

# Relationships Between Psychological Distress and Affective, Behavioral, and Cognitive Experiences of Stuttering

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## ABSTRACT

**Purpose:** People who stutter (PWS) are vulnerable to the development of various psychopathological symptoms, although prevalence data are mixed and less clarity exists about factors that potentially influence their occurrence. The current study sought to shed light on the prevalence of self-reported psychopathology in PWS and aimed to identify relationships between affective, behavioral, and cognitive (ABC) experiences of stuttering and psychological distress (PD).

**Method:** Forty-four PWS were administered the Behavior Assessment Battery (BAB) for Adults who Stutter and the Brief Symptom Inventory-18. The prevalence of clinically significant PD was calculated via BSI-18 global severity index *t*-score cutoffs. Regression analyses examined relationships between ABC variables of stuttering and PD.

**Results:** Participants' BAB scores approximated normative values, while the PD score distribution was similar to that of a nonclinical sample. Nine percent of participants met thresholds for clinically significant PD. All ABC correlates of stuttering significantly and positively correlated with PD scores, capturing considerable amounts of shared variance.

**Conclusions:** Levels of PD in PWS approximate those of the general community, highlighting the existence of psychologically distressed subgroups of PWS. Speech situation-specific anxiety had the strongest relationship to PD, followed closely by one's report of situation-specific speech disruption. To a lesser but still significant extent, PWS' frequency to which they engage in various avoidance/escape behaviors, as well as their communication attitude, predicted levels of psychopathology. These data inform diagnostic and clinical decision making, drawing attention to factors that should be attended to in treatment.

Stuttering involves much more than those observable disfluencies that interrupt the forward flow of speech. Like J. G. Sheehan (1970) postulated, the larger, more relevant portion of the condition is not what is seen or heard by the listener, but what is felt by the speaker. In pursuit of further understanding the true nature of stuttering,

empirical research in past decades has sought to more clearly define these “under the surface” variables. As such, numerous qualitative (Connery et al., 2020; Ginsberg & Wexler, 2000; Tichenor & Yaruss, 2018, 2019a) and quantitative (Tran et al., 2018; Vanryckeghem & Brutten, 2018; Weşierska et al., 2018) research investigations have pointed to the fact that people who stutter (PWS) develop certain affective, behavioral, and cognitive (ABC) reactions in response to their speech disorder. These “ABCs” provide not only a multidimensional framework for how PWS experience stuttering but also draw attention to

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clinically important factors that relate to their psychosocial well-being. Given established research findings that PWS are at an increased risk for negative psychological health outcomes (Iverach & Rapee, 2014) often resulting in reduced quality of life (QoL; Boyle, Beita-Ell, et al., 2018), it seems vital for researchers and clinicians alike to further understand how such components might influence the presence of other psychopathological sequelae.

### **Affective Component**

The affective component of stuttering is chiefly illustrated by PWS' proclivity to experience negative affective states (Blumgart et al., 2010; Briley et al., 2021). Research literature pertaining to the PWS' experiences with stuttering closely marks events commonly associated with cognitive-behavioral models of anxiety, including the presence of ruminating negative cognitions related to speaking (Andrews & Cutler, 1974; Tichenor & Yaruss, 2020; Vanryckeghem & Brutton, 2011, 2012), anticipation of moments of stuttering and subsequent anticipatory anxiety (Jackson et al., 2015), avoidance of sounds, words and/or situations that occasion fluency breakdown and are deemed troublesome by PWS (Vanryckeghem et al., 2017), and various physical manifestations of anxiety (E. J. Brutton, 1963), as well as significant levels of emotional tension or discomfort in different social situations (Kraaimaat et al., 2002). A systematic review by Craig and Tran (2014) noted that adults who stutter show not only moderately elevated levels of trait anxiety but also substantially elevated levels of state anxiety (social anxiety). As such, prevalence rates of PWS who meet criteria for social anxiety disorder are markedly higher compared to persons who do not stutter (PWNS; Blumgart et al., 2010; Iverach et al., 2009; Kraaimaat et al., 2002; Menzies et al., 2008). Even more specific to PWS is a tendency to develop conditioned fear of particular speaking situations (Iverach et al., 2011; Messenger et al., 2004; Vanryckeghem et al., 2017). This is highlighted in studies employing the Speech Situation Checklist–Emotional Reaction (SSC-ER; Vanryckeghem & Brutton, 2018) where researchers have furnished evidence for specific scenarios that provoke the most negative emotion in PWS per self-report (Vanryckeghem et al., 2017). These include scenarios where the use of specific words cannot be easily avoided and substituted, situations related to interpersonal stress, dealing with criticism, being rushed and teased, making appointments or a phone call, talking to strangers, and interviewing for a job, to name a few. It is documented how PWS experience most anticipatory speaking fears in response to possible negative peer evaluations (Iverach & Rapee, 2014; Kraaimaat et al., 2002; Messenger et al., 2004).

### **Behavioral Component**

PWS report similar behaviors surrounding the moment of stuttering (Connery et al., 2020; Tichenor & Yaruss, 2018, 2019a), albeit there is wide variability with which PWS experience disfluency on a day-to-day basis (Karimi et al., 2013; Tichenor & Yaruss, 2021). Regardless, contextual factors have been identified that more or less occasion stuttering frequency (G. J. Brutton & Janssen, 1981; J. G. Sheehan et al., 1967). Vanryckeghem et al. (2017), by way of the Speech Situation Checklist–Speech Disruption (SSC-SD; Vanryckeghem & Brutton, 2018), examined situations that PWS report to occasion the most stuttering. Similar to their work with the SSC-ER, the researchers found that situations that cause the most speech disruption and most highly dichotomized their PWS and PWNS groups related to specific underlying dimensions that participants also identified as eliciting negative emotional reaction, namely, specific sounds or words and stressful or anxiety producing speech situations. As the researchers concluded, fluency breakdown and negative emotion are interrelated, apparent by significant correlations documented between each item on the SSC-ER and SSC-SD.

Behaviors secondary to stuttering might develop in attempts to avoid and/or escape moments of stuttering (Vanryckeghem et al., 2004), not only to mitigate the physical struggle associated with stuttering but also as a means to “pass as fluent.” It has been documented how PWS are able to anticipate fluency breakdown to a considerable degree (G. J. Brutton & Janssen, 1979). These behavioral responses to one's expectation of disfluency have garnered renewed interest in recent years (Jackson et al., 2015, 2018), alongside temperamental variables that can influence PWS' engagement in avoidance (Rodgers & Jackson, 2021). Some might contend that the behaviors PWS employ in response to the expectation of stuttering are cognitive in nature, given how these individuals living with persistent social anxiety show a proclivity to exhibit attentional biases toward threatening social stimuli, resulting in, for example, avoidance of eye-gaze (Lowe et al., 2012). Pertaining to the current study, while the antecedent to the use of behaviors secondary to stuttering might sometimes be cognitive in nature, the coping devices PWS use to avoid or escape stuttering are seen as behavioral actions that may or may not be precontemplated. In an attempt to actively conceal their speech disorder, PWS can potentially circumvent the undesirable cost stuttering brings along, such as delegitimization and stigma (Constantino et al., 2017). While certain avoidance and/or escape behaviors can sometimes result in successful concealment or a more timely production of words, concomitant behaviors might ultimately become reinforced, creating more physical tension and struggle for the speaker.

