2021

Psychological Distress and Affective, Behavioral and Cognitive Experiences of Stuttering

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PSYCHOLOGICAL DISTRESS AND AFFECTIVE, BEHAVIORAL AND COGNITIVE EXPERIENCES OF STUTTERING

by

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B.S. University of Central Florida, 2019
B.S. University of Central Florida, 2016

A thesis submitted in partial fulfillment of the requirements
for the degree of Master of Arts
in the School of Communication Sciences and Disorders
in the College of Health Professions and Sciences
at the University of Central Florida
Orlando, Florida

Fall Term
2021

ABSTRACT

Adults who stutter (AWS) are vulnerable to the development of various psychopathological symptoms, although prevalence data are mixed, and even less clarity exists as it relates to the factors that potentially influence their occurrence. The current study sought to shed light on the prevalence of self-reported psychopathology in AWS and aimed to identify relationships between affective, behavioral and cognitive (ABC) experiences of stuttering and psychological distress. This was based on AWS' reports of speech situation-specific anxiety and speech disruption, the use of behaviors to avoid or escape stuttering, and one's communication attitude. The self-reports administered to 40 AWS via Qualtrics, an online survey software, were subtests of the Behavior Assessment Battery for Adults who Stutter (BAB; Vanryckeghem & Brutten, 2018) and the Brief Symptom Inventory-18 (Deragotis, 2001). Participants' BAB scores approximated the normative data suggesting that the current sample corresponded to the psychosocial profile of AWS. Participants' indications of psychological distress were not found to differ from that of a non-clinical normative sample. Ten percent of participants met clinical thresholds for what is considered clinically significant distress. Overall, the current data provide evidence that, as a group, levels of psychopathology in this population approximate community samples, highlighting the existence of psychologically distressed subgroups of AWS. Regression analyses uncovered that the ABC factors of stuttering positively predicted participants' reports of levels of psychopathology. Among these factors, speech situation-specific anxiety had the strongest relationship to psychological distress, followed closely by one's report of situation-specific speech disruption. To a lesser, but still significant extent, a PWS' communication attitude predicted psychopathology. Finally, a weaker and less clear positive relationship

between PWS' use of coping behaviors to avoid and/or escape stuttering and their levels of psychological distress was found.

ACKNOWLEDGMENTS

The work presented would not be possible without a countless number of individuals, only some of which I will mention here.

My deepest appreciation goes to my thesis chair and mentor, Dr. Martine Vanryckeghem, who has, without a doubt, become my greatest ally in this academic journey. Your guidance has been instrumental to all areas of my professional development, and the countless hours you have sacrificed have culminated in values and skills that I will use for a lifetime. Thank you for always challenging me to be a critical thinker. Your high standards motivate me to be a better version of myself. I am inspired most by the passion you have for research and your dedication to helping individuals who stutter.

Thank you, Dr. Jeffrey Bedwell and Dr. Oliver Wendt, for serving on my thesis committee and providing meaningful insights as to ways to strengthen aspects of the investigation's research design, methodology, statistical analysis and clinical usefulness. I look forward to future research collaborations.

Thank you, Dr. Charlotte Harvey, for your continued mentorship and friendship. Our continuous dialogue has been a spring of knowledge, inspiration and encouragement.

Thank you, to my family, for instilling in me the desire to seek out my life's purpose. Your unwavering support is truly meaningful.

Thank you, people who stutter, your friends, family, and advocates. This research is inspired by you, for you.

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CHAPTER 1: INTRODUCTION

1.1 Stuttering

Stuttering, or "Child-Onset Fluency Disorder" (Diagnostic and Statistical Manual of Mental Disorders 5th ed.; DSM–5; American Psychiatric Association, 2013), is a neurodevelopmental, epigenetic, multifactorial disorder with a typical onset between two and five years of age (Smith & Weber, 2017; Yairi & Ambrose, 2013). Worldwide, seventy million people stutter. Stuttering has a prevalence of 1% (Bloodstein et al., 2021), with a lifetime incidence between 5% and 8% (Yairi & Ambrose, 2013). A large portion (~75%) of children who begin to stutter will experience spontaneous recovery (Bloodstein et al., 2021; Yairi & Ambrose, 2005), 80% within five years of the initial onset (Yairi & Ambrose, 2013). In a meta-analysis examining characteristics that differentiate children whose stuttering persists versus those who recover in early childhood, Singer et. al (2020) concluded that children who persisted were more likely to be male, had a genetic predisposition for stuttering, began to stutter at a later age, produced higher stuttering frequencies and performed lower on tests of speech sound accuracy and expressive and receptive language.

