

## Connecting stuttering measurement and management: II. Measures of cognition and affect

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### Abstract

*Background:* To the person who stutters, there are other experiences than the somatic ones of stuttered speech. These are experiences of cognition and affect: in other words, experiences of thought and emotion. For several reasons, it is quite difficult to determine and recommend core measures of cognition and affect for clinicians to consider using.

*Aims:* To catalogue some of the many instruments that may be regarded by clinicians as worthwhile for use in measuring cognition and affect in clinical practice.

*Main Contribution:* The presentation of measures of cognition and affect is organized according to those that have appeared in recent clinical trials of stuttering during roughly the last decade, and those that have not featured in clinical trials.

*Conclusions:* Measures that have featured in the clinical trials literature might be looked on favourably, along with those for whom there are more than one data source in support. The various measures from the discipline of clinical psychology generally fall into the latter category. The notions of cognition and affect emerge from the discipline of clinical psychology, and therefore it makes sense to look to that discipline for measures of those constructs. Seeking such tools outside the discipline of speech pathology, especially those with established reliability and validity, seems to hold potential in contributing to one's understanding of affective and cognitive functioning in people who stutter.

*Keywords:* stuttering, measurement, cognition, affect.

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**What this paper adds**

This paper identifies measures of cognition and affect used and potentially of use in clinical trials. A need is identified to seek reliable and valid measurement tools within and outside the discipline of speech pathology for the treatment of stuttering.

**Introduction**

Although the disruptions of stuttered speech are prominent in the disorder, as noted in a companion article in this series (Shenker 2006), there is of course more to the disorder that is not so readily perceived. To the person who stutters, there are other experiences than the somatic ones of stuttered speech, and these are less readily detectable to the observer. They may occur not only during moments of stuttering, but may also occur before and after them. These are experiences of cognition and affect: in other words, experiences of thought and emotion. As Shenker has shown, it is quite a straightforward matter to establish core measures of stuttered speech that would be used by clinicians who attempt to eliminate or reduce stuttered speech in a client.

However, for several reasons, it is not so easy to determine and recommend core measures of cognition and affect for clinicians to consider using. Unlike the situation with core measures of stuttered speech, it is not feasible in the case of measures of cognition and affect to look to clinical trials to determine recommendations to clinicians. One reason is simply that there have not been many uses, in clinical trials of stuttering treatments, of measures of cognition and affect. In fact, there have only been three prominent clinical trials during roughly the past decade that have done so. One is Craig *et al.*'s (1996) study of a variant of prolonged speech and electromyography (EMG) biofeedback, which included as outcome measures the Communication Attitude Test — Revised (De Nil and Brutton 1991), and the Stait–Trait Anxiety Inventory for Children (Spielberger *et al.* 1973) (see below). The latter test was not reported in the Craig *et al.* report, but was included in a long-term report of the trial participants (Hancock *et al.* 1998). Block *et al.* (2005) reported long-term data on a large group of adults who received a variant of prolonged speech, and Block *et al.* reported additional data for those subjects using the Locus of Control of Behaviour Scale (Craig *et al.* 1984), derived from Rotter's (1966) original scale, and the S24 communication attitude scale (Andrews and Cutler 1974), derived from Erickson's (1969) original scale. A clinical trial of the SSMP program (Breitenfeldt and Lorenz 1989) by Blomgren *et al.* (2005) used the Multicomponent Anxiety Inventory-IV (Schalling *et al.* 1987), the State–Trait Anxiety Inventory (Spielberger *et al.* 1983), the Perceptions of Stuttering Inventory (Woolf 1967), the Locus of Control of Behaviour Scale (Craig *et al.* 1984) and the Beck Depression Inventory (Beck and Steer 1993) (see below). Shenker (2006) was able to recommend to clinicians stuttering measures that featured in the treatment process outlined in the manuals concerned. However, in neither of the two clinical trials mentioned above were the treatments built around measures of cognition and affect, as occurs with direct measures of stuttering (Onslow and Ingham 1987).