Jackson et al. (2019), using the Stuttering Anticipation Scale (Jackson et al., 2018), identified three common ways PWS typically respond to stuttering anticipation: avoidance, physical change, and approach. Behaviors of avoidance were comprised of actions like circumlocution of words, completely avoiding to speak or having someone else speak for them, while physical changes included taking a breath before a stutter or slowing down speech, among others (p. 6). In a similar vein, approach patterns related to a speaker's decision to stutter openly without avoiding. Exploring the amount, frequency, type, and nature of coping behaviors typically employed in anticipation of or during the occurrence of disfluent speech, Vanryckeghem et al. (2004), by means of the Behavior Checklist (BCL; Brutton & Vanryckeghem, 2003) not unexpectedly found that PWS reported using significantly more speech-associated coping responses than PWNS, but the groups also differed in the type and frequency of their use. The top four responses in the PWS group were substituting one word for another, pausing before trying to say a feared word, avoiding eye contact, and repeating an interjected syllable before saying the feared word. When examining factors underlying the data, general body movements and behaviors related to manner of speaking captured 64.12% of PWS' total shared variance, including pretending to be thinking about what to say or not knowing the answer to a question, using a starter phrase such as "let me see" in order to avoid/postpone saying something, speaking in a sing-song fashion, whispering, or talking loudly (Vanryckeghem et al., 2004). The array of literature examining what construes maladaptive behavioral reactions to the expectancy of stuttering highlights this critical component of the disorder, warranting further examination and exploration of how engagement in such behaviors might influence psychological health (PD; Crichton-Smith, 2002; Jackson et al., 2015; Lowe et al., 2021). Given recent literature pointing to how a PWS' concealment of stuttering predicts psychological distress (Gerlach et al., 2021), it is thought that increased engagement in avoidance/escape mechanisms would influence levels of presenting psychopathology.

### **Cognitive Component**

The cognitive component of stuttering can be described as a culmination of one's unique experiences, communicative interactions, and attitudinal reactions thereto. Thoughts PWS have may be rational or irrational, serving to comprise one's general self-view (Vanryckeghem, 2019). Negative cognitions, poor self-esteem, and poor self-image present in some PWS are in large part influenced by societal stigma toward stuttering (Boyle, 2013a). Given how negative and discrediting attitudes exist toward PWS (Harvey, 2018), public stigma can lead to self-stigma

in PWS, or the internalization of the negative stereotypes, prejudice, and discrimination one is subjected to. Tichenor and Yaruss (2020) found that PWS who were more likely to engage in repetitive negative thinking were also found to be more adversely impacted by stuttering. Suicidal ideation has been found to be higher in male PWS compared to male PWNS, and to correlate with symptoms of depression (Briley et al., 2021). Constantino et al. (2020) concluded that increased experiences of communicative spontaneity (i.e., speech characterized by little premeditation and effortless production) correlated not only with more fluency but also strongly predicted a lesser adverse impact of stuttering on participants' lives. Cross-cultural investigations utilizing the Communication Attitude Test for Adults Who Stutter (BigCAT; Vanryckeghem & Brutton, 2018) have demonstrated just how much more negatively PWS think about their speech when compared to PWNS. These studies (Valinejad et al., 2020; Vanryckeghem & Brutton, 2011; Węsierska et al., 2018) have repeatedly shown how PWS score, on average, roughly 5–6 *SDs* above the mean of PWNS, highlighting PWS' proclivity to engage in unhelpful speaking-related cognitions that impact psychological functioning.

### **PD in PWS**

PD refers to a state of emotional suffering, characterized by psychophysiological and behavioral symptoms that are nonspecific to any one mental pathology (Arvidsdotter et al., 2016). While researchers have defined the concept of PD in different ways, a general consensus exists that the psychopathological domains of PD mainly include anxiety (feelings of nervousness and tension) and depression (sadness or depressed mood), sometimes accompanied by somatization (distress, pain, and discomfort arising from perceptions of bodily dysfunction; Mirowsky & Ross, 2003). While PD might be eliminated when a stressor ceases to exist or an individual learns to cope effectively with the source of stress, one might experience PD when a stressor is absent, given that symptoms of PD also happen to be a diagnostic criterion for various mental health disorders. A variety of clinical and/or experimental tools exist to measure PD, and pertinent to the stuttering-related literature, psychopathological constructs are assessed in a variety of ways. In order to tease out the presence of a specific psychopathological symptomatology, researchers might employ scales that directly examine constructs, such as anxiety (e.g., State Trait Anxiety Inventory; Spielberger, 1972), or use a subscale of a particular battery that explores various psychopathological domains (e.g., Symptom Checklist-90–Revised [SCL-90-R]; Derogatis, 1994). In determining general PD, or psychopathology, certain instruments attempt to use a mixture of

subscale data to produce a global severity measure, typically representing overall negative affectivity, as seen with the Brief Symptom Inventory-18 (BSI-18; Derogatis, 2001). Other ways in which researchers have obtained levels of distress include taking total scores from different test instruments and standardizing and aggregating values to create a composite measure (Gerlach et al., 2021).

Psychological health and the presence of personality dysfunction and psychopathological symptoms have been explored in PWS utilizing various research methods. Studies have concluded that, at the very least, these adults are at an increased risk for adverse psychological health outcomes related to negative affectivity (Craig et al., 2009; Iverach et al., 2009; Tran et al., 2011). Iverach et al. (2009) reported that the presence of personality dysfunction was significantly higher for their treatment-seeking PWS than matched controls, with PWS demonstrating at least threefold increased odds for developing any one Axis-II personality disorder under the framework of the *Diagnostic and Statistical Manual of Mental Disorders–Fourth Edition* (American Psychiatric Association, 2000). In a rebuttal, Manning and Beck (2011) noted several issues with the self-report test used in the study that might have resulted in the exceptionally high rate of personality dysfunction in the experimental group. Manning and Beck (2013a) later investigated treatment-seeking PWS, finding that only four out of their 50 (8%) participants met clinical thresholds for one personality disorder, while just one participant exhibited criteria for two personality disorders. This led to the conclusion that treatment-seeking PWS' rates for potential personality disorders were similar to those of community samples. Using different investigative methods to uncover possible psychopathological symptomatology in PWS, Tran et al. (2011) explored PD in PWS by way of the SCL-90-R (Derogatis, 1994). PWS had significant and clinically elevated negative mood states compared to PWNS. Substantially elevated negative mood symptoms were evidenced for domains of interpersonal sensitivity, anxious mood, phobic anxiety, as well as for the global severity measure (Global Severity Index [GSI]) of the SCL-90-R (overall negative affect), while medium group effects were found for the remaining domains including somatization, obsessive compulsiveness, depressive mood, hostility, paranoid ideation, and psychoticism. What can be corroborated from the aforementioned studies are equivocal group data pointing to varying levels of psycho- and personality pathology in individuals who stutter, leaving consumers unsure of true group trends.

Examining variables influencing PD in PWS, Craig et al. (2011) reported factors that distinguished a resilient group from a nonresilient group and provided protection

against the development of negative affectivity in the participants studied. These included a strong sense of control over one's life and daily functioning (self-efficacy), helpful social support networks, and successful integration into society. Blumgart et al. (2014) showed that PWS not only have lower levels of social support when compared to those who do not stutter, but the PWS who had little in the way of social support also had elevated levels of negative affect as evidenced by significantly higher scores on the SCL-90-R domains of interpersonal sensitivity, depressive mood, and anxiety. Boyle (2013b) examined the effect of stuttering support groups on various psychological health markers including self-efficacy, life satisfaction, and self-stigma, finding that, compared to PWS with no support group experience, those who had a history with stuttering support groups were found to internalize negative stigmatizing beliefs to a statistically significant lesser extent. One of his major conclusions was that self-help groups for PWS limit the internalization of a mal-attitude about oneself, speaking to how cognitive changes come about from support group participation, leading to changes psychosocially. Manning and Beck (2013b) uncovered that social and trait anxiety were the only significant predictors of overall adverse impact of stuttering. Interestingly, measures of depression and personality pathology were not significantly associated with stuttering impact or stuttering severity. In a recent study in which stuttering was conceptualized as a concealable stigmatized identity, Gerlach et al. (2021) aimed to determine if and how stigma-identity constructs influence PWS' psychological health, finding that concealment was the strongest predictor variable of adverse impact related to stuttering and PD. These data highlight how one's motivation to conceal stuttering (which might manifest in behaviorally based coping mechanisms) influence levels of psychopathology.