Stuttering has been defined as an involuntary disruption in the fluency of verbal expression (Perkins, 1990; Wingate, 1964), when the forward flow of speech is interrupted (Van Riper, 1982). These definitions highlight what most commonly characterizes stuttering from a listener's perspective: its overt speech disruptions, or "disfluencies". Disfluencies typical to persons who stutter (PWS) include sound, syllable or mono-syllabic word repetitions, silent (blocks) or oral prolongations, and broken words. Stuttering is an involuntary behavior and stuttering moments have been described by PWS as a loss of control, or the sensation of getting stuck (Perkins, 1990; Tichenor & Yaruss, 2018, 2019a).

While overt speech features of stuttering are commonly used to characterize the disorder, they actually make up only a small portion of what the experience of the condition entails (Sheehan, 1970). To fully characterize the *person who stutters* one needs to look beyond the visual and audible aspects of stuttering, the surface features of the disorder, and incorporate the intrinsic factors the PWS carries with them daily. These components, commonly referred to as the "ABCs" of stuttering (*Affective, Behavioral* and *Cognitive*), might include fear, guilt, shame, anxiety, avoidance and negative thinking, amongst other experiences, and help to describe the often negative psychosocial aspects of the disorder. Such variables, which have been reported by PWS in qualitative (Connery et al., 2019; Corocan & Stewart, 1998; Crichton-Smith, 2002; Ginsberg & Wexler, 2000; Tichenor & Yaruss 2018, 2019a) and quantitative research (Tran et al., 2018; Svenning et al., 2021; Weiserska et al., 2018), provide a multidimensional framework for how PWS not only experience stuttering but ways in which they cope with their speech disorder. 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 et al., 2018), the ABC's can provide critical insight into why such mental health consequences might occur in individuals living with the condition.

The ABC's of stuttering consider *affect* (A), or how a PWS feels about themselves or their speech, and might involve fear, worry or anxiety related to sounds, words and/or speaking situations, as well as social and generalized anxiety. The *behavioral* (B) dimension includes stuttering as well as behaviors of avoidance and/or escape that are secondary to stuttering. *Cognition* (C) refers to a PWS' speech-related attitude or how they think about themselves and their speech. These components, which make up a tripartite model of stuttering, are interconnected and have a reciprocating influence (Watson, 1995). Throughout the lifespan,

unique experience histories of PWS can cause these coexisting components to wax or wane, shaping one's personality and possibly increasing susceptibility to psychological hardships (Bleek et al., 2012; Iverach & Rapee, 2014; Vanryckeghem, 2019).

1.2 Affect in Persons Who Stutter

The link between negative emotion and stuttering has been recognized as a key factor in the onset, development and chronicity of the disorder (Brutten & Shoemaker, 1967). Negative emotion manifests itself in PWS as experiences of fear, worry or anxiety. Anxiety in PWS can take different forms which may or may not co-occur: that of a general stress trait (trait anxiety) or that which reflects a psychophysiological state as a result of adverse situations (state anxiety) (Ezrati-Vinacour & Levin, 2004; Leal et al., 2017). State anxiety common to PWS is social anxiety, also known as social phobia, which is defined as a "persistent fear of one or more social situations in which the individual is exposed to possible scrutiny by others" (DSM-5; American Psychiatric Association, 2013a, p. 202). In a meta-analysis examining investigations into the relationship between stuttering and anxiety, Craig and Tran (2014) concluded that the majority of adults who stutter (AWS) showed both moderately elevated levels of trait anxiety as well as substantially elevated levels of state anxiety (social anxiety). Overall, the researchers calculated the effect sizes for the culmination of studies reviewed to be .57 and .82.