The latter observation is probably not surprising considering that to date there has been no clinical trial of a treatment specifically and exclusively for the cognitive

and affective aspects of stuttering that might cause distress to those affected. The closest in the literature to an exception would be the Blomgren *et al.* (2005) report, which focused on control of stuttered speech but also contained activities designed specifically to ‘modify the client’s attitudes and perceptions of his or her stuttering’ (p. 4). Hopefully, that situation may change in the future with the development of interventions for speech related social anxiety. With anxiety, the cognitive and affective components — thoughts and feelings — tend toward expectation of some harm (Beck and Emery 1985). There are currently abundant data to support the contention that those who stutter differ from those who do not in the rate and extent to which speech related social anxiety is experienced, even to the extent that around half of those who stutter and seek clinical help warrant a co-morbid diagnosis of social phobia (for an overview, see Messenger *et al.* 2004). Cognitive-behaviour therapy is known to be an efficacious treatment for social anxiety in general (Heimberg 2002, Andrews *et al.* 2003), and hence would appear to be suitable for application to the problem of stuttering.

The final reason why it is difficult to recommend measures of cognition and affect to clinicians is simply that there are so many of them. The list that follows, although extensive, is by no means exhaustive. Even so, it would clearly be impossible for clinicians to use each of them in routine clinical practice to evaluate the effects of their interventions on the ill effects of the disorder on cognition and affect. The recommendations are organized, then, according to those that have appeared in recent clinical trials of stuttering during roughly the last decade (Craig *et al.* 1996, Block *et al.* 2005, Blomgren *et al.* 2005) and those that have not. Certainly, this division is somewhat arbitrary, however it is at least consistent with the theme of this series of ‘connecting stuttering measurement and management’. That notwithstanding, it is limited by the fact that, with the exception of the Locus of Control of Behaviour Scale, no measure of cognition or affect has been used more than once in the recent clinical trials literature. Nonetheless, this division of instruments may be regarded by clinicians as a worthwhile one for use in considering measures of cognition for use in clinical practice. It may be useful to take account of the merits of those measures in documenting changes in cognition and affect in those clinical trials when choosing measures of those constructs for use in clinical practice. Additionally, when data pertaining to the clinical value of an instrument have been reported, they are also noted in the following. Only test procedures that generate a numerical score or scores are presented in the following.

### **Measures of cognition and affect used in clinical trials to date**

#### *Children and adolescents*

##### *The Communication Attitude Test — Revised (Brutten 1985)*

This is a self-administered tool used with children 7 years and older. It involves 32 true–false statements reflecting attitudes in various speaking situations. Although data with this scale were not reported for the Craig *et al.* (1996) trial, Hancock *et al.* (1998) reported that at 2–6 years post-treatment there was some reason to believe that the treatment improved the communication attitudes of the participants favourably. The children still had elevated scores in relation to control children with a mean of 12.4, but not to the extent of stuttering children in other research:

according to De Nil and Brutton's (1991) data for this test with Belgian children, the mean score for stuttering children ( $n=70$ ) was 16.7. The De Nil and Brutton data for non-stuttering children ( $n=271$ ) was 8.7, indicating a difference in attitude to communication early in life. Vanryckeghem and Brutton (1996) replicated this finding with children as young as 6 years. In general, the findings from these two studies were that speech-related attitudes became increasingly negative with age in children who stutter. Vanryckeghem *et al.* (2001) replicated this finding.

#### *State–Trait Anxiety Inventory for Children* (Spielberger *et al.* 1973)

This is an adaptation of the well-known State–Trait Anxiety Inventory (Spielberger *et al.* 1983). The test was developed by clinical psychologists rather than speech pathologists, and it has the advantage that it is normed on around 1500 children. The instrument contains two self-report scales, one to measure state anxiety and one to measure trait anxiety. The state scale presents 20 statements to elicit how a child feels at the time of completing the self-report, and the trait scale presents 20 statements about how children feel in general. Craig *et al.* (1996) provided some information that, after the treatments that greatly reduced children's stuttering, there were also improvements in the children's state and trait anxiety.

#### *Adults*

#### *The Multicomponent Anxiety Inventory-IV* (Schalling *et al.* 1987)

This has in common with the Endler Multidimensional Anxiety Scales–Trait (see below) that it deals with anxiety as a multifaceted dimension. It contains a scale for psychic/cognitive anxiety, somatic anxiety, and muscular tension. Blomgren *et al.* (2005) reported that scores on the Psychic/Cognitive Anxiety and the Somatic Anxiety scales decreased progressively, and clinically significantly, from the pretreatment to the immediate post-treatment, and then to 6 months post-treatment. There were no changes in the muscular tension scores. The apparent anxiolytic results of the treatment are not surprising considering that 'treatment included a series of activities designed to eliminate avoidance strategies. These activities included advertising one's stuttering in all speaking situations' (Blomgren *et al.* 2005: 4).

