those who do not to a statistically significant extent, and to have good validity and reliability (Brutten & Vanryckeghem, 2003a,b, 2007; Vanryckeghem, Brutten, Uddin, & Van Borsel, 2004; Vanryckeghem & Herder, 2004). The resulting BCL data provide an inventory of the avoidance and escape responses that a client uses to cope with stuttering, and that warrant the attention of the clinician.

4. Cognition and Speech-Associated Attitude

Cognition is an integral component of the experiences of CWS and PWS. The importance of the relationship between cognition and stuttering and its role in the onset and development of the disorder has long been recognized (Barber Watson, 1995; Lincoln, Onslow & Menzies, 1996). When cognitions become irrational, they can strengthen stuttering behavior and prohibit CWS and PWS to deal with problems in a constructive manner. These cognitions can stabilize to a more permanent totality of negative thoughts and anticipations and lay the foundation for negative communication attitude. The link between attitude and stuttering has been documented predominantly among adults who stutter. Pretreatment attitude e.g. was seen as a good prognostic measure of the instatement and maintenance of fluency (Guitar, 1976). In the same manner, it was stated that long-term maintenance of fluency that resulted from an operant treatment program used was at least partially dependent on

improved attitude toward speech (Andrews & Cutler, 1974), and that stuttering relapse was more often associated with negative speech-associated attitude than was a positive belief (Guitar, 1976; Guitar & Bass, 1978).

5. Communication Attitude Test for School-Age Children (CAT)

Data that relate to speech-associated attitude among children was, however, non-existent or very rudimentary until the eighties when Brutten designed the Communication Attitude Test (CAT). The CAT (Brutten & Vanryckeghem, 2003a, 2007) was designed to specifically investigate the speech-associated belief system of grade-school children as a purely cognitive measure. Youngsters (age 6 - 16) who stutter are asked to reflect directly on their attitude toward speech. Research with the CAT on an international scale is abundant. Repeatedly, it has been documented that school-age children who stutter score statistically significantly higher on the CAT, indicating that they think negatively about their speech (Bernardini, Vanryckeghem, Brutten, Cocco, & Zmarich, 2009; Brutten & Vanryckeghem, 2003a, 2007; De Nil & Brutten, 1990, 1991; Gacnick & Vanryckeghem, 2014; Green, 1998; Jacksic-Jelcic, & Brestovci, 2000; Johannisson, Wennerfeldt, Havstam, Naeslund, Jacobson, & Lohmander, 2009; Kawai, Healey, Nagasawa, Vanryckeghem, 2012; Vanryckeghem, 1995; Vanryckeghem & Brutten: 1992, 1995, 1997, 2003a). Psychometric research into the reliability of the CAT (Boutsen & Brutten, 1990; Brutten & Dunham, 1989; De Nil & Brutten, 1990; Vanryckeghem & Brutten, 2003a) resulted in the omission of two of the CAT's original items and the establishment of the current 33-item True-False self-report test (Brutten & Vanryckeghem, 2003a, 2007). The CAT has also shown to have a good internal as well as test-retest reliability and sensitivity.

In addition to the psychometric studies that have occurred globally with the CAT, the test has also been used to explore associated issues. One of them relates to the link between speech-associated attitude and negative emotional reaction. By means of the CAT, Vanryckeghem, Hylebos, Brutten and Peleman (2001) were able to document a strong and statistically significant (.89) relationship between mal-

attitude and negative emotion among CWS, which is supportive of the view that attitude and negative emotion tend to influence each other and are a part of the stuttering syndrome.

The relationship between attitude and stuttering severity was documented in a study by Vanryckeghem and Brutten (1996). Stuttering severity, which was measured during reading and extemporaneous speech, was found to correlate to a limited ($r=.33, .39$, respectively), though statistically significant extent. The limited shared variance indicates that these measured variables reflect somewhat different aspects of what constitutes stuttering. Using the SSI-3, Kawai, Healey, Nagasawa and Vanryckeghem (2012) found a significant difference in the speech-associated attitude of their CWS with mild, moderate and severe stuttering.

The differential effect of grade was studied by Kawai, Healey, Nagasawa and Vanryckeghem (2012). Aside from the fact that their data indicate that CWS score statistically significantly higher compared to CWNS across first to sixth grade, they found that for CWS as well as CWNS, the first graders scored statistically significantly lower compared to children in higher grades. From second grade onwards, the scores were not significantly different within each group.