Kraaimaat et. al (2002) described the experience of anxiety to involve thoughts regarding anticipated events, the avoidance of specific situations/actions, and/or the perception of physical manifestations of anxiety, including but not limited to muscle tension, sweating, heart palpitations and galvanic skin responses. Research literature pertaining to the PWS' experiences with stuttering marks all of these aforementioned events, including ruminating negative cognitions PWS have related to speaking (Andrews & Cutler, 1974; Erickson, 1969; Tichenor &

Yaruss, 2020; Vanryckeghem & Brutten, 2011, 2012), anticipation of moments of stuttering and its subsequent anticipatory anxiety (Jackson et al., 2015), avoidance of sounds, words and/or situations that occasion fluency breakdown and are deemed troublesome by PWS (Trotter & Bergman, 1957; Vanryckeghem et al., 2004; Vanryckeghem et al., 2017) and various physical manifestations of anxiety (Blood et al., 1994; Brutten, 1963) as well as significant levels of emotional tension or discomfort in different social situations (Kraaimaat et al., 2002).

Because stuttering is typically complemented by negative consequences across the lifespan including bullying, teasing, stigma, negative stereotypes and discrimination (St. Louis, 2015), such penalties associated with stuttering are thought to give rise to the development of anxiety shortly after the condition's onset (Ezrati-Vinacour et al., 2001) often beginning in childhood and into adolescence (Blood & Blood, 2007; Blood et al., 2007). As the mean typical onset for social anxiety disorder (SAD) in the general population has been found to be around 15 years of age (Gran et al., 2005), and increased societal and social demands occur as individuals enter adolescence, it is quite logical that a considerable portion of individuals who stutter will go on to develop SAD, as the research literature suggests.

Prevalence rates of SAD in PWS vary from 22% to 60% (Blumgart et al., 2010; Iverach et al., 2009; Kraaimaat et al., 2002; Menzies et al., 2008; Stein et al., 1996), with even the lower prevalence reports in this population being significantly elevated over that of the general community (8% - 13%; Kessler et al., 2005). Those with SAD live with fear of acting in a way that will be embarrassing or humiliating, and when exposed to a feared situation, will experience anxiety and discomfort. While the actual threat of a particular social situation might be low, individuals living with SAD are said to sometimes overestimate the negative consequences of a particular scenario that is socially related (DSM-5, p. 203). As Brundage et al. (2017) point out,

however, the line that delineates what is considered an 'out of proportion' response on the part of the PWS is less clear, given the sometimes serious ramifications that result from stuttered speech, like its associated stigma and delegitimization. Regardless, anxious anticipation, avoidance and/or distress occurring due to said feared performance and social situations can negatively impact the individual's social, occupational and daily functioning (American Psychiatric Association, 2013). Because communication is something essential to many if not all aspects of a person's life, it can be said that a PWS living with comorbid SAD might experience severe discomfort or anxiety on a daily and even hourly basis provided the frequency with which they enter various communicative scenarios. From a physiological perspective, the consequences of such repeated exposure to stress can negatively impact numerous body systems. For example, the re-occurring effects of social stress have been linked to an individual's increase in cortisol production, leading to poorer health outcomes such as cardiovascular disease (Matthews et al., 2006) and accelerated biological aging (Aschbacher et al., 2018).

It has been found that, as a group, PWS develop significantly higher levels of conditioned fear to particular speaking situations than persons who do not stutter (PWNS) (Iverach et al., 2011; Messenger et al., 2004; Vanryckeghem et al., 2017). In a cross-cultural study investigating speaking scenarios that elicit negative emotional reaction in PWS, Brutten and Janssen (1981) found that the top three situations that caused PWS the most negative emotion were talking before a group, giving a prepared speech, and being rushed when speaking. While PWS and PWNS do share speaking scenarios in which both groups have heightened levels of anxiety, such as public speaking engagements or speaking with authority figures (Trotter & Bergman, 1957), there are numerous speaking situations, such as talking on the telephone, that occasion considerably high levels of fear or worry in PWS, but prompt little to no anxiety in PWNS