The Blomgren *et al.* trial also incorporated the well known, normed, psychological test the *State–Trait Anxiety Inventory* (Spielberger *et al.* 1983), which measures state and trait anxiety using 20 statements for each subtest, to which participants respond with a four-point scale. Blomgren *et al.* reported that there were no significant post-treatment changes in either state anxiety or trait anxiety scores. It is noteworthy that these results are inconsistent with those in another prominent treatment-related report using the State–Trait Anxiety Inventory. In a treatment that was much more exclusively focused on control of stuttered speech than was the SSMP treatment investigated by Blomgren *et al.*, Craig *et al.* presented some evidence that trait anxiety scores were reduced post-treatment.

Blomgren *et al.* also produced data for trial participants on the *Perception of Stuttering Inventory* (PSI). This measure was introduced by Woolf (1967) to capture struggle, avoidance, and expectancy in those who stutter, and is a questionnaire

comprising 60 statements being 'characteristic of me' for adolescents and adults. A score is obtained for each of the components 'struggle', 'avoidance' and 'expectancy' to generate a profile of the respondent. A severity estimate may be determined as well and can be used to monitor changes in treatment. Of all the changes in cognitive and affective measures reported by Blomgren *et al.*, changes in each of the three components were the most striking among their results, being clinically and statistically significant. Again, this is not surprising, considering, as noted above, that the treatment in question contains specific activities to reduce clients' struggle and avoidance.

The Blomgren *et al.* report also incorporated data from *The Beck Depression Inventory-II* (BDI-II) (Beck 1996). This is an extensively used measure of symptoms of depression used in clinical psychology, comprising a 21-item, self-report questionnaire. The validity and reliability of the instrument are well established (e.g. Osman *et al.* 1997, Dozois *et al.* 1998). Blomgren *et al.* reported that post-treatment scores on this instrument showed improvement with the SSMP.

#### *Locus of Control of Behaviour Scale* (Craig *et al.* 1984)

This was also incorporated into the Blomgren *et al.* report. This scale is suitable for older children, adolescents, and adults, and is designed to measure beliefs about the internal or external causal relationship of contributions to behaviour and behavioural outcomes. This tool has 17 statements rated on six-point Likert scales, and a total score is computed. Higher scores reflect greater perceived external controls upon one's own behaviour, and lower scores reflect greater perceived internal control of one's own behaviour. Those with a prominent external locus of control believe their behaviour is under the influence of chance, luck, or the influence of others. People with internal locus of control believe their behaviour is under their personal control. Blomgren *et al.* reported that changes in this measure post-treatment were non-significant. However, there are quite a few other pertinent data that have been presented for the Locus of Control of Behaviour Scale. There have been several reports that favourable shifts in locus of control predict favourable treatment outcome in terms of control of stuttered speech (for an overview, see Block *et al.* 2005). Clinically, these findings have important implications, because they suggest that locus of control might profitably be targeted during treatment and measured for evidence of treatment effects. However, in a companion paper in this series, Block *et al.* produced data that were inconsistent with those findings. They found that locus of control of behaviour indeed could be measured independently of stuttering severity, but that pretreatment scores on the scale predicted neither short-term nor long-term treatment outcomes in the 78 participants in the Block *et al.* (2005) clinical trial.

The *S24 Scale of Communication Attitudes* (Andrews and Cutler 1974), which has 24 items, is an adapted version of the Erickson Scale (1969), which had 39 items. It is designed to identify communication attitudes. It is used for older adolescents and adults and elicits true-false choices to statements of communicative competence. When a client response matches a pre-established response, one point is scored and assessed as consistent with a negative attitude toward speech. Normative data are available. Block *et al.* (2005) reported that, as was the case with the Locus of Control of Behaviour measure, the S24 indeed did measure a construct that was different to

stuttering severity, but that the S24 score predicted neither short-term nor long-term treatment outcomes in the 78 participants in the Block *et al.* (2005) clinical trial. This finding is quite at odds with a quite large body of existing literature suggesting that positive change in S24 scores predicts favourable outcomes in terms of stuttering control, and that therefore it might be a useful supplement to the Locus of Control of Behaviour scale in the conduct and evaluation of treatments designed to control stuttered speech.

### **Measures of cognition and affect not used in clinical trials to date**

#### *Children*

##### *The A-19 Scale* (Guitar 1998)

This is for use with children and involves 19 yes/no questions verbally presented to the child. For kindergarten and first-grade children, some example questions are provided, such as 'are you a boy', before the administration of the test. One point is given for matched responses on a score sheet. Higher scores reflect greater negative communicative attitudes. Based on an unpublished study of 56 children in Kindergarten through fourth grade, the mean score of 28 children who stutter was 9.07 (SD=2.44) and the average score for matched children who did not stutter was and 8.17 (SD=1.80) (Guitar 1998).

