The Unhelpful Thoughts and Beliefs About Stuttering Scale-Revised (UTBAS-R): Streamlining a cognitions checklist

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ABSTRACT

Background: The Unhelpful Thoughts and Beliefs About Stuttering Scale (UTBAS) is a widely used measure, available in 17 languages, designed to identify negative cognitions of adults who stutter. However, with a total of 198 response requirements (three subscales with 66 items each), it is long and impractical for use in many clinical and research settings. We conducted two studies. Study 1 investigated the correlation between the three subscales to determine if any of the scales could be removed. Study 2 sought to reduce the total number of items based on floor and ceiling effects, high levels of correlation with other items, and item-response (IRT) theory fit statistics.
Method: We analysed UTBAS data from the Australian Stuttering Research Centre (ASRC) database. Participants were adults who stutter and who had completed the UTBAS as part of their participation in either a speech restructuring and/or cognitive behaviour therapy-based research trial.
Results: Study 1 ($n = 316$) revealed strong, positive relationships between subscale total scores (r values ≥ 0.88). This finding was consistent for pre- and post-treatment UTBAS scores and was statistically significant (P < 0.001).
Study 2 ($n = 431$) revealed 7 of scale 1 items with floor or ceiling effects, and 6 items highly correlated with others. An initial IRT identified 11 items with poor fit. The top 20 items with the highest slope parameters were finally selected.
Conclusion: Results demonstrate redundancy of the second and third subscales and 46 items of the UTBAS. We propose a preliminary revised version of the UTBAS (UTBAS-R) consisting of 20 items and one subscale.

1. Introduction

Stuttering is a speech disorder that typically presents when young children start to formulate utterances of increased length and linguistic complexity (Packman et al., 1996). Perceptually, stuttering can be characterised by repeated movements and fixed postures with and without audible airflow (Teeson et al., 2003). Moments of stuttering, particularly fixed postures, may also be accompanied by extraneous movements, for example, visible facial grimacing. Stuttering, however, is more than these perceptual characteristics, as the disorder can impact an individual's education and occupation, as well as their social, emotional, and psychological well-being

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(Onslow, 2025).

It is not uncommon for stuttering to lead to speech-related anxiety in adults, and this anxiety has the potential to negatively impact the maintenance of speech treatment gains (Iverach et al., 2009). While there is a plethora of clinical resources to assess anxiety in general (e.g., the Beck Anxiety Inventory, [Beck et al., 1988], State-Trait Anxiety Inventory [Spielberger et al., 1983], Subjective Units of Distress Scale [Tanner, 2012], Brief Fear of Negative Evaluation Scale [Leary, 1983]), few measures have been developed to explore the negative thoughts and cognitions that may drive speech related anxiety in adults who stutter (AWS). In response to the absence of thought records for AWS, clinical psychologists at the Australian Stuttering Research Centre led the development of the Unhelpful Thoughts and Beliefs About Stuttering Scale (UTBAS) from a file audit. The audit included clients over the previous decade who had received cognitive behaviour therapy for anxiety about stuttering (St Clare et al., 2009). Research supports the psychometric properties of the scale and its sensitivity to measure therapeutic gains from psychological treatment to address social anxiety. (Iverach et al., 2011; St Clare et al., 2009). Furthermore, the value of the UTBAS is globally evident with translations of the measure now available in 17 languages (Chu et al., 2017). Notably, the UTBAS items became an integral component of an efficacious standalone internet-based cognitive behaviour therapy program (Helgadóttir et al., 2014) that is now freely available to AWS worldwide (see https://iglebe.asrc. edu.au/).