(Brutten & Janssen, 1981; Vanryckeghem et al., 2017). In pursuit to evaluate the usefulness of the Speech Situation Checklist for Adults who Stutter (SSC; Vanryckeghem & Brutten, 2018), a self-report test that examines PWS' indication of anxiety and speech disruption in particular settings, Vanryckeghem et al. (2017) described specific scenarios that provoked the most negative emotion in the sample studied. In their study, utilizing stepwise discriminant analysis to rank the Speech Situation Checklist- Emotional Reaction (SSC-ER) items that most differentiated PWS from PWNS, the researchers uncovered the following markers which occasioned the most negative emotional response: the use of specific words or sounds that cannot be easily avoided and when substitutions cannot be easily used, situations related to interpersonal stress, scenarios dealing with criticism, being rushed and teased, making appointments, making a phone call, talking to strangers, and interviewing for a job. The investigators concluded that, as a group, negative emotion related to speaking in PWS tends to be most highly influenced by fears that are sound- or word-specific and deal with interpersonal stress and social situations. These findings, which corroborate previous investigations (Iverach & Rapee, 2014; Kraaimaat et al., 2002; Messenger et al., 2004), point to the fact that PWS experience the most anticipatory fears in response to possible negative peer evaluations. This evidence helps to differentiate between what are considered stuttering-related fears and other forms of social phobia. Additionally, the researchers found that similar situations which brought about heightened levels of negative emotion in PWS also tended to occasion higher levels of speech disruption (stuttering) in the individuals studied. This highlights that not only do these specific scenarios prompt fear, worry or anxiety in PWS, it also establishes an important link between speaking-related anxiety and the frequent co-occurrence of self-reported speech disruption in these aforementioned situations (Vanryckeghem et al., 2017).

1.3 Behavior in Persons Who Stutter

Quantitative and qualitative research has shown that PWS report similar behaviors as it relates to the experiences surrounding the moment of stuttering (Connery et al., 2019; Crichton-Smith, 2002; Ginsberg & Wexler, 2000; Tichenor & Yaruss, 2018, 2019a; Vanryckeghem et al., 2004; Vanryckeghem et al., 2017). The speech-related behaviors that PWS typically exhibit can be broken into two main groups: 1) moments of stuttering (disfluencies) and 2) voluntary behaviors *secondary* to stuttering which are operantly conditioned and used as means to cope with stuttering (Brutten & Shoemaker, 1967).

While disfluencies typical to PWS are sometimes described differently across the literature, it is generally agreed upon that they consist of repetitions, prolongations and blocks (silent or oral). Additionally, disfluencies can occur with varying degrees of *tension* or *struggle*. These terms, which refer to how a moment of stuttering appears, portray the physical, molecular aspects of the behavior occurring, such as the lips pursing hard together during a stuttering block. Disfluencies are, however, not always audible and/or observable to the listener. Furthermore, the way stuttered speech is quantified and measured has been debated by researchers and clinicians for many years (Cordes & Ingham, 1994; Yaruss, 1997). Because the process of judging if and to what extent a disfluency has occurred might be rather subjective, it can be said that the individual having a fluency breakdown (the PWS) is in the best position to confirm or deny if in fact a moment of stuttering has transpired, as well as to illustrate what the experience is like. To express it in Perkin's (1990) words, the definitive features of the disorder are much more experiential than observable. And so, it is through the eyes of the PWS that one can learn more about particular speaking scenarios in which stuttering is more or less likely to occur.

1.3.1 Situation-Specific Speech Disruption

Contextual factors, which have been identified through many years of research (Brutten & Janssen, 1981; Sheehan et al., 1967; Vanryckeghem et al., 2017), have been found to influence fluency breakdown in PWS. First should be noted, however, the wide variability with which PWS experience disfluency. Karimi et al. (2013) studied ten PWS who participated in different speaking situations across a 12-hour day and found that participants had vast and unpredictable variations in frequency and severity of stuttering in the different situations, finding no discernable pattern of variation that was consistent across the participants. Constantino et al. (2016) showed similar conclusions, indicating that much change in stuttering frequency exists among PWS when it comes to different speaking tasks or even with the same speaking task but on a different day. More recently, in their attempt to better understand *how* variability in the experience of stuttering affects AWS, Tichenor and Yaruss (2021) uncovered that the overwhelming majority of their participants (97%) indicated that they experience variability in stuttering. Respondents found this variability to be the second most frustrating aspect of their condition, behind the reported sensation of feeling stuck during disfluencies. PWS reported their overt speech behaviors, including stuttering frequency and duration, to be the most ever-changing aspect of their disorder. Second to this were internal aspects of the condition, which included covert behaviors and physical tension associated with moments of stuttering.