## **Purpose**

Research findings relating to the prevalence of psychopathology in PWS are mixed, and factors that interact with distress need to be more closely examined and identified. While the aforementioned studies consider an array of factors that may or may not influence levels of self-reported PD in PWS, few look specifically at how underlying mechanisms of the experience of stuttering relating to its ABC components, as measured by the Behavior Assessment Battery (BAB), are to account for these changes in psychological health. The following research questions were posed:

1. What is the prevalence of self-reported PD in PWS?



2. What is the relationship between PWS' indication of speech situation-specific anxiety and self-reported levels of PD?
3. What is the relationship between PWS' indication of speech situation-specific speech disruption and self-reported levels of PD?
4. What is the relationship between PWS' use of various behaviors to avoid/escape stuttering and self-reported levels of PD?
5. What is the relationship between PWS' communicative attitude and self-reported levels of PD?

The maladaptive nature of certain ABC variables seen in PWS leads to questions of how the extent to which such experiences might impact the presence of other psychosocial sequelae. Particularly, one's speech-situation specific anxiety and speech disruption, the use of avoidance and/or escape behaviors, and the presence of negative communicative attitude are hypothesized to positively predict the presence of PD in individuals who stutter.

## Method

### Participants

Inclusion criteria required participants to be at least 18 years old, be a person who stutters, as well as currently live in North America. The age of stuttering onset needed to occur prior to age 11 years. Individuals having a current diagnosis of a speech and/or language disorder other than stuttering were excluded. All those included in the final sample met these criteria as determined via a demographic questionnaire.

Eighty-one persons opened the survey (see Materials and Procedure section). Data of 23 participants were omitted due to incomplete survey responses. Four were removed because their age of stuttering onset reportedly occurred after the age 11 years. Five indicated currently living outside of the United States or Canada, while two reported a current speech or language disorder other than stuttering. The questions, "Do you believe a certain event led you to stutter?" and "If yes, explain," were used to determine if participants provided information suggestive of a fluency disorder of psycho- or neurogenic origin (i.e., participant indicated psychological trauma), resulting in two participants being removed from the subject pool. In addition, one participant was removed for not providing their age. The remaining 44 PWS were included in the final sample. Twenty-five participants (56.80%) were male and nineteen participants (43.2%) were female. Ages

ranged from 18 to 76 ( $M = 33.86$ ,  $SD = 11.40$ ). All participants indicated being a PWS. Forty-two participants (95.5%) reported being diagnosed by either a speech-language pathologist (SLP;  $n = 38$ ; 86.4%), a board-certified fluency specialist ( $n = 1$ ; 2.3%), or "Other" ( $n = 3$ ; 6.8%). Relative to education, 14 participants (31.8%) said they held a bachelor's degree, 21 held (47.7%) a master's degree, and two (4.5%) held a doctoral degree. Four participants (9.1%) held a high school diploma and three participants (6.8%) indicated "Other."

When asked, "Are you currently in therapy for stuttering?" 33 (75%) indicated "No" and 11 (25%) indicated "Yes." Regarding those who reported receiving speech therapy at some point in the past, 42 (95.5%) recalled receiving therapy at one point in their life, while two (4.5%) indicated never having received therapy.

Self-perceived stuttering severity was rated on a 5-point Likert scale. PWS rated their stuttering severity as follows: very mild ( $n = 6$ ; 13.6%), mild ( $n = 13$ ; 29.5%), moderate ( $n = 21$ ; 47.7%), severe ( $n = 3$ ; 6.8%), and very severe ( $n = 1$ ; 2.3%). Thirty-six (82%) participants reported being a member of a stuttering support group. As to the length of time they participated in a support group, the majority of participants indicated more than 5 years ( $n = 19$ ; 52.8%), followed by 3–5 years ( $n = 4$ ; 11.1%), 1–3 years ( $n = 5$ ; 13.9%), and 0–1 year ( $n = 7$ ; 19.4). One participant (3%) did not respond to this question. In response to, "Do you actively try to conceal your stuttering? If so, to what extent?" more than half of them (54.6%) reported: "Never" ( $n = 12$ ; 27.3%) or "Sometimes" ( $n = 12$ ; 27.3%) trying to conceal. The remainder tried to hide their stuttering "Often" ( $n = 10$ ; 22.7%), "A lot" ( $n = 5$ ; 11.4%), or "Always" ( $n = 5$ ; 11.4%).

### Materials and Procedure

Approval for the study was obtained from the University of Central Florida Institutional Review Board. In order to recruit as many participants as possible, a targeted e-mail and social media campaign was used to disseminate the survey to individuals who stutter, board-certified fluency specialists, and SLPs. To increase response rate, the survey was designed to take no more than 30 min to complete so as to minimize respondent fatigue. PWS completed the study via Qualtrics, an online survey software system. Upon opening the survey, participants provided their consent to participate in the study by electronically signing a consent form. The first component in the survey was the demographic questionnaire, followed by five self-report tests, administered in a computer-randomized order. In between the tests, one of four Infrequency Validity Scale questions was presented.

Participants were administered all subtests of the BAB (Vanryckeghem & Brutton, 2018), a series of self-report tests that assess a person's lived experiences with stuttering, and the multidimensional aspects surrounding the disorder, which include its ABC components that comprise the independent variables of the current study. The battery fits within the World Health Organization (WHO, 2001) International Classification of Functioning, Disability and Health (ICF) framework and is comprised of the SSC-ER and SSC-SD, the BCL, and the BigCAT.

The SSC-ER explores negative emotional reaction (affective component) experienced by PWS in 38 described speech situations that they have to consider relative to their degree of evoked negative emotional reaction (fear, anxiety, worry; e.g., "Are you anxious, concerned, or worried about your speech when you are ... talking on the telephone; introducing yourself?"). The SSC-SD provides the same speech scenarios as in the SSC-ER but asks respondents to judge the degree of perceived level of speech disruption (stuttering), investigating the behavioral component of the disorder (e.g., "Is your speech disrupted. . . do you get stuck on, repeat, or prolong sounds or words when you are ... talking on the telephone; . . .introducing yourself?"). Each subtest uses a 5-point Likert scale (1 indicating *not at all* to 5 representing *very much*) to query anxiety, fear, worry (SSC-ER), or speech disruption (SSC-SD). Total scores are tallied for the 38 presented speech situations on each separate test. Both tests have been subjected to various investigations over the years and have shown to possess solid psychometric properties (G. J. Brutton & Janssen, 1981; G. J. Brutton & Vanryckeghem, 2003; Vanryckeghem & Brutton, 2018; Vanryckeghem et al., 2017).

The BCL (Vanryckeghem & Brutton, 2018) was administered to examine PWS' usage of various types of behaviors employed when trying to avoid or escape the occurrence of disfluent speech. The BCL collects data on the number, nature, and frequency of use of concomitant behaviors in daily communication. Respondents indicate whether or not they use each of the 60 presented behaviors when problems producing a sound, syllable, or word are anticipated, or experienced. In alignment with the BCL scoring procedures, scores are calculated based on a dichotomous scale: 1 if a particular behavior is used or 0 if it is not, leading to a possible range of scores from zero to 60. To scrutinize the relationship between the frequency of use of each of the indicated coping behavior, a 5-point Likert scale is applied (*very infrequent* to *very frequent use*). For the current study, to scrutinize the type and frequency of PWS' engagement in coping behaviors, a 0–5 scale was used. That is, 0 indicates nonuse of a particular behavior, whereas 1–5 is indicative of using a particular behavior with a specific frequency. As is the case with the other BAB subtests, the BCL has evidence for its

reliability and validity (G. J. Brutton & Vanryckeghem, 2003; Vanryckeghem & Brutton, 2018; Vanryckeghem et al., 2004; Węsierska et al., 2018).