The UTBAS consists of three subscales measuring the frequency (UTBAS I), believability (UTBAS II), and anxiety (UTBAS III) about these thoughts. For UTBAS I, using a 5-point Likert scale (ranging from 1 = *Never have the thought*; up to 5 = *Always have the thought*), respondents report how frequently they have a specified thought, for example, "I won't be able to keep a job if I stutter" (Item 3). For UTBAS II, respondents then report how much they believe each thought, and for UTBAS III, they report how anxious each item makes them feel (Iverach et al., 2011). The developers of the UTBAS were interested in the extent to which believing thoughts and becoming anxious, as opposed to simply experiencing thoughts, was critical in driving social anxiety disorder. However, at 66 items for each subscale, the UTBAS can be cumbersome, both for the person who stutters and for clinicians and/or researchers using the measure. Consequently, the need to further enhance the scale is warranted, and such efforts reflect a relatively routine practice in scale construction (Streiner et al., 2014). In 2016, Iverach et al., reported on the development of the UTBAS-6. This item reduction study resulted in a brief version of the UTBAS, consisting of 6 items and the three subscales for the purposes of a "brief screening instrument" (page 964). Notably, the goal of item reduction for developing a screener in the Iverach et al. (2016) study is distinct from the objective of this study, which is to refine the 198-response version for continued application as a comprehensive assessment of unhelpful cognitions. In summary, a streamlined UTBAS scale that requires less time for key stakeholders than the 66-item version, yet offers more detailed insights than a basic screener, would be beneficial in both clinical and research contexts. In the present paper, we examine the correlation between the three scales of the UTBAS using pre- and post-treatment UTBAS scores (Study 1), and we explore the factor structure of the measure and eliminate any redundant items (Study 2) from the original 66-item UTBAS.

We analysed UTBAS scores from the research databank of the Australian Stuttering Research Centre. The data was drawn from several prior studies, dating back to 2009 and included both published (Helgadóttir et al., 2014; Menzies, O'Brian et al., 2019; Menzies, Packman, et al., 2019) and unpublished data ($N = 363$ and $N = 337$ respectively). This project was approved by the University of Technology Human Research Ethics Committee (UTS HREC Reference No: ETH22-7557).

All UTBAS data was from adults who had completed the measure as part of their involvement in either a speech restructuring and/ or cognitive behaviour therapy-based study. Shared eligibility criteria across all studies were as follows: (a) 18 years of age or older, (b) stuttering, and (c) functional English. Study specific inclusion and exclusion criteria are available from the relevant manuscripts cited above.

2. Study 1: Correlation of the three UTBAS subscales

2.1. Participants

Study 1 involved a total of 316 participants including 250 (79 %) males between 18 and 76 years of age (mean = 33.4 years, $SD =$ 13) and 66 (21 %) females between 18 and 80 years of age (mean = 34.2 years, $SD =$ 13.6). Pre-treatment UTBAS scores were available for all participants. A subset of 91 participants had pre- and post-treatment UTBAS data.

2.2. Method

We analysed pre- and post-treatment UTBAS totals for each of the three scales. Specifically, correlation between the three subscales were calculated using Pearson's product-moment correlation coefficient. Results are displayed in the correlation matrices presented in

Table 1
Correlation between pre-treatment results from UTBAS scales ($N = 316$).

	UTBAS I	UTBAS II	UTBAS III
UTBAS I	1		
UTBAS II	0.92**	1	
UTBAS III	0.88**	0.89**	1

*UTBAS I = Frequency subscale; UTBAS II= Belief subscale; UTBAS III= Anxiety subscale
**P < 0.001

Tables 1 and 2.

2.3. Results

Table 1 details the correlation for pre-treatment UTBAS scores ($N = 316$) and Table 2 details correlation for UTBAS scores collected post-treatment ($n = 91$).

As expected, the matrices reveal large positive correlations between all three subscales for both pre- and post-treatment data sets (r value ranging from 0.88 to 0.94).

2.4. Discussion

The finding of high correlation between all three subscales of the measure is consistent with results from the development study by Iverach et al. (2011), involving 140 AWS. Given the role of beliefs and expectancies in cognitive models of social anxiety (Clark & Wells, 1995), the developers of the UTBAS had originally sought to distinguish between the frequency of experiencing an unhelpful thought (UTBAS subscale I) from an individuals' belief in the thought (UTBAS subscale II) and the extent to which it made them anxious (UTBAS subscale III). However, the consistent finding of high correlation between the three scales suggests the UTBAS may not be performing as originally intended.

One plausible reason for high correlation between the three scales is that respondents are not discriminating between the instructions on each of the subscales. This misinterpretation could be due to nuances in the language used for each scale, or it may reflect possible response fatigue, given the large number of test items. Several studies support the notion that lengthy surveys can impact the quality of participant responses (Galesic & Bosnjak, 2009; Gibson & Bowling, 2020). Alternatively, the frequency at which AWS experience a negative thought may simply be a strong correlate of their belief in the thought and with the amount of anxiety the thought provokes.