To further shed light on the various types of situations which elicit disfluency, Vanryckeghem et al. (2017), by way of the Speech Situation Checklist – Speech Disruption (SSC-SD; Vanryckeghem & Brutten, 2018), examined situations that PWS report to occasion the most stuttering. Using the same statistical methods as with the SSC-ER items, the researchers found that situations which cause the most speech disruption and which most highly dichotomized the experimental (PWS) and control (PWNS) groups were settings that required

one to provide personal/specific information, first encounters, talking to superiors and strangers, making appointments, ordering in a restaurant, using the telephone, job interviews, and being criticized, rushed, or teased, to name a few. These situations related to six underlying dimensions that participants also identified on the SSC-ER as eliciting negative emotional reaction. Namely, they were associated with providing personal and specific information, first encounters, talking to superiors and/or strangers, making an appointment, talking on the phone and restaurant situations. As a whole, these data point to, and confirm previous research (Bakker, 1995; Brutten & Vanryckeghem, 2003a) showing that a PWS' indication of speech disruption, and negative emotional reaction, relate primarily to specific sounds or words and stressful or anxiety producing speech situations. The researchers concluded that, while word and/or situational variables might vary depending on numerous factors including the individual or the particular circumstance, fluency breakdown and negative emotion are certainly interrelated, which is apparent by significant correlations documented between each item on the SSC-ER and SSC-SD.

1.3.2 Behaviors Secondary to Stuttering

In response to their speech disruptions, PWS are known to employ coping behaviors to avoid and/or escape moments of stuttering (Vanryckeghem et al., 2014). Such behaviors are used to not only mitigate the physical struggle associated with stuttering, but also as a means to "pass as fluent", or not overtly show that they stutter. As Plexico et al. (2009a) put it, coping behaviors are used to protect both the speaker and listener from experiencing discomfort, which is mostly based on a PWS' inability to anticipate the listener's reaction to stuttering, which they might presumptively think will be negative. By actively concealing their speech disorder, PWS can potentially circumvent the undesirable cost stuttering can cause, such as delegitimization and associated stigma (Constantino et al., 2017). Delegitimization, or the exclusion of selected

individuals or groups from society which results in the withdrawal of legitimacy (Bar-Tal & Hammack, 2012), can occur indirectly or directly in response to stuttered speech. For example, participants in Constantino and colleagues' (2017) investigation recount having family members tell them to refrain from speaking if they expect to stutter. In an indirect fashion, participants experienced delegitimization which was perceived as uninvited altruism (providing unhelpful recommendations; e.g. persons finishing their sentences or telling them to slow down). Subjects also noted receiving "the *look"* (p. 33) in response to their stuttered speech, a reaction which conveyed that their speech was abnormal and startling. These are just some reasons why a PWS might choose to engage in the use of coping behaviors in an attempt to conceal their stuttering. Unfortunately, as recent research has suggested, concealment of stuttering has been found to predict poorer psychological health in AWS (Gerlach et al., 2021).

Coping behaviors exhibited by PWS typically take two forms: responses that PWS report using when they *expect* speech disruption (avoidance behaviors; e.g. word circumlocution) or behaviors utilized to escape the moment of stuttering (escape behaviors; e.g. body movements whose intent is to physically aid the production of a sound or a word). Such accessory behaviors can occur in the absence of disfluency, too, and are known to involve any part of the body. Further, it has been thought that coping behaviors are operantly learned, as documented by research demonstrating how behaviors secondary to stuttering can be brought under stimulus control (Brutten & Shoemaker, 1967). However, it has also been theorized that certain coping responses might arise from physical struggle during stuttering moments, pointing to the fact that such accessory behaviors could be behavioral manifestations of classically conditioned speaking related anxiety (Janssen & Kraaimaat, 1986).

While certain avoidance and/or escape behaviors can sometimes result in successful concealment or a more timely production of sounds, syllables and/or words, such concomitant behaviors ultimately become behaviorally reinforced as they serve to reward to speaker. Thus, these behaviors can become increasingly maladaptive, often creating more physical tension and struggle and providing yet another barrier to communication in addition to the disfluencies themselves. While less research pertaining to the quantification of coping behaviors in PWS exists, there is evidence pointing to a trend between a PWS' age and the number of nonspeech behaviors associated with their stuttering (Prins & Lohr, 1972; Schwartz et al., 1990). In other words, individuals who stutter tend to adopt more nonspeech coping behaviors as they move from childhood into adolescence and adulthood.