In the assessment manual for the *Cooper Personalized Fluency Control Therapy — Revised* (Cooper and Cooper 1985) are four subtests addressing affective and cognitive issues with children. In the 'attitudinal indicators of significance of stuttering' subtest are 20 items regarding agreement or disagreement about feelings, thoughts, and beliefs related to stuttering and its social impact. In the 'situation avoidance reactions' subtest are ten common situations described that children may avoid or prefer to avoid because of the way they speak. Additional space is provided to include other situations not described but pertinent to the child. In the 'child's perception of stuttering severity' subtest, three items are ranked on a 1–3 severity scale. Finally, in the 'clinician's perceptions of stuttering severity' subtest, there are another five items (four related to observable characteristics of stuttering, one on 'handicapping reactive attitudes and feelings') rated by the clinician on a 1–5 (mild to profound) severity scale. These scores are part of an integrated assessment that seeks to provide a basis for setting up and measuring intervention effectiveness.

##### *The Burks Behavior Rating Scales (BBRS-1)* (Burks 1976)

This is for preschool through grade 9 and used to evaluate children with behaviour problems. It has 110 items covering 19 problem behaviours which a parent or teacher indicates on a five-point scale how often the behaviour being evaluated is observed. The scored results include an identification of behaviours interfering with school functioning and personality areas that require further evaluation or treatment. Some areas identified included excessive self-blame, anxiety, suffering, sense of persecution, impulse control, sense of identity, and social conformity, among others.

When a clinician wishes to assess temperament in the 3–7-year-old who stutters, the *Behavioral Style Questionnaire (BSQ)* might be a helpful tool. McDevitt and Carey (1995) describe this norm-referenced paper-and-pencil test to which parents

respond. It provides a profile of nine temperamental variables (such as adaptability, persistence, sensory reactivity) across four levels of positive versus negative strength (with zero being neutral) across each variable. Although this test does not fit neatly in either affective or cognitive component, it does reveal some characteristics of children that might otherwise be assigned to affective or cognitive areas.

#### *Rosenberg Self-Esteem Scales (Rosenberg 1965)*

These were originally developed on over 5000 junior and senior high school students from ten New York state schools. It is a simple and widely used scale of self-esteem which presents ten statements the client scores on a four-point scale (strongly agree, agree, disagree, strongly disagree). Half the questions are positively worded, the other half negatively worded. Lower scores indicate higher self-esteem. The scale has good reliability and validity.

#### *Tests with versions for children and adults*

##### *Speech Situation Checklist (Brutten and Shoemaker 1974)*

This was revised in 1977 and comes in formats for children and adults. Each has two parts. Part one rates negative emotional feelings on a five-point scale (not afraid to very much afraid), and part two rates amount of speech disruption on a five-point scale (not at all to very much). The child form presents 55 speech situations, and 51 speech situations are presented in the adult form. In each case, average scores for anxiety and disruptions are obtained across many situations, allowing for therapy planning. Hanson *et al.* (1981) identified 21 items on the adult checklist that discriminated between stuttering and non-stuttering participants, using emotional response scores alone, without the need for any speech data.

##### *Fear Survey Schedule (Brutten and Shoemaker 1974)*

This comes in two forms. One is a list of 80 possible things that frighten or make children feel uncomfortable. The list items cover many potential issues affecting children and are rated from 'not at all afraid' to 'very much afraid' on a one-to-five-point scale. There is also an adult form of the schedule with 55 items. Although mean scores for non-stuttering (70.5) and stuttering (108.1) adults are reported, only scores for non-stuttering children are reported, with a mean of (162.5).

#### *Adolescents and adults*

##### *Inventory of Communication Attitudes (Watson 1988)*

This is a self-report instrument of 39 statements through 13 subscales of common speaking situations. These are measured on four response scales (affective, behavioural, cognitive-A, and cognitive-B) and a frequency scale on a one (high) to seven (low)-point rating system to reflect attitudes in general situations of self-enjoyment, own speech skills, others' enjoyment, and others' speech skills.

*Stutterer's Self Rating Scale of Reactions to Speech Situations* (Darley and Spriesterbach 1978)

This presents 40 different situations which are described with four attendant columns: avoidance, reaction (amount of enjoyment or dislike), stuttering (severity ratings), and frequency (opportunity to experience the situation). Each column has a 1–5 rating with positive to negative weightings reflecting the degree to which a client may have a tendency to engage in each columned experience. The average rating per column provides a numerical index from which diagnostic decisions and progress measurements may be made.