Regardless, the finding of such high correlations ($r \geq 0.88$) demonstrates that the three subscales are functioning as a single measure, rather than examining three separate constructs as originally intended. Consequently, the strength and direction of the relationship between the scales suggests that unhelpful beliefs about stuttering can be adequately measured on one scale alone. Given the negligible value add of the beliefs (UTBAS subscale II) and anxiety sections (UTBAS subscale III) of the measure, the revised UTBAS (UTBAS-R) eliminates these two scales and retains the frequency scale (UTBAS subscale I). This refinement will reduce the response requirements from 198 items to 66 items which will improve the useability of the UTBAS for clinicians, researchers, and AWS. The authors acknowledge, that from a clinical perspective, it may be perceived as a loss to remove subscales that were intended to expand the scale to assess three distinct aspects of unhelpful cognitions. Theoretically, being able to measure and distinguish between the frequency of negative thoughts (UTBAS 1), how much the individual believes in these thoughts (UTBAS II) and how much anxiety the thoughts trigger (UTBAS III) would be of clinical value for both assessment and treatment purposes. However, the authors consider the potential loss of subscales to be theoretical, since the findings strongly indicate that the subscales are not clearly differentiating among the intended domains.

3. Study 2: Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA)

3.1. Participants

A total of 431 participants were included in Study 2. The age and gender were available for 289 participants. Of these, 204 (71 %) participants were male between 18 and 81 years of age (mean = 35.8 years, $SD = 13.5$) and 85 (29 %) participants were female between 18 and 68 years of age (mean = 33.8 years, $SD = 12.3$).

3.2. Method

3.2.1. Initial EFA and CFA

Pre-treatment UTBAS scores for the individual items of scale 1 were extracted for analysis. We initially assessed whether the 66 items of scale 1 formed a valid construct using factor analysis. Expectation-maximisation was used to create a single-imputation of missing data in in the overall dataset ($N = 431$). These were then randomly split into training and test sets ($n = 216$ in training set, $n = 215$ in test set). The eigenvectors from the correlation between all items were used to create a scree-plot; this was used to identify

Table 2
Correlation between post-treatment results from UTBAS scales ($n = 91$).

	UTBAS I	UTBAS II	UTBAS III
UTBAS I	1		
UTBAS II	0.93**	1	
UTBAS III	0.94**	0.90**	1

*UTBAS I = Frequency subscale; UTBAS II= Belief subscale; UTBAS III= Anxiety subscale
**P < 0.001

the appropriate number of factors for an exploratory factor analysis. Loadings, uniqueness, and alpha if deleted for each item were extracted from the factor solution to assess item fit.

An appropriate model was identified from the EFA on training data, and the fit of this was confirmed in a confirmatory factor analysis on the test dataset. Model fit was assessed with χ^2 test, Root Mean Square Error of Approximation (RMSEA), Comparative Fit Index (CFI), and Tucker-Lewis Index (TLI), and the standardised factor loadings examined.

3.2.2. Item-reduction strategy

The CFA indicated a poor fit (absolute and relative) and, given the large number of items in Scale 1, we undertook a multi-stage approach to removing superfluous and poor-fitting items to create a smaller, better fitting scale. Using a different training split (same approach as above), we examined if items had high floor or ceiling effects, looking for items with the responses at the highest (> 25 %) or lowest (> 50 %) end of the scale, and we removed these. The correlation between items was then examined, and one item from pairs with high correlation (correlation > 0.7) was removed by consensus between the first and second authors. A graded-response model (Samejima, 1969) was then fitted, and item fit characteristics from this item-response theory model were used. Items that had poor root mean square error of approximation ($p < .1$ for poor fitting item), then a low factor loading (< 0.5), and then infit or outfit values indicating poor fit (> 1.5, or < 0.5) were removed. Finally, we selected 20 items (considered a practical size for administration), with the highest slope parameters from the graded-response model (indicating good ability of the item to discriminate values of the latent trait). Finally, a single-factor confirmatory factor model was run on the reduced pool of items with the test data split, with RMSEA, CFI, and TLI used to assess model fit.

3.3. Results

3.3.1. Exploratory factor analysis on all items

The eigenvalues from the exploratory factor analysis on the training data showed most of the variance explained by a single factor (Fig. 1), confirming that the UTBAS is consistent with a single, general factor.