Accessory behaviors PWS use are not overly unique when viewed from a social sciences perspective. In other forms of social phobia, for example, persons are also known to perform actions as a means to deal with and adapt to their condition. From this perspective, given the high prevalence of state anxiety in PWS, many concomitant behaviors of individuals who stutter can fit into the category of what are "safety behaviors", or behaviors used by those who are socially anxious as attempts to circumvent negative social consequences (Clark, 1999; Lowe et al., 2017). Safety behaviors are employed in direct response to the underlying manifestation of social phobia: fear of negative evaluation. Thus, they serve to prevent the individual from discovering that their fears and/or negative beliefs are in fact untrue (Rapee & Heimberg, 1997). A prime and well documented example in the literature pertaining to individuals living with social phobia is the avoidance of eye contact with the aim to not be included in a conversation. In this case, the individual successfully avoids a feared social/performance-related situation and, unfortunately, further reinforces the worry and negative emotion related to that particular

scenario. As documented in the literature, one's engagement in safety behaviors has been found to maintain anxiety in those who experience social phobia (Helbig-Lang & Petermann, 2010). Recent research has shown this to be the case with PWS, too (Lowe et al., 2017).

To identify the amount, frequency, type and nature of coping behaviors PWS typically employ in anticipation of or during the occurrence of speech disruption, Vanryckeghem et al. (2004), who administered the Behavior Checklist (BCL; Brutten & Vanryckeghem, 2003a) to AWS and AWNS, found that AWS reported using significantly more speech-associated coping responses than their peers who do not stutter. PWS and PWNS not only differed in the frequency with which they reported using certain coping behaviors, but also as it relates to the type of actions they engage in. Regarding the frequency with which different behaviors were employed, 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 (e.g., "uh"). While PWS indicated usage of significantly more coping devices than their non-stuttering peers, the two groups did tend to employ at least some of the same behaviors, as evidenced by five alike responses among the list of ten most reported for each group. These included utilization of word substitutions, avoiding eye contact, use of interjections and "filler" phrases (e.g. "let me see"). When examining broad factors in the AWS data via factor analysis, general body movements and behaviors related to manner of speaking captured 64.12% of AWS' total shared variance. Body movements that were most represented involved the head, fingers and body (9.97%), hand/leg (7.07%) and nose, tongue, foot and toe movements (6.49%). Within the category of behaviors related to manner of speaking, top factors included behaviors such as pretending to be thinking about what to say, indicating not knowing the answer to a question, or using a starter phrase like 'let me see' in order to avoid/postpone saying

something that was a reportedly feared word or sentence. Changes in manner of speaking (speaking in a sing-song fashion, whispering, talking loudly) were also behaviors reported (Vanryckeghem et al., 2004). Findings of the investigation paralleled previous studies (Bakker & Brouwer, 1984) and were later echoed in the BCL's subsequent re-standardization investigation (Vanryckeghem & Brutten, 2018). Overall, the wide array of coping behaviors PWS employ in anticipation of or during a moment of stuttering as well as varying reasons for why PWS might utilize such devices are clearly noted.

1.4 Cognition in Persons Who Stutter

The cognitive component of stuttering refers to a person's *thinking* about their speech, or one's communication attitude. The speech-associated belief system of a PWS can be described, in part, as a culmination of one's unique experiences, including their communicative interactions, and one's attitudinal reactions thereto. Unfortunately, many individuals who stutter foster negative self-perceptions that are sometimes unrealistic and non-conducive to long-term success (Watson, 1995). Overall, the thoughts that PWS have about themselves, their speech, and their stuttering may be rational or irrational and serve to comprise one's general self-view (Vanryckeghem, 2019).