The BigCAT (Vanryckeghem & Brutton, 2018) was administered to investigate speech-associated attitude. This self-report test consists of 34 true/false statements that respondents evaluate relative to what they currently think about their speech. Responses on the BigCAT that indicate a negative communication attitude receive a score of 1, while answers that convey positive thinking are scored zero, leading to a possible score between zero and 34. For example, if a respondent were to choose "False" for the statement "Speaking is no problem for me," that item would be scored as 1, indicating a negative communication attitude. If "True" is chosen, 0 points are awarded, conveying positive cognition. The BigCAT is a singularly cognitive-based measure of communication attitude specifically designed for PWS. Studies repeatedly show significant dichotomies between PWS and PWNS' scores, a strong discriminative power, and good reliability and validity (Valinejad et al., 2020; Vanryckeghem & Brutton, 2011, 2012, 2018; Vanryckeghem & Muir, 2016).

PD or psychopathology (the dependent variable) was assessed with the BSI-18 (Derogatis, 2001), an 18-item self-report checklist predominately utilized as a screening instrument for symptoms of PD and psychiatric disorders in community and medical populations. It contains items from, and is a shortened version of, its parent scales, the 53-item BSI (Derogatis, 1993) and the original 90-item SCL-90-R (Derogatis, 1994). The BSI-18 provides 18 symptom descriptions, which are to be rated by respondents along a 5-point Likert scale (0 = *not at all*, 4 = *very much*) according to how much they have been bothered by the symptom in the past week (e.g., "spells of terror or panic," "nervousness or shakiness inside"). The test examines three domains of psychopathology by means of three symptom scales: Anxiety (e.g., general nervousness, fear, and panic), Depression (e.g., apathy, sadness, and suicidal ideation), and Somatization (PD expressed as physical experiences; e.g., muscular/stomach pain, cardiovascular problems). BSI-18 raw scores can be transformed to GSI *t* scores based on gender-specific normative data from nonpatient community-dwelling U.S. adults. Respondents who have either a *t* score of  $\geq 63$  on the GSI (summation of all test item scores) or a *t* score of  $\geq 63$  on any two of the three symptom scales, are classified as having clinically significant distress (Derogatis, 2001). The BSI-18's shorter format allows for a quicker average completion time, and psychometric properties pertaining to its structural validity are improved due to the reduced number of symptom dimensions, making it more homogeneous than its parent scales (Derogatis, 2001). While each symptom domain provides subscale scores, the

BSI-18 and GSI score it produces is most commonly used in a unidimensional fashion, in order to scrutinize general PD. The test has been shown to have a good internal reliability, structural validity, and factor structure (Galdón et al., 2008; Li et al., 2018).

Insufficient effort responding (IER) has been shown to occur in survey research due to participants with low or reduced motivation to attend to study materials, posing a threat to the validity of research designs that employ survey methods (Huang et al., 2012). Because of this, four items from an infrequency IER scale created by Huang et al. (2012) were interspersed throughout the study’s questionnaires to account for participants who might have been careless in their responses. Items used were provided in true and false format (e.g., “I have never used a computer”). Questions from this IER scale have been determined to have good reliability, criterion-related validity, and unidimensionality, showing effectiveness in detecting IER (Huang et al., 2015).

### Data Analysis

Participants’ data were entered into IBM SPSS Statistics (Version 27) software for analysis. Missing values were imputed via individual participant subtest specific mean scores. Measures of central tendency for total raw scores on the BAB subtests were obtained and compared to the test manual’s normative samples of PWNS and PWS. BSI-18 GSI raw scores were transformed to gender specific *t* scores to be analyzed descriptively and compared to a normative community sample provided by the test’s manual (Derogatis, 2001). Independent samples *t* tests were conducted to compare between-group means of male and female PWS GSI *t* scores. Single-sample *t* tests were used to determine whether males or females GSI scores were different from the test’s normative community sample.

Bivariate correlations between relevant variables showed that gender was not significantly related to any variables of interest, while age related to three out of five of those variables. Therefore, age was included as a covariate in remaining analyses. In a hierarchical linear regression model using simultaneous entry method, variance inflation factors (VIFs) for SCC-ER and SSC-SD scores indicated issues of multicollinearity (VIFs > FILL IN). VIF’s exceeding 4.0 have been found to be problematic (Hair et al., 2010). In addition, all independent variables showed a large degree of overlap in variance with *r* values ranging from .54 to .83. Because of this, four separate linear regressions covarying for age were conducted between total scores of each BAB subtest and GSI raw scores. In the models containing SSC-ER, SSC-SD, and BigCAT scores, studentized residuals never exceeded  $\pm 3.00$ , suggesting no statistical outliers. In the model containing

BCL scores, one outlier was identified and removed from that regression analysis.

## Results

Descriptive statistics for all BAB subtests’ total scores can be found in Table 1. Mean scores for PWS on the SSC-ER and SSC-SD closely approximated each other. When compared to normative data (Vanryckeghem & Brutton, 2018), the SSC-ER scores for our sample of participants were just more than 3.5 *SD* above the mean of PWNS and 5.5 *SD* above the mean for SSC-SD. Relative to participants’ use of coping behaviors and speech-associated thinking, they scored 6 *SD* above the mean for PWNS on the BCL and slightly more than 5 *SD* above the mean on the BigCAT. Compared to PWS’ norms, the individuals in the current sample had scores for both the SSC-ER and SSC-SD that closely approximated normative means, falling within roughly 0.5 *SD* below the average PWS’ scores. Regarding the BCL, the present sample reported using more coping behaviors, scoring, on average just more than 1 *SD* above the mean of the standardization sample. On the BigCAT, individuals’ scores averaged roughly at 1 *SD* below the mean of the normative sample of PWS. Overall, PWS showed significantly more negative emotional reaction to and speech disruption in particular speaking scenarios, a significantly more negative communication attitude, and reported engaging in the use of avoidance and or escape behaviors to a considerably higher extent than individuals who do not stutter. The ABC speech-associated reactions reported by PWS in the current study were similar to those PWS examined in the normative sample (Vanryckeghem & Brutton, 2018).

Descriptive statistics for gender-specific GSI *t* scores can be found in Table 2. Male and female participants’ GSI *t* scores were not found to statistically significantly

**Table 1.** Measures of central tendency and variation for PWS’ total scores on the BAB subtests.

Variable	SSC-ER	SSC-SD	BCL	BigCAT
<i>M</i>	100.64	103.38	28.43	20.93
<i>SD</i>	36.68	29.21	14.45	9.00
<i>Mdn</i>	98.00	108.50	30.00	22.00
Mode	56	76	13	26
Minimum	38	38	1	0
Maximum	180	157	59	33

*Note.* PWS = people who stutter; BAB = Behavior Assessment Battery; SSC-ER = Speech Situation Checklist–Emotional Reaction; SSC-SD = Speech Situation Checklist–Speech Disruption; BCL = Behavior Checklist; BigCAT = Communication Attitude Test for Adults Who Stutter.

**Table 2.** Measures of central tendency and variation for PWS' gender specific GSI *t* scores on the BSI-18.

Variable	Male PWS ( <i>n</i> = 25)	Female PWS ( <i>n</i> = 19)
<i>M</i>	49.08	50.58
<i>SD</i>	9.17	7.35
<i>Mdn</i>	50.00	50.00
Mode	36	48
Minimum	36	33
Maximum	68	63

Note. PWS = people who stutter; GSI = Global Severity Index.

differ,  $t(42) = -.584, p = .563$ . Compared to the norms of the BSI-18 nonclinical normative sample of community-dwelling adults (Derogatis, 2001), GSI *t* scores for males and females in the current investigation were also found to not be statistically significantly different,  $t(24) = -.502, p = .620$ ;  $t(18) = .343, p = .735$ . In other words, levels of PD for both male and female PWS groups were not found to be systematically different from the respective gender samples in the general community.