*Stuttering Severity Scale* (Lanyon 1967)

This is a 64-item true–false statement inventory that discriminates between stutterers and non-stutterers as well as severity levels of stuttering (mild, moderate, severe). When a response matches a predetermined true–false answer, one point is assigned to the statement. Eighteen of the questions refer to attitudes about talking. The total score is the number of points matching the predetermined answers. Overall, this scale may help the clinician obtain information of how a person who stutters views his own behaviours and attitudes related to his stuttering.

*Self-Efficacy Scale for Adult Stutterers (SESAS)*

This was developed by Ornstein and Manning (1985) to measure confidence in both entering situations as well as achieving a certain level of fluency in those situations. Manning (2001) notes that self-efficacy scaling has served as a useful predictor of changes in personal attitude and behaviour. The SESAS is a self-rating instrument that describes and addresses five major speaking constructs. Those constructs include speaking to multiple listeners, to one familiar listener, one unfamiliar listener, to an important listener, and to social settings. There are a total of 50 speaking situations. Beyond measuring intra-therapeutic change and effectiveness, the authors suggest the assessment is useful for determining performance outside the clinic situation as well as for following up regarding maintenance of changes made in treatment. Ornstein and Manning reported that the scale distinguished between 20 participants who stutter and 20 who did not, and correlates well with the S24 communication attitude scale and the Perceptions of Stuttering Inventory (see above).

*Overall Assessment of the Speaker's Experience of stuttering (OASES)*

Yaruss and Quesal (2002) are currently developing the OASES for adults and along with a similar (Coleman *et al.* 2003) form called the *Assessment of the Child's Experience of Stuttering (ACES)*. Each is a survey-type questionnaire with ratings along a five-point scale for the OASES and a three-point scale for the ACES. Each seeks affective, behavioural, and cognitive information from four parts: general information, your reactions to stuttering, communication in daily situations, and quality of life. Scores are derived from each part as well as a total score. Although still in the developmental stages, the forms appear to be designed so the clinician obtains a better understanding of how stuttering affects the life of the person who stutters. Each is an adaptation of the 2001 World Health Organization's International Classification of Function, Disability, and Health (World Health

Organization, 2001). Both sets of authors encourage feedback from clinicians who use the forms in the field.

*The Revised Willoughby Questionnaire for Self-Administration* (Wolpe 1973)

This is used by psychologists with adults to determine if a person has excessive sensitivity and anxiety to common social situations. Twenty-five questions are rated on a five-point 0–4 scale (from ‘no’ or ‘not at all’ to ‘yes’ or ‘entirely’) to indicate various emotional personality traits. The score is the sum of individual scores and ranges from zero to 100. Higher scores may reflect a general anxiety one experiences in relation to stuttering. The questionnaire may be used in conjunction with other assessments, especially when anxiety to social situations appears to be an attendant issue of the communication problem.

The roles of the fear of speaking, or fear of stuttering, and their effects upon social communication are well known. In a recent paper, Molt (2003) presents the *Social Phobia Inventory (SPIN)* as a measure for determining the presence of social phobia. The SPIN is a self-rated social anxiety disorder scale with zero (not at all) to four (extremely) scores across 17 items bothering the individual within the previous week. Molt notes the importance yet difficulty of differentiating the presence or absence of social phobia as a co-morbid disorder in people who stutter. That is, differential diagnosis would indicate if situational or social fears were driven by the stuttering, social phobia, or some combination. Having such an understanding might aid in determining the appropriate intervention(s) for any particular client in which this issue applies.

*Personal Questionnaire Rapid Scaling Technique (PQRST)*

This was developed by Mulhall (1977). Its purpose was to aid adults in monitoring ‘fluctuations in the intensity of personal experiences such as feelings, beliefs, symptoms, etc.’ It is a technique that measures clients’ attitudes to many difficult speaking situations and may be useful in therapy and counselling.

*Johari Window* (Luft 1970)

This is an interesting and dynamic technique that provides a visual representation of many ways we come to know ourselves. A two-by-two matrix is formed of perceptions known to self and unknown to self which are coordinated with perceptions known to others and unknown to others to reveal four ‘panes’ of the self: open/public, blind, hidden/private, and unknown. Each pane is flexible as it is influenced by one’s feelings, relationships, situations, and level of self-knowledge. Through an exploratory process, one learns self-perception (in)accuracies through descriptions of a person’s public and private self. It may be helpful in identifying and correcting distorted self-perceptions.