3.3.2. Confirmatory factor analysis on all items

A confirmatory factor analysis revealed poor model fit. The single-factor model was significantly different ($\chi^2 = 5451.4$, number of parameters = 130, $p < .001$) from model-implied covariance, with the absolute measures of model fit (RMSEA = 0.089) being marginal, and relative measures of model fit being poor (CFA = 0.67, TLI = 0.66). An item-reduction strategy was undertaken to reduce the participant burden and improve model fit.

3.3.3. Item-reduction

With the new training and test data splits, we applied our item-reduction strategy to the training set. We removed four items with a floor effect, and three items with a ceiling effect (Fig. 2). There were 6 items highly collinear with other items and these were removed. We identified eight items with poor RMSEA in the graded-response model, then three with a low factor loading. No items showed poor infit or outfit. Finally, as described above, 20 items with the highest slope parameter were selected.

After the selection process, items 14, 16, 17, 18, 23, 31, 32, 35, 36, 38, 41, 43, 44, 46, 49, 50, 51, 52, 53, 60 were selected for a brief
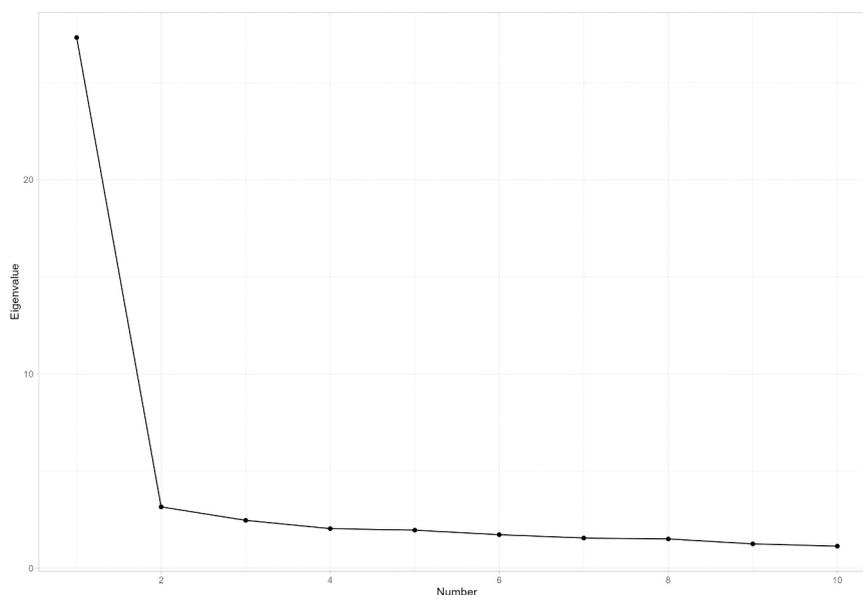

Fig. 1. Scree-plot of the first 10 eigenvalues from exploratory factor analysis on training data.

form version of UTBAS.

The brief-form UTBAS was significantly different from the model-implied covariance (χ^2 = 455.4, number of parameters = 40, $p < .001$), and absolute (RMSEA = 0.88) fit was similar to the full UTBAS, but we found that relative fit (CFI = 0.89, TLI = 0.88) improved.

3.4. Summary of results

Results from Study 2, provide the first empirical examination of the factor structure of the UTBAS. Specifically, the EFA revealed one general factor underpinning the structure of the UTBAS. While the EFA provided support for the unidimensional nature of the measure, the CFA revealed a poor model fit. Consequently, to mitigate this issue, a comprehensive item reduction strategy was employed. A final CFA was performed on the remaining item pool, and while the absolute fit remained similar to the initial analysis, relative fit indices improved, suggesting a better model fit.