Relative to the proportion of individuals meeting Derogatis' (2001) threshold of what is considered clinically significant distress (i.e.,  $\geq 63$ ), four participants (9.09%) in the present study had GSI *t* scores exceeding this value, approximating the top 9% of participants in Derogatis'

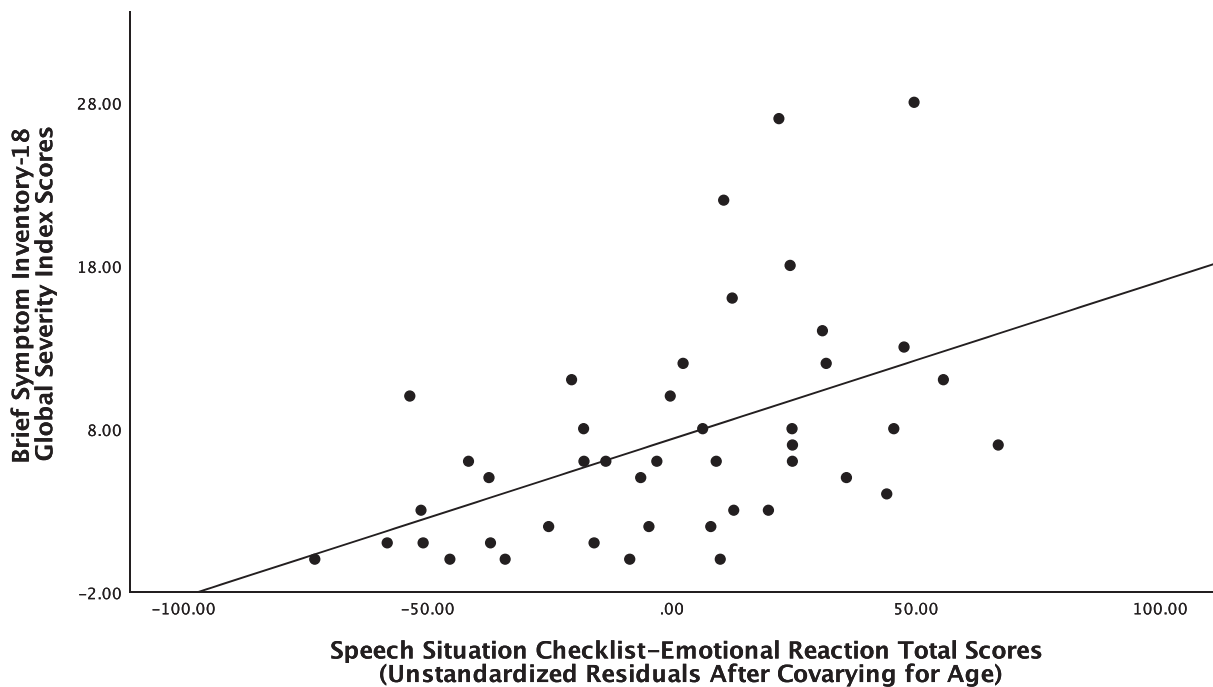
(2001) standardization sample of community-dwelling adults who met or exceeded this threshold.

Analyzing the relationship between the ABC factors linked to stuttering and PD, all four regression models covarying for age (SSC-ER, SSC-SD, BCL, and BigCAT) positively predicted participants' GSI scores to a significant extent. Overall, the strongest relationship uncovered was between SSC-ER and GSI scores, where the model captured 24% of the shared variance, adjusted (adj.)  $R^2 = .24, F(2, 41) = 7.62, p < .001$ , and a medium and significant regression coefficient was obtained ( $\beta = .52, p < .001$ ). This means that, as PWS indicated more negative emotional reaction relative to different speaking scenarios, they tended to report higher levels of PD, as visually portrayed in the scatterplot shown in Figure 1.

As it relates to SSC-SD scores, a similar and significant model effect was observed, accounting for less shared variance compared to SSC-ER, adj.  $R^2 = .18, F(2, 41) = 5.65, p = .01$ . As depicted in Figure 2, a significant medium positive regression was evidenced ( $\beta = .47, p = .004$ ), indicating that the more a PWS indicated situation-specific speech disruption, they reported higher levels of PD.

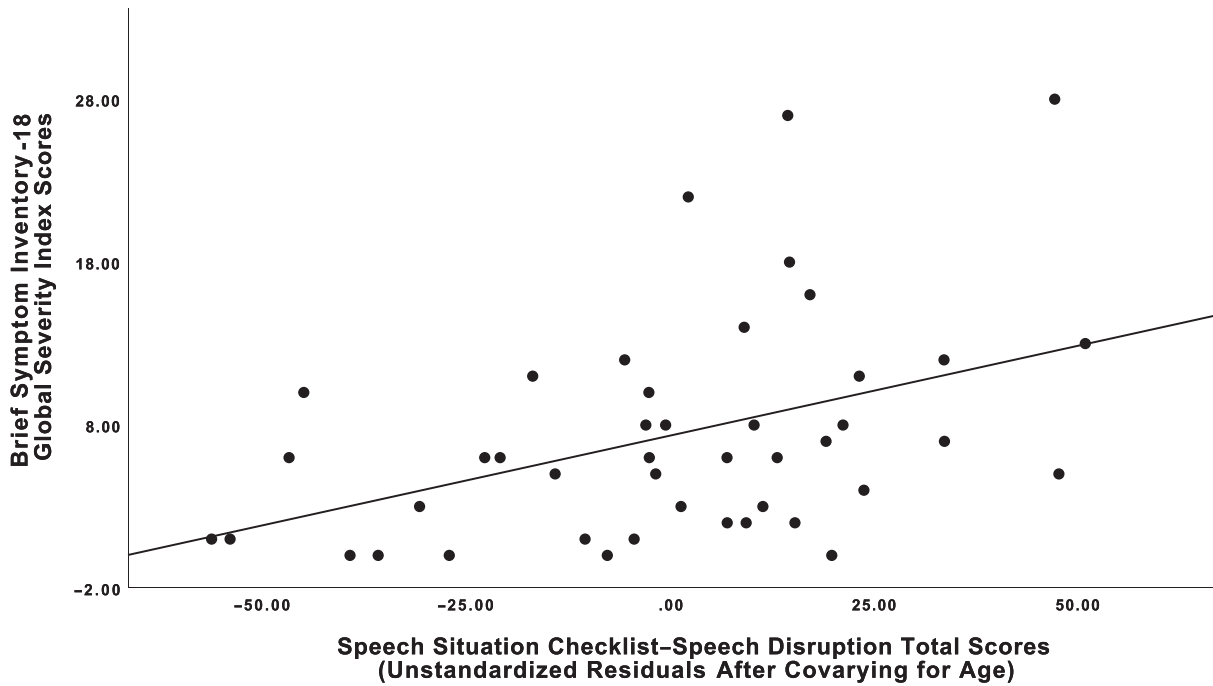
As shown in Figure 3, another positive and predictive relationship was obtained with BCL frequency scores

**Figure 1.** Scatterplot of the relationship between PWS' situation-specific negative emotion and psychological distress. PWS = people who stutter.





**Figure 2.** Scatterplot of the relationship between PWS' situation-specific speech disruption and psychological distress. PWS = people who stutter.



(i.e., based on the 1–5 Likert scale described before). This was evidenced via 16% of shared variance being captured, and a significant model effect,  $\text{adj. } R^2 = .16$ ,  $F(2, 40) = 5.123$ ,  $p = .01$ , wherein a medium beta coefficient

( $\beta = .45$ ,  $p = .01$ ) was obtained. That is, the frequency to which PWS reported using various behaviors to avoid or escape stuttering had a linear, predictive relationship with PD.

**Figure 3.** Scatterplot of the relationship between PWS' use of concomitant behaviors and psychological distress. PWS = people who stutter.