*Sixteen Personality Factor (16PF) Questionnaire* (Cattell *et al.* 1994)

This is designed for individuals 16 years and older. Psychologists have used this to evaluate normal adult personality, as part of clinical evaluations, and for counselling

purposes. There are 16 primary personality traits including such areas as anxiety, tension, rigidity, emotional maturity, self-sufficiency, and assertiveness. The questionnaire correlates well with many major psychological classification scales and what psychologists refer to as ‘the five global factor scales’: extraversion, anxiety, tough-mindedness, independence and self-control.

Although originally used with psychiatric outpatients, the *Profile of Mood States (POMS)* might be a useful clinical tool because it identifies and measures fluctuating mood states over time. Developed by McNair *et al.* (1971), it may provide insight to the changes occurring with client-reported ‘good days and bad days’. The POMS is a self-administered instrument of 65 questions using adjectives to describe feelings and moods. Each question is scored on a five-point scale across areas such as tension–anxiety, anger–hostility and confusion–bewilderment. Because of its immediate measurement of various mood states, it has been used beyond counselling and psychotherapy contexts in various sports and exercise contexts. There is a shorten version as well (Shacham 1983).

*NEO Personality Inventory (NEO-PI — Revised)* (Costa and McCrae 1992)

This is designed for people 17 years of age and older and includes five dimensions or personality traits identified through research. The five dimensions are: (1) neuroticism, (2) extraversion, (3) openness to experience, (4) agreeableness and (5) conscientiousness. Each of these has six lower scores on specific personality factors rated from high to low. It may be completed by self-report or observer-report or the NEO-FFI (five-factor inventory) which is a simple, shorten version where 60 items are rated on a five-point scale. The various forms of the inventory have high reliability and validity measures on norms based on a 1000-subject sample. This inventory may hold promise for exploring personality traits of people who stutter in contrast to people who do not stutter, if such differences exist or are meaningful.

*The Endler Multidimensional Anxiety Scales–Trait (EMAS-T)* (Endler *et al.* 1991)

These are designed to assess separately anxiety related to perceived social threat and anxiety related to physical threat. As such, the instrument measures four situational dimensions of trait anxiety. The 60-item inventory comprises 15 responses to obtain information from respondents concerning four situations: (1) social evaluation, (2) physical danger, (3) new/strange situations and (4) daily routines. Messenger *et al.* (2004) found that the scales of Social Evaluation and New/Strange situations distinguished between stuttering and control participants with a large effect size, but that the scales of physical danger and daily routines did not. Messenger *et al.* argued that these findings are consistent with expectations that the focus of the anxiety of those who stutter would be social rather than the routine tasks of life or physical danger.

*Fear of Negative Evaluation Scale* (Watson and Friend 1969)

A version of the scale was developed with the intention of measuring anticipation of negative evaluation in social situations. The scale is quick to administer, eliciting 30 true–false responses that centre on the prospect of negative evaluation by others, the

expectation that such negative evaluations would occur, and the distress caused by those perceptions. Respondents are instructed to ‘read each of the following statements carefully and in each case indicate whether or not the statement applies to you ...’. Messenger *et al.* reported that this instrument distinguished between stuttering and control participants with a large effect size, and argued that this was consistent with a current psychological perspective that those who stutter might expect negative social evaluation.

### Conclusions

The number of instruments available for measuring affect and cognition makes it difficult to offer firm recommendations about which would be useful for clinicians during the course of assessing those who stutter, and planning and evaluating interventions intended to influence affect and cognition. Perhaps those above that have featured in the clinical trials literature might be looked on favourably, along with those for whom there are more than one data source in support. The various measures from the discipline of clinical psychology generally fall into the latter category.

The notion of anxiety emerges from the discipline of clinical psychology, and therefore that discipline might be a fitting source of measures of affect and cognition which are intimately bound up in the construct of anxiety. Additionally, problematic affective and cognitive states are applicable not only to people who stutter, but also to all people. As such, it makes sense to look for tools in communication sciences that may be models for people who stutter but are outside the discipline of stuttering. A significant need remains regarding reliable, valid, and clinically tested measures of cognition and affect in people who stutter. In the meantime, seeking additional tools outside the discipline, especially those with established reliability and validity, seems to hold potential in contributing to our understanding of affective and cognitive functioning in people who stutter.

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