Previously, Vanryckeghem and Brutten (1997) had documented that mal-attitude of CWS tends to increase with age, whereas an opposite trend is seen among CWNS. This between-group disparity increases with age. Equally important was the observation that, from age 6 on, mal-attitude is significantly more likely to be present among CWS than it is among CWNS. This phenomenon intrigued the researchers and warranted a new line of research with even younger children. However, prior to this, Vanryckeghem (1995) studied how reliable parents are in reporting on their children's speech-associated attitude. It is standard practice of clinicians to question the parents of very young children being assessed relative to their children's development, symptomatology, emotional reactions, attitudes, etc. However, data stemming from related fields show only a low-to-moderate degree of concordancy between parental report and the performance of their child, as measured by means of

developmental scales and inventories (Byrne, Backman, and Smith, 1986; Goldstein, 1985; Miller, Manhal, & Mee, 1991); or as it relates to family, drug- and work attitudes of young adult children (Thompson, Acock, & Clark, 1985). By means of administration of the CAT to school-age children and an adaptation of this test to the parents, reflecting on their CWS' attitude, it was discovered that the concordance between the children's CAT scores and those of their mother or father was statistically significant but low, ranging from .29 to .34 (Vanryckeghem, 1995). This common used parental child-related report "gold standard" might thus be questioned, given the limited shared variance between a child's reported speech-associated attitude and that reported by the parents.

6. Studies with the CAT in Japan

Although the CAT has been used in many countries around the world, there is a limited number of published studies on the CAT in Asian countries (Kawai et al., 2012). In 1995, Kawai translated the CAT-R (De Nil & Brutten, 1991) into Japanese. This instrument, CAT-J, included the same 32 items as the CAT-R. Using the CAT-J, Kawai conducted a pilot study of the speech-associated attitude among 32 CWS and 70 CWNS, who were in 4th through 6th grade of elementary school. Kawai (1995) found a statistically significant difference in speech-related attitude between CWS and CWNS. However, it was observed that Japanese CWNS demonstrated a more negative attitude toward speech compared to CWNS in the United States and European countries (Kawai, 1995, 1997). Subsequently, in order to investigate the efficacy of their cognitive component of stuttering therapy, Nagasawa and Kawai (1998) used the CAT-J to determine attitude change of Japanese CWS. They administered the CAT-J to 64 CWS four times with an interval of three months in the course of their treatment. Thirty-five out of the 64 CWS received stuttering modification therapy, the others were subjected to fluency shaping treatment. The researchers found that the CWS who received stuttering modification therapy showed a significant increase in positive communication attitude as therapy went on, whereas those who received

fluency shaping intervention did not show a significant attitude change in the nine months of their treatment. As indicated above, Kawai et al. (2012) found that CWS have a significantly more negative communication attitude than CWNS, a result that is similar to the data by Vanryckeghem (1997) and Vanryckeghem and Brutton, (1996) for children in Belgium.

The results of the Kawai et al. study (2012) appear to be a valid reflection of the speech-associated attitude of Japanese children who stutter, given that a reasonably large sample of 80 CWS was obtained for this investigation. This sample is similar to the sample size of the De Nil and Brutton (1991) study. Nevertheless, the findings of this study need to be replicated using a larger number of participants in both the CWS and CWNS group. In particular, one of the limitations of this study was the lack of administration of the SSI-3 to CWNS. This would have served to separate participants into two distinct categories. Future research in this area should include the SSI-4 measure for CWNS.

7. Communication Attitude Test for Preschoolers and Kindergartners (KiddyCAT)

The seemingly limited usefulness of parental comments about their child's speech-associated attitude and the previously reported data pointing to the presence of significant negative thinking of CWS about their speech, as of the age of six, which only increases with age, led the CAT test authors into exploring other means of investigating attitude among younger children. It resulted in the design of the Communication Attitude Test for Preschool and Kindergarten Children who Stutter, or KiddyCAT (Vanryckeghem & Brutton, 2007). Research by Grinager Ambrose and Yairi, (1994), and Ezrati, Platzky, and Yairi (2001) had already indicated that, as a group, children as young as three show an awareness of disfluency. Clearly, the thought that awareness, and the recognition of "stuttering" is a more advanced phenomenon, had been challenged. Given their research on attitude with school-age children, Vanryckeghem and colleagues wanted to take these awareness data a step further and investigate if negative speech-associated attitude might already be present among preschool and

kindergarten CWS. By means of a 12-item "yes"-no" verbally presented self-report test (e.g. do mom and dad think that you speak well; is talking hard for you), and a play-type administration, the researchers were able to document that CWS, as young as three, score statistically significantly higher on the KiddyCAT compared to CWNS (Vanryckeghem & Brutton: 2007; Vanryckeghem, Brutton & Hernandez, 2005). In the meantime, data pointing to a mal-attitude among young children has been confirmed in other cross-cultural investigations (Bernardini, Cocco, Zmarich, Di Pietro, Vanryckeghem, & Brutton, 2012; Clark, Conture, Frankel, & Walden, 2012; Vanryckeghem & Vanrobaeys, 2013; Weśnierska, Vanryckeghem, Jezioreczak, & Wilk, 2014).