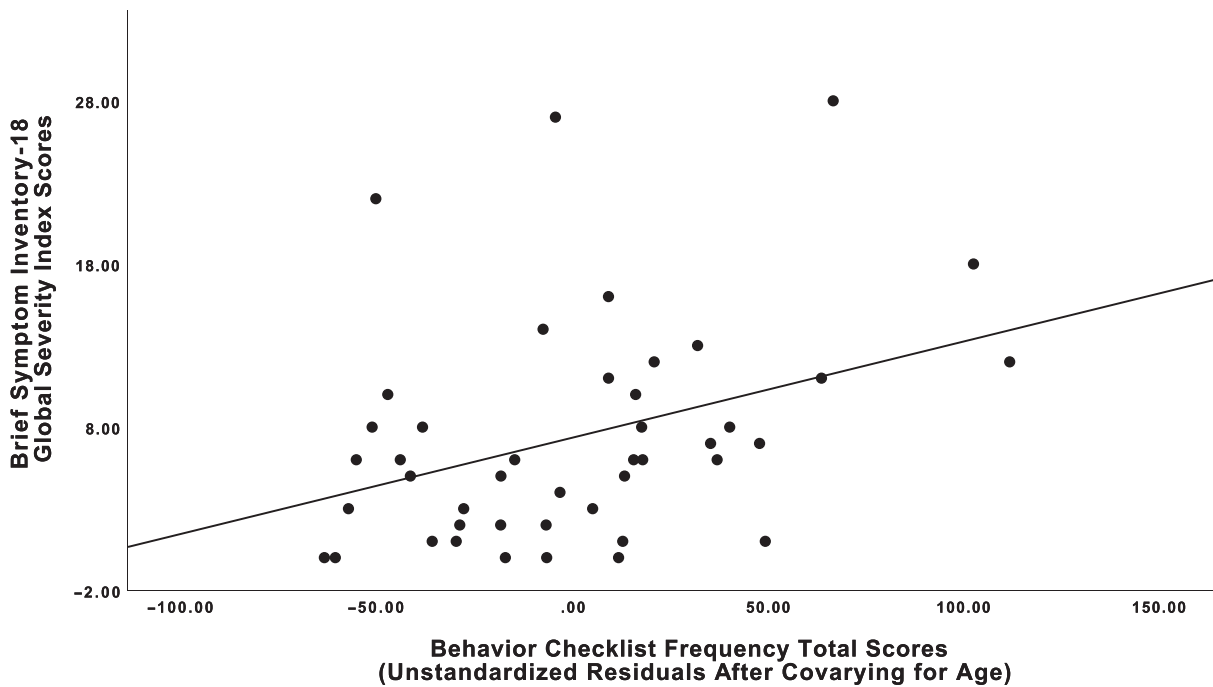
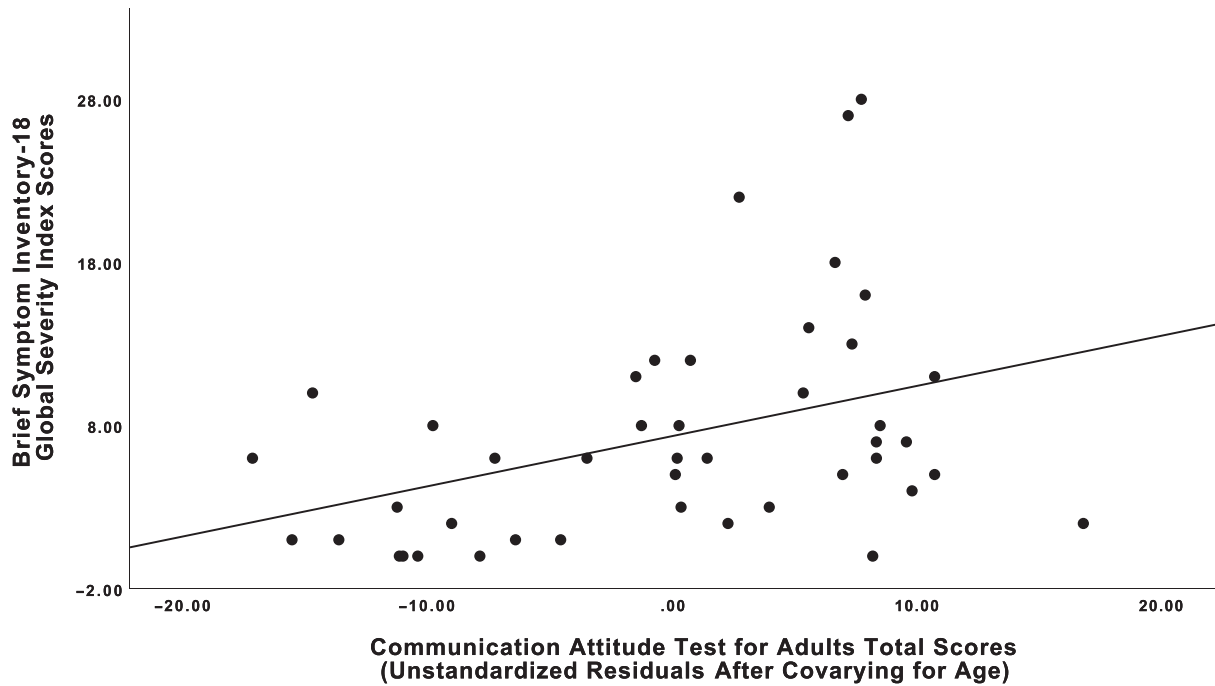


Figure 4. Scatterplot of the relationship between PWS' communication attitude and psychological distress. PWS = people who stutter.



Lastly, as seen in Figure 4, for BigCAT total scores, the least robust but still significant and positive relationship was found,  $adj. R^2 = .15$ ,  $F(2, 41) = 4.670$ ,  $p = .02$ , warranting a significant medium regression coefficient ( $\beta = .41$ ,  $p = .01$ ). That is, the more negative a PWS' attitude toward their speech was, the greater the degree of PD.

To further shed light specifically on those four participants who had clinically significant levels of PD, total scores for those participants' BAB subtests and GSI  $t$  scores can be seen in Table 3. To rule out if they might have skewed the current regression results to a significant extent, supplementary analysis was undertaken wherein the same linear regressions were conducted without these four individuals ( $n = 40$ ). Beta values were essentially the

same, resulting in the same hierarchy of effects based on this correlational value (SSC-ER:  $\beta = .52$ ; SSC-SD:  $\beta = .47$ ; BCL:  $\beta = .44$ ; BigCAT:  $\beta = .37$ ).

## Discussion

### Prevalence of ABC Correlates of Stuttering and PD

The significant differences in BAB scores compared to the PWNS normative sample, paired with participants' reports of ABC reactions falling, essentially, within 1  $SD$  of the average normative PWS, provide evidence that those studied react as individuals who stutter, speaking to the investigation's external validity and the generalizability of its sample. Moreover, levels of PD in the current PWS did not significantly differ from those of the general community. This is in agreement with Manning and Beck's (2013a) investigation, who found that just 10% of their PWS studied met clinical thresholds for Axis-II personality disorders. While clinically significant symptoms of PD and meeting thresholds for Axis-II personality disorders are not one and the same, percentages corroborated by both investigations mirror prevalence rates for personality disorders globally (Winsper et al., 2020), in addition to those levels of PD present in Derogatis' (2001) nonclinical normative sample.

Table 3. Total scores for BAB subtests of participants with clinically significant psychological distress.

GSI $t$ scores	SSC-ER	SSC-SD	BCL	BigCAT
68 (Male)	157	157	39	30
68 (Male)	127	122	36	29
63 (Female)	118	112	15	25
63 (Female)	127	120	51	28

Note. BAB = Behavior Assessment Battery; GSI = Global Severity Index; SSC-ER = Speech Situation Checklist–Emotional Reaction; SSC-SD = Speech Situation Checklist–Speech Disruption; BCL = Behavior Checklist; BigCAT = Communication Attitude Test for Adults Who Stutter.