A myriad of factors can instill negative cognitions, poor self-esteem and self-image in PWS. One important cause relates to the negative public- and self-stigmatization of those living with the disorder (Boyle, 2013a). Stigma, as described by Goffman (1963), is the "…situation of an individual who is disqualified from full social acceptance" (p. i). Public stigma involves the negative reactions of persons in society to individuals with stigmatized conditions. Like other stigmatized groups, PWS often experience public stigma in the form of stereotypes, prejudice, and discrimination (Boyle, 2013a; Corrigan & Watson, 2002). Given the negative and often

discrediting attitudes that exists toward PWS (Harvey, 2018; St. Louis et al., 2020) and the abundant research surrounding undesirable peer perceptions of those who stutter (Crowe & Cooper, 1977; Crowe & Walton, 1981; Dorsey & Guenther, 2000), public stigma can lead to self-stigma in PWS, or that which occurs when persons internalize the negative stereotypes, prejudice, and discrimination they are subjected to. While a variety of factors can impact the development of negative thinking in PWS, these phenomena certainly contribute to account for why and how negative thought processes might be internalized in those who stutter (Boyle, 2013a).

The development of negative speech-associated thinking in PWS begins in childhood, as evidenced by investigations revealing that children who stutter (CWS) not only show awareness of their disfluent speech but begin to develop a negative attitude towards communication as early as the age of three (Neumann et al., 2015; Novšak Brce & Vanryckeghem, 2017; Shafiei et al., 2016; Vanryckeghem et al., 2005; Weiserska & Vanryckeghem, 2015). As CWS get older, a negative speech-related attitude becomes increasingly more prominent and chronic, substantiated by a correlation between an increase in CWS' self-reported negative speech-associated cognitions and age (Vanryckeghem & Brutten, 1997). Negative speaking-related cognitions (e.g. "There is something wrong with the way I speak", "Speaking is hard for me"), and their habitual presence contribute to comprise the general self-perception of how a PWS thinks about themselves and their speaking ability.

Exploring the occurrence of repetitive negative thinking (RNT), or the commonality of intrusive and repetitive thoughts in PWS, Tichenor and Yaruss (2020) found that their PWS sampled engaged in RNT descriptively more, but not to a statistically significant extent, than PWNS. Administering the Perseverative Thinking Questionnaire (PTQ; Ehring et al., 2011) to

investigate the presence of RNT, the Adult Temperament Questionnaire short form (ATQ; Evans & Rothbart, 2007), and the Overall Assessment of the Speaker's Experience of Stuttering (OASES; Yaruss & Quesal, 2016) to scrutinize overall adverse impact of the disorder, the researchers found that those PWS who were more likely to engage in RNT were also found to be more adversely impacted by stuttering. This relationship was modified by temperamental characteristics. Specifically, PWS who had lower levels of Effortful Control and higher levels of Negative Affectivity exhibited both significantly higher levels of RNT and descriptively higher levels of adverse impact from stuttering. In a recent investigation by Constantino et al. (2020), it was found 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, as measured via the OASES. These findings speak to a multitude of factors. Namely, how a person's thinking about their speech can influence not only the amount of stuttering they exhibit, but the overall impact stuttering has on them.

The informal and formal assessment of speech-associated thinking in PWS has been an area of interest since the early to mid 1900's (Ammons & Johnson, 1944; Brown & Hull, 1942). During that time, it became increasingly clear to researchers that negative speech-associated attitude is present in PWS. In an attempt to demonstrate how the communication attitude of PWS and PWNS differs, Erickson (1969) created the Erickson S-scale. Erickson found a statistically significant difference between PWS and PWNS, providing evidence that PWS think more negatively about their speech than their fluent peers. Score distributions between the two groups showed a considerable amount of overlap, however, leading to more attempts to further modify the scale. Andrews and Cutler (1974) eliminated 15 items, coining the currently used 'Erickson

S-24' which allowed them to more cleanly dichotomize PWS from PWNS based on their speech-associated attitude. Also, their research established a relationship between an individual's communicative attitude and their ability to maintain more fluent speech.

In a Belgian investigation, Brutten and Vanryckeghem (2003b) pointed to psychometric flaws with the S-24 scale, and the fact that certain items were linguistically outdated. This led the researchers to create the Communication Attitude Test for Adults Who Stutter (BigCAT: Vanryckeghem & Brutten, 2011, 2018). In a study comparing the BigCAT's differential diagnostic capabilities with the S-24, Vanryckeghem and Brutten (2012