3.5. Discussion

The improved relative fit following the comprehensive item reduction suggested that some items from the original UTBAS were not optimally defined. While eliminating items did bolster the final model fit, thought checklists, such as the UTBAS, are meant to be comprehensive by nature, covering the full range of possible negative thoughts experienced by a population. Thus, removing items may be considered disadvantageous by some. However, we make three points. First, the 66 unhelpful thoughts from the original subscale (UTBAS subscale 1) are still available for clinicians who want an exhaustive checklist of negative thoughts and beliefs in their practice. This version may be most useful within the treatment process for example to stimulate conversations around unhelpful thoughts associated with stuttering. Second, the refined version with improved usability and practical application may be most useful for researchers assessing outcomes pre or post treatment. Third, the retained items originate from the original measure, which was developed based on files from adults who stutter and had already undergone rigorous testing of their measurement properties in prior
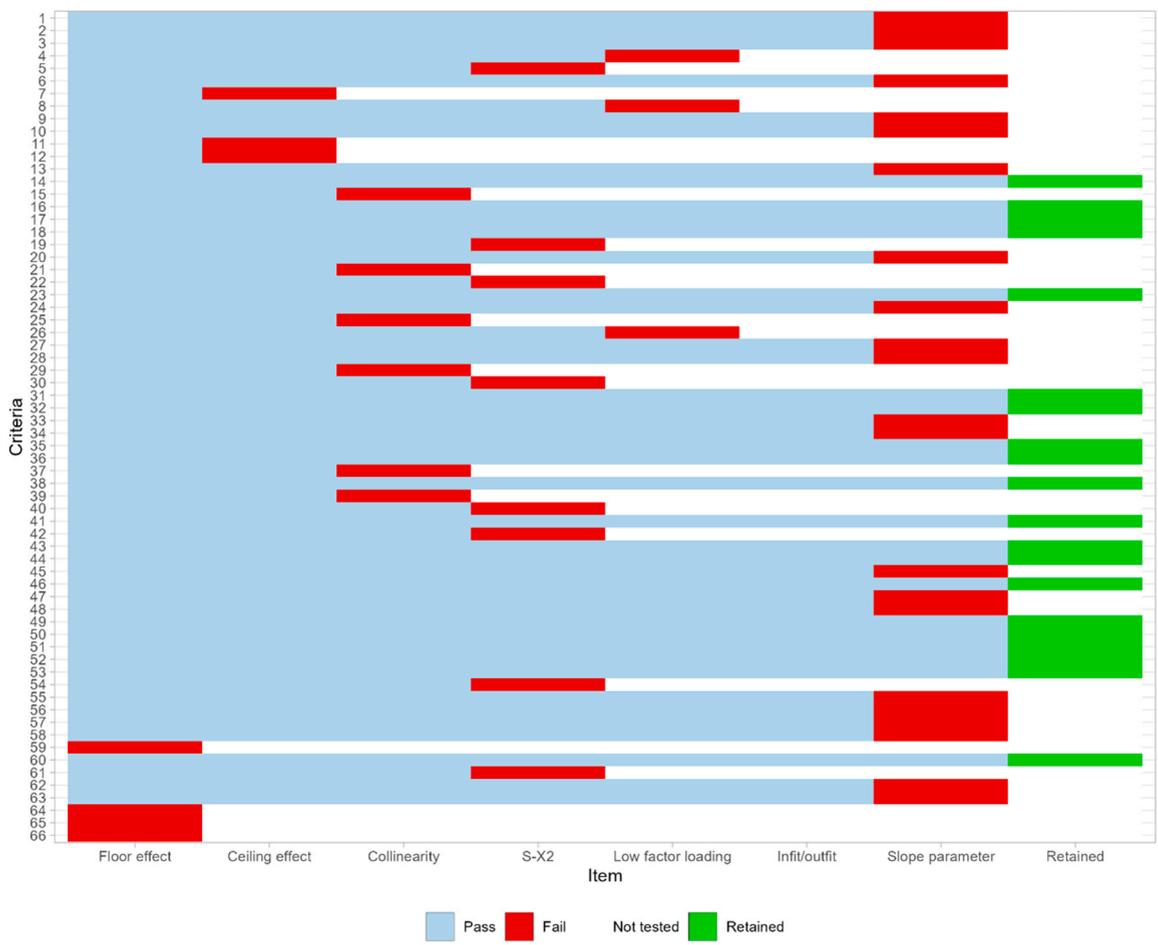

Fig. 2. Categories of item exclusion and inclusion.

development studies. Consequently, one can have a degree of confidence that the retained items in the revised version are valid and broadly representative of the thoughts experienced by people who stutter.