Outcomes of the current study are in disagreement with investigations concluding that PWS possess significantly higher rates of psychopathology (separate from social phobia) than PWNS (Iverach et al., 2009; Tran et al., 2011; Treon et al., 2006), as was the case in Tran et al.'s study (2011) with the SCL-90-R. Their sample's global psychopathology scores were not only statistically significantly elevated over PWNS', but only 32% of their stuttering participants fell into what they considered a "normal range." High convergent validity between the BSI-18 and SCL-90-R's global severity measures (Prinz et al., 2013) complicates reasons for the differences seen in comparative findings, given the lack of a statistically significant difference found in the current study between PWS and those in the general community. Differing methodological procedures employed by each study bring to light how procedural implications might be a major factor for fluctuating results across the literature. Future studies could benefit from operationally defined constructs they purport to measure, clearly stated methodological procedures, and their rationale, paying attention, too, to rhetoric and language surrounding the reporting of findings so group trend data are not misinterpreted.

The extent to which the possible impact of experience-specific factors, reported on in the demographic questionnaire need to be taken into consideration. While a large portion of individuals reported not currently being in treatment, a majority had been in therapy in the past, as is the case in other studies (Boyle, Milewski, & Beita-Ell, 2018; Svenning et al., 2021). While its effect is unknown, such experiences could relate to presenting levels of psychopathology in the PWS studied. The extent to which involvement in stuttering support groups might alleviate negative psychosocial concomitants is somewhat more self-explanatory (Boyle, 2013b; Yaruss et al., 2002). The current data lead to questions of how much the average PWS conceals their stuttering and its role in symptoms of PD. Forty-eight percent (48%) of Boyle, Milewski, and Beita-Ell (2018) participants indicated they "Somewhat Agree" or "Strongly Agree" to the statement, "I rarely need to hide the fact that I stutter." In the current study, more than half (54.6%) of the respondents reported to "Never" or "Sometimes" try and conceal their stuttering, reflecting a group of PWS who might be less inclined to hide their stuttering which could relate to presenting distress.

### ***Relationships Between ABC Components of Stuttering and PD***

Overall, results of the current investigation show that all ABC experiences of stuttering, as measured by the BAB, positively relate to levels of psychopathology to a significant extent. The robust relationship unearthed between speaking-related anxiety and PD speaks to how

the experience of stuttering can involve repeated and varying degrees of state anxiety, given the essential and omnipresent nature of social interactions. Considering the current results, one could logically infer how a chronic and habitual fear of speaking across daily communicative scenarios might foster the development of PD, given how symptoms of anxiety, like feelings of impending panic and great unease, are known to impact one's ability to problem solve and handle demands of life (Stirling & Hellewell, 2013). A growing amount of literature supports PWS' tendency, as a group, to experience depressive symptoms at higher rates than PWNS (Briley et al., 2021; Craig et al., 2015; Iverach et al., 2010). Depression highly co-exists with social phobia, generalized anxiety or other anxiety-related disorders (Dalrymple & Zimmerman, 2007), with roughly half of adults with an anxiety or depressive disorder also displaying a simultaneous presence of the other pathology (Kircanski et al., 2017). PWS' feelings of discomfort, intensified by negative stigma around stuttering, forms of delegitimization they endure (Boyle, 2013a; Constantino et al., 2017), and negatively impacted life opportunities related to communication, all seem to relate to psychologically distressing symptoms, such as anxiety and depression. It is noted how anxious individuals tend to exhibit thoughts of uncertainty and threat, whereas depressed persons might frequently contemplate incompetence, failure, or other undesirable self-attributes (Spielberger, 1972). In both cases, these components predominantly reinforce negative emotion, feed into one another, and could manifest in what some have referred to in PWS as a "core negative affectivity factor" (Tran et al., 2011, p. 23). Stirling and Hellewell's (2013) model of learned helplessness, which contributes to depression in those experiencing chronic social difficulties, cites that unpleasant experiences in situations that are beyond one's control might lead an individual to expect failure in their efforts. This "loss of control" can be applied to PWS on a molecular and molar level, given how moments of stuttering have been reported by PWS as a loss of control (Tichenor & Yaruss, 2018), or how self-efficacy (or control over one's life) plays a vital role in psychosocial implications of the disorder (Craig et al., 2011). Research by Craig et al. (2011) and Boyle (2013a, 2013b) showing how self-efficacy, social support, and connection influence psychosocial health in PWS is relevant here given the current data pointing to how stuttering-related fears relate to psychological well-being and are hypothesized to co-occur with social dysfunction. PWS' reports of somatization corroborated via GSI scores can be explained to some extent by research showing PWS' proclivity to experience this psychopathological phenomenon in contrast with PWNS (Tran et al., 2011).

The current investigation provides evidence for a significant relationship between a PWS' indications of

situation-specific speech disruption and levels of PD. Craig et al. (2009) found no associations between percentage syllables stuttered (%SS) and QoL in PWS and Blumgart et al. (2010) also found that %SS was unrelated to scores on any of their measures of anxiety (state and trait). Manning and Beck's (2013b) investigation showed no significant associations between %SS and levels of trait anxiety, social anxiety, depression, and personality pathology, nor was there a significant relationship between these variables and increased scores on the Stuttering Severity Instrument (Riley, 1994). More specific to the data at hand are Tran et al.'s (2011) findings of an absence of a significant relationship between %SS and PD. Predating these studies, Ezrati-Vinacour and Levin (2004) found that PWS' state anxiety, explored via both SSC-ER and PWS' subjective self-measures immediately following speaking tasks, had robust correlations with increased stuttering severity. This, paired with research establishing the strong positive relationship between PWS' SSC-SD and SSC-ER scores (Vanryckeghem & Bruten, 2018), provides a more solid evidence base for the apparent link between self-reported situation-specific fluency breakdown and one's situation-specific anxiety, whereas the connection between stuttering severity/frequency and other types of anxiety is less clear. Current findings expand the breadth of knowledge on the relationship between situation-specific fluency breakdown and psychopathological symptoms. Given that stuttering frequency or severity rarely predicts psychological health outcomes (Blumgart et al., 2010; Craig et al., 2011), reasons for the current findings could relate to the situation-specific nature of the fluency breakdown reported and be associated with one's perception of communicative interactions and accompanying distressing thoughts and/or feelings. Discreditation, maljudgments toward PWS (Cooper & Cooper, 1996; Crowe & Walton, 1981), and subsequent participation restrictions as documented in the qualitative reports of PWS who experience delegitimization due to their stuttering (Constantino et al., 2017) all seem to be associated with why one's perception of their situation-specific stuttering predicted distress.