The KiddyCAT has shown to be internally reliable (Vanryckeghem & Brutton, 2007) and is based on one single factor "speech difficulty" (Clark et al., 2012). Similar to the CAT, the KiddyCAT allows the clinician to determine if a child's speech-associated attitude is typical of what is usually observed among CWNS, or is atypical and more like that of CWS. The presence of a negative speech-associated attitude at a preschool age, together with the knowledge that communication attitude among CWS only becomes more negative with age, warrants the attention of the clinician. It highlights the importance of assessing communication attitude and, when appropriate, to include attitude change as an aspect of therapy (Conture, 2001; Zebrowski & Kelly, 2002).

8. Communication Attitude Test for Adults (BigCAT)

The determination of communication attitude among adults who stutter, has been regular practice for many years. Typically, the Erickson S-39 Scale (Erickson, 1969) or the S-24 (Andrews & Cutler, 1974) were used for this purpose. However, Vanryckeghem and Brutton's line of investigation into communication attitude of school-age (CAT) and, later, preschool and kindergarten children (KiddyCAT), led in 2011 to the establishment of norms for the already clinically used Communication Attitude Test for Adults who Stutter or BigCAT (Vanryckeghem & Brutton, 2011, 2012). The BigCAT is, like the CAT, an unconfounded cognition-based measure and consists of 35 true-false items that specifically explore speech-

associated belief. A normative and comparative investigation among PWS and PWNS with the BigCAT revealed a highly significant between-group difference in the mean scores. Moreover, the average score of PWS was found to be 5 ½ SD above mean score of the PWNS. Contrary to the S-24, the BigCAT scores of CWS and CWNS show much less in the way of overlap. The BigCAT, which has also shown to have good internal reliability, is clearly the more discriminatively powerful tool. Its total test score and its items can be used to guide treatment that incorporates attitude change.

9. BAB Summary

The BAB self-report tests which investigate negative emotional reaction and communication disruption as it relates to sound, word and situational eliciting cues, the use of avoidance and escape responses, mal-attitude, clearly provide a non-confounded multi-dimensional assessment of the ABC components that make up or are associated with stuttering. In turn, they lead to multi-modal treatment because the sub-tests' item and total scores help the clinician pinpoint the targets of therapy and guide the observation of change. Aside from solely focusing on stuttering behavior change tactics, anxiety reduction and desensitization approaches, awareness and omission of behaviors secondary to stuttering are being addressed and cognitively, a more positive communication attitude is being introduced.

Improved fluency depends, in part, on replacing the disruptive effect of a negative speech-related attitude with a belief system that is positive and supportive of fluency. In general, the link between cognition and behavior has long been emphasized by cognitive behavior therapists (Bandura, 1969, 1986; Meichenbaum & Cameron, 1974). As stated by Perkins (1979), for PWS, to bridge the gap between sounding normal and feeling normal, their speech-associated attitudes need to be "identified, reinforced or modified" (p.383). Also Andrews and Cutler (1974), Andrews and Craig (1988), Boberg (1981), Guitar and Bass (1978), Menzies, O'Brian, Onslow, Packman, St Clare and Block (2008), Ryan (1974), among others have, in a similar way, indicated that successful

treatment and maintenance of fluency is in part dependent on acquiring a positive attitude.

III. Conclusion

This paper dealt with different assessment tools: the BAB for children and adults, and the KiddyCAT, that allow for the determination of feelings, behaviors and speech-related attitude. The view from within, provided by the child or adult who stutters, augments the clinical observation and permits a more fully rounded treatment. It points to the direction that therapy should take. In addition, its tests allow for pre- and post-treatment efficacy determination of the tactics used, and allocate a greater involvement of the individual in the management of his or her fluency disorder.

As far as the research addressing communication attitude among children who do and do not stutter in Japan, additional studies are needed to confirm or rebut the results of the Kawai et al. (2012) investigation, which indicates that Japanese CWS' speech-related attitude becomes more negative as they get older. This can be accomplished by collecting CAT-J data on CWS who are in middle (grades 7 through 9) and high school (grades 10 through 12). In addition to further investigate children's speech-associated attitude, it would be equally important to develop a Japanese version of the complete BAB. This would make it possible for Japanese clinicians to apply a multidimensional approach in the assessment of their clients who stutter, and to analyze the affective, behavioral and cognitive components of their stuttering.

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