4. General discussion

Adults who stutter are susceptible to experiencing negative thoughts about their speech (St Clare et al., 2009), which can contribute to the development and maintenance of speech related anxiety (Clark & Wells, 1995). Since the original development of the UTBAS in 2009 and 2011, the UTBAS scale has provided a valid and reliable means to explore the speech related thoughts and beliefs of AWS. Information yielded from the measure can provide valuable insights to guide therapy and to measure changes following treatment (Iverach et al., 2011; St Clare et al., 2009). Despite the longstanding use of the UTBAS in both research and clinical practice, there has been no recent systematic exploration of the relationship between the three subscales nor any investigation of its underlying factor structure. The present study sought to address these gaps by firstly analysing the correlation between the three subscales of the UTBAS (Study 1). Results from this analysis revealed a high level of correlation between the thoughts (UTBAS I), beliefs (UTBAS II), and anxiety (UTBAS III) subscales. This suggests that the three scales are not providing unique information that necessitates retention of all three scales. Considering these results and the pertinent role of negative thoughts as drivers and maintainers of anxiety (Beck & Clark, 1997; Clark & Wells, 1995), the present authors proposed the retention of the thoughts frequency scale (UTBAS I) and omission of the beliefs (UTBAS II) and anxiety (UTBAS III) test components. The finding of the redundant subscales (UTBAS II and III) prompted Study 2. Specifically, the authors sought to explore the factor structure of the retained scale (UTBAS I) and to identify any poorly performing items that could be eliminated. Results from the EFA provided support for one underlying general factor. In a subsequent confirmatory factor analysis, the application of a single-factor model did not reveal a close fit, possibly due to the relatively high number of test items. Despite these findings, the results were within the limits of what is considered a 'reasonable approximate' fit. Following a comprehensive multi-stage approach to eliminate unnecessary items, the total number of items was successfully reduced to a more manageable size, and a repeat CFA on the shortened measure resulted in an improved relative model fit. The findings of the two studies combined have positive implications, both practically and clinically.

4.1. Clinical and research implications

The current version of the UTBAS is cumbersome, with its three subscales and 66 test items. Results from Study 1 and Study 2 provide support for a more practical measure with one scale and 20 test items (see Appendix). The authors note that this loss of items means that some unhelpful thoughts will not be screened for. However, there are compelling reasons to believe that key stakeholders aren't using the original measure because of its exhaustive nature; in an assessment setting, unhelpful thoughts about stuttering reflect just one of many areas to be explored by clinicians, and 66 responses is still a lot to expect of individuals who are primarily attending speech pathology services for advice on restructured speech. This revised version (UTBAS-R) may be advantageous in cases where clinicians and or researchers do not require an exhaustive list of thoughts and who simply wish to measure unhelpful thoughts pre and post treatment. The UTBAS-R will be more efficient for clinicians to administer in both clinical and research settings and more user friendly for AWS to complete. This shorter version may also reduce potential respondent fatigue and increase completion rates when utilised for research purposes. As discussed previously, the original version with all 66 items, is still available for clinicians to use at their discretion, when a more exhaustive exploration of unhelpful thoughts is indicated Finally, the study provides the first empirical evidence for the underlying unidimensional factor structure of the UTBAS.

4.2. Limitations and future directions

Sample sizes within the realm of 400 are considered sufficient for factor analytic studies (Comrey, 1988), and while the numbers in this study align with these recommendations, a larger sample could bolster the generalisability of the results. The authors also acknowledge the limitations of the initial model fit of the CFA and the potential value in further factor analytics studies with a larger sample size or different statistical modelling techniques. Importantly, the authors acknowledge that the UTBAS-R is still in the formative stages of development. Critically, the proposed version still needs to be evaluated with a separate cohort of adults who stutter. Accordingly, it is imperative that future validation studies include an external evaluation of its psychometric properties. Since the UTBAS has been translated into 17 languages, future studies could also focus on establishing measurement invariance of the new version across languages.

CRediT authorship contribution statement

Ross Menzies: Writing – review & editing, Writing – original draft, Methodology, Conceptualization. **Robyn Lowe:** Writing – review & editing, Project administration. **Kris Rogers:** Writing – review & editing, Visualization, Methodology, Formal analysis. **O'Brian Susan:** Writing – review & editing, Data curation, Conceptualization. **Monique Jones:** Writing – review & editing, Writing – original draft, Project administration, Data curation.

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Declaration of Competing Interest

The authors report no conflicts of interest. The authors alone are responsible for the content and writing.

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Appendix. Unhelpful Thoughts and Beliefs About Stuttering Scale-Revised (UTBAS-R)

	Using the following scale, please read each item below and circle the number which most accurately describes you in terms of how frequently you have these thoughts					
	1 =never or not at all	*How FREQUENTLY I have these thoughts*				
	2 =rarely or a little					
	3 =sometimes or somewhat					
	4 =often or a lot					
	5 =always or totally					
1	People will think I'm stupid if I stutter	1	2	3	4	5
2	I won't be able to answer their questions	1	2	3	4	5
3	I'm hopeless	1	2	3	4	5
4	I'm of no use in the workplace	1	2	3	4	5
5	People will think I'm strange	1	2	3	4	5
6	I can't face these people	1	2	3	4	5
7	People will wonder what's wrong with me if I stutter	1	2	3	4	5
8	I don't want to go – people won't like me	1	2	3	4	5
9	My pauses are too long – people will think I'm weird	1	2	3	4	5
10	I can't convince people of anything I say because I stutter	1	2	3	4	5
11	I'll make a fool of myself	1	2	3	4	5
12	People shouldn't have to wait so long for me to speak	1	2	3	4	5
13	I always embarrass the people I'm speaking to	1	2	3	4	5
14	People will think that I'm worthless	1	2	3	4	5
15	No one will understand what I'm trying to say	1	2	3	4	5
16	What's the point of even trying to speak – it never comes out right	1	2	3	4	5
17	I won't be able to say exactly what I want to say	1	2	3	4	5
18	Everyone will think I'm simple or dumb because I avoid using difficult words	1	2	3	4	5
19	I slow up everyone's conversation	1	2	3	4	5
20	I'll never finish explaining my point – they'll misunderstand me	1	2	3	4	5

Data availability

The data that has been used is confidential.

References

Beck, A. T., Brown, G., Epstein, N., & Steer, R. A. (1988). An inventory for measuring clinical anxiety: Psychometric properties. *Journal of Consulting and Clinical Psychology, 56*(6), 893–897. https://doi.org/10.1037//0022-006x.56.6.893

Beck, A. T., & Clark, D. A. (1997). An information processing model of anxiety: Automatic and strategic processes. *Behaviour Research and Therapy, 35*(1), 49–58. https://doi.org/10.1016/S0005-7967(96)00069-1

Chu, S. Y., Sakai, N., Mori, K., & Iverach, L. (2017). Japanese normative data for the Unhelpful Thoughts and Beliefs about Stuttering (UTBAS) Scales for adults who stutter. *Journal of Fluency Disorders, 51*, 1–7. https://doi.org/10.1016/j.jfludis.2016.09.006

Clark, D. M., & Wells, A. (1995). A cognitive model of social phobia. In R. G. Heimberg, M. R. Liebowitz, D. A. Hope, & F. R. Schneier (Eds.), *Social phobia: Diagnosis, assessment and treatment* (pp. 69–93). Guilford Press.

Comrey, A. L. (1988). Factor-analytic methods of scale development in personality and clinical psychology. *Journal of Consulting and Clinical Psychology, 56*(5), 754–761. https://doi.org/10.1037//0022-006x.56.5.754

Galesic, M., & Bosnjak, M. (2009). Effects of questionnaire length on participation and indicators of response quality in a web survey. *Public Opinion Quarterly, 73*(2), 349–360. https://doi.org/10.1093/poq/nfp031

Gibson, A. M., & Bowling, N. A. (2020). The effects of questionnaire length and behavioral consequences on careless responding. *European Journal of Psychological Assessment, 36*(2), 410–420. https://doi.org/10.1027/1015-5759/a000526

Helgadóttir, F. D., Menzies, R. G., Onslow, M., Packman, A., & O'Brian, S. (2014). A standalone Internet cognitive behavior therapy treatment for social anxiety in adults who stutter: CBTpsych. *Journal of Fluency Disorders, 41*(C), 47–54. https://doi.org/10.1016/j.jfludis.2014.04.001

Iverach, L., Heard, R., Menzies, R., Lowe, R., O'Brian, S., Packman, A., & Onslow, M. (2016). A brief version of the unhelpful thoughts and beliefs about stuttering scales: The UTBAS-6. *Journal of Speech, Language, and Hearing Research, 59*(5), 964–972. https://doi.org/10.1044/2016_jslhr-s-15-0167

Iverach, L., Jones, M., O'Brian, S., Block, S., Lincoln, M., Harrison, E., Hewat, S., Cream, A., Menzies, R. G., Packman, A., & Onslow, M. (2009). The relationship between mental health disorders and treatment outcomes among adults who stutter. *Journal of Fluency Disorders, 34*(1), 29–43. https://doi.org/10.1016/j.jfludis.2009.02.002

Iverach, L., Menzies, R., Jones, M., O'Brian, S., Packman, A., & Onslow, M. (2011). Further development and validation of the Unhelpful Thoughts and Beliefs about Stuttering (UTBAS) scales: Relationship to anxiety and social phobia among adults who stutter. *International Journal of Language and Communication Disorders, 46* (3), 286–299. https://doi.org/10.3109/13682822.2010.495369

Leary, M. R. (1983). A brief version of the fear of negative evaluation scale. *Personality and Social Psychology Bulletin, 9*(3), 371–375. https://doi.org/10.1177/0146167283093007

Menzies, R., O'Brian, S., Packman, A., Jones, M., Helgadóttir, F. D., & Onslow, M. (2019). Supplementing stuttering treatment with online cognitive behavior therapy: An experimental trial. *Journal of Communication Disorders, 80*, 81–91. https://doi.org/10.1016/j.jcomdis.2019.04.003

Menzies, R. G., Packman, A., Onslow, M., O'Brian, S., Jones, M., & Helgadóttir, F. D. (2019). In-clinic and standalone internet cognitive behavior therapy treatment for social anxiety in stuttering: A randomized trial of iglebe. *Journal of Speech, Language, and Hearing Research, 62*(6), 1614–1624. https://doi.org/10.1044/2019_JSLHR-S-18-0340

Onslow, M. (2025, July). *Stuttering and its clinical management: Twelve lectures*. Retrieved August 7, 2025, from ⟨https://www.uts.edu.au/research/centres/australian-stuttering-research-centre/resources⟩.

Packman, A., Onslow, M., Richard, F., & Van Doorn, J. (1996). Syllabic stress and variability: A model of stuttering. *Clinical Linguistics and Phonetics, 10*(3), 235–263. https://doi.org/10.3109/02699209608985174

Samejima, F. (1969). Estimation of latent ability using a response pattern of graded scores. *Psychometrika, 34*(S1), 1–97. https://doi.org/10.1007/BF03372160

Spielberger, C. D., Gorsuch, R. L., Lushene, R., Vagg, P. R., & Jacobs, G. A. (1983). *Manual for the state-trait anxiety inventory*. Consulting Psychologists Press.

St Clare, T., Menzies, R. G., Onslow, M., Packman, A., Thompson, R., & Block, S. (2009). Unhelpful thoughts and beliefs linked to social anxiety in stuttering development of a measure. *International Journal of Language and Communication Disorders, 44*(3), 338–351. https://doi.org/10.1080/13682820802067529

Streiner, D. L., Norman, G. R., & Cairney, J. (2014). *Health measurement scales: A practical guide to their development and use* (5th Ed.).). Oxford University Press.

Tanner, B. A. (2012). Validity of global physical and emotional SUDS. *Applied Psychophysiology Biofeedback, 37*(1), 31–34. https://doi.org/10.1007/s10484-011-9174-x

Teeson, K., Packman, A., & Onslow, M. (2003). The Lidcombe behavioral data language of stuttering. *Journal of Speech, Language and Hearing Research, 46*(4), 1009–1016. https://doi.org/10.1044/1092-4388(2003/078)

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Associate Professor Robyn Lowe is a speech-language pathologist researcher at the Australian Stuttering Research Centre, University of Technology Sydney. Her research interests include investigating the psychological aspects associated with stuttering and the impact of these on the long-term maintenance of speech treatment benefits. Associate Professor Lowe is also involved with the translation and evaluation of evidenced based treatments for stuttering to accessible mediums, including telepractice and the development of fully automated online platforms.

Professor Ross Menzies is a clinical psychologist and professor at the Australian Stuttering Research Centre, University of Technology Sydney. Professor Menzies has an interest in the origins and management of anxiety. He has developed cognitive behaviour therapy packages for the treatment of adults and adolescents who stutter, as well as a range of other disorders. He is the President of the Australian Association for CBT, and the President-Elect of the World Confederation of Cognitive and Behavioural Therapies (WCCBT).