The extent to which PWS reported using various coping behaviors to avoid or escape stuttering and their relationship with self-reported levels of PD warranted another positive and predictive relationship. In a "need to survive in a fluent culture" (Plexico et al., 2009a, p. 101), PWS are often poised to select cognitive, emotionally, or behaviorally based coping responses to deal with a stuttering moment with the main goal to escape physical struggle and/or avoid listener penalties and discomfort. As such, the array of behavioral coping devices PWS reported to use to avoid or escape moments of stuttering as captured by the BCL are thought to be cognitively, physically, and

emotionally taxing, as noted in qualitative reports of PWS who employ such behaviors (Connery et al., 2020; Plexico et al., 2009a; Tichenor & Yaruss, 2018). Plexico et al. (2009b) mention how emotion-focused and avoidant forms of coping are malproductive, as the issue they intend to cope with is not being solved but averted. Given the habitual nature of concomitant behaviors, the fact that they often fail to induce fluency, provide only temporary relief, and might become more of a perceived problem than the stuttering itself, it can be seen how such speech-aids might pose a further barrier to communication, occasioning increased levels of distress. PWS in Tichenor and Yaruss' (2019b) investigation indicated that the more likely they were to have "not stuttering" as a goal, the higher the likelihood they were to remain silent, remove themselves from a situation, let someone else speak for them, employ other avoidance and escape behaviors, and have a general proclivity to experience more negative ABC states. Current data support work by Boyle (2013b) who posits how overemphasis on fluency may adversely impact psychosocial health, including the internalization of stigmatizing thoughts. Theoretical groundwork for the data at hand is discussed in literature hypothesizing how avoidance and/or escape behaviors might have deep-seating effects on one's identity development, as described in J. G. Sheehan's (1970) role-conflict theory. PWS' intermittent periods of fluency, which cause an allure to maintain stutter-free speech, draws attention to how PWS might be subject to identity crises and internal inconsistencies of self-image. Such a phenomenon was recently given a fresh perspective by Gerlach et al. (2021) who found via a composite measure of trait anxiety and depression that concealment significantly predicted PD. While the current investigation's independent variable is specifically comprised of the extent to which PWS report using avoidance and/or escape behaviors and not one's indication of stuttering concealment, they complement those of Gerlach et al. (2021) given that the recorded behavioral manifestations reported in the current study serve as a vehicle for concealing stuttering.

Accounting for the least amount of shared variance, but still a significant predictor, was the relationship between PWS' indications of negative communication attitude and psychopathology. The current findings corroborate stuttering-related literature positing how negative cognitions, such as those manifesting in self-focused attention and/or irrational thinking, relate to development and maintenance of poorer psychological health in PWS (Ingram, 1990; Lowe et al., 2017; Tichenor & Yaruss, 2020). Current findings are in support of Miller and Watson (1992) who demonstrated a positive and significant relationship between PWS' increased negative communicative attitude, levels of trait and state anxiety and depression. While the



BigCAT does not measure the frequency with which PWS engage in negative communicative ideas, it should be noted how thoughts tend to “crystalize,” becoming a dispositional trait which comprises one’s attitude (Vanryckeghem, 2019, p. 2). Thus, the data seem to align with research showing how self-focused attention and repetitive negative thinking influence the psychosocial impact of stuttering and help maintain social phobia (Ingram, 1990; Tichenor & Yaruss, 2020). Literature in psychology posits that those who experience recurring cognitions of shame and self-blame resulting from adverse experiences tend to report more depressive-like symptoms (Cruwys & Gunaseelan, 2016). Iverach et al. (2015) found that the frequency and strength of negative speech-associated thoughts in PWS correlate with measures of trait anxiety, fear of negative evaluation, neuroticism, and depression. Similarly, the current findings show how increased negative speech-associated cognitions relate to the development of PD, which include anxiety and depressive symptoms. Boyle’s (2015) assessment of negative stuttering-related cognitions revealed that stigma scores were associated with significantly higher indications of anxiety and depression and lower levels of QoL and social support. This, paired with Boyle’s (2013b) study showing that PWS who put less emphasis on fluent speech production also showed less in the way of internalizing self-stigmatizing thoughts, again illuminates how negative cognitions related to stuttering are linked to poorer psychological health outcomes. Current data compliment these studies in further confirming the link between negative speech-associated cognitions present in PWS and their impact on distress.

### ***Clinical Implications***

Data from the current investigation related to the prevalence of PD in PWS can, at the least, inform clinicians to the varying levels of psychological health impact occurring in this population. As some studies have postulated (Kraaimaat et al., 2002; Preus, 1981), the current data seem to confirm the existence of a subgroup of clinically distressed PWS. Useful to clinicians is a cognizance that highly psychologically distressed PWS exist, and clinical implications for such individuals should include possible psychological referral or particular attention being paid to symptoms such as state and trait anxiety, depression, and somatization. In the case of psychological assessments, screening tools with high sensitivity and specificity can serve to compliment the clinician’s assessment and treatment of individuals who stutter. Based on the WHO (2001) ICF framework, which provides person-centered scope of practice guidelines for professionals working with PWS, the psychological ramifications of stuttering should be evaluated and attended to in therapy.

The existing relationships between the ABC variables in PWS and their impact on levels of PD have clinical implications, keeping in mind the hierarchy and strength of interaction effects observed. Considering a client’s levels of PD should be a priority for SLPs addressing presenting features of speech situation-specific levels of anxiety and speech disruption, the use of behaviorally based avoidance or escape mechanisms, and negative communicative attitude. Data from the current investigation certainly add support to the use of stuttering treatments that poise reduction of anxiety as a critical component (G. J. Brutton, 1986; Menzies et al., 2008; Scheurich et al., 2019; J. G. Sheehan, 1953; Van Riper, 1982) as well as treatments that address malattitude and psychopathology through cognitive-behavioral therapy (CBT; Menzies et al., 2008). Specifically, particular attention to exposure and desensitization, and approach rather than avoidance of fear-inducing scenarios that occasion stuttering, is addressed in therapies such as Avoidance Reduction Therapy (J. G. Sheehan, 1953; V. M. Sheehan & Sisskin, 2001). Exposure therapy, prevalent in treating anxiety-related disorders, with limited empirical support in stuttering research given that it is rarely used in isolation, has preliminary data for its efficacy in reducing social phobia and lessening negative ABC reactions in PWS (Scheurich et al., 2019). CBT, with a wide variety of therapy techniques (Menzies et al., 2008), has a growing amount of support for improving psychological health of individuals who stutter (Beilby et al., 2012; Gupta, 2016; Reddy et al., 2010). The well-established stuttering modification treatments traditionally have focused not only on one’s speech-restructuring, but also on speech-related anxiety, using desensitization through counter- and deconditioning of overt and covert behaviors as well as establishing a more positive belief system (G. J. Brutton, 1973, 1975; G. J. Brutton & Shoemaker, 1967; Van Riper, 1982).

### ***Limitations and Future Directions***

The data that flow from the current investigation come with some limitations, including its sample size, which is smaller when compared to larger scale studies (Tran et al., 2011, 2018) that examine prevalence of psychopathology in PWS, or use correlational analyses to scrutinize relationships between presenting psychosocial factors. A higher sample size might have likely led to more robust statistical effects across the four linear regression models conducted, producing more generalizable results.

The findings of the current study give direction to future research, incorporating not only teasing out further the true prevalence of PD in PWS, but the identification of factors that most predict the development and maintenance

of various forms of psychopathology. While anxiety is a construct highly studied in recent decades as it relates to the experience of stuttering (Craig & Tran, 2014), other psychopathological domains, such as depression or somatization, are less explored and not as well understood in this population. Future research might focus on determining which specific types of situations that occasion speaking-related anxiety and speech disruption most influence distress. In a similar vein, which forms of avoidance/escape mechanisms that PWS report to use most influence PD? Or, are there specific thoughts or ideations that drive the predictive relationship found between negative communication attitude and symptoms of psychopathology? Possibly, factor analytic research methods could probe further into the variables in question, capturing in more detail the nature of ABC experiences, as measured by the BAB, that are linked to negative mental health outcomes in PWS.

## Conclusions

Data from this investigation affirm the literature surrounding PWS' proclivity to experience negative affective states and substantiate that there is much more to being a PWS than those overt speech disfluencies that are observable to the listener. Namely, psychopathological symptoms such as state and trait anxiety, depression, and somatization, as well as a negative speech-associated attitude that accompanies negative affectivity and the engagement in behaviors to avoid or escape stuttering. Relationships uncovered between well-established ABC reactions typically reported by PWS relative to their speech and levels of experienced PD, provide an accumulation of meaningful effects that inform clinical practice of professionals who treat individuals who stutter, shedding light on the importance of holistic treatment interventions that target the psychosocial concomitants of stuttering and view one's psychological health outcomes as highly important.

## Data Availability Statement

The data sets generated and/or analyzed during the current study are not publicly available due to an agreement signed by participants in which they were told their data would not be shared with anyone other than the research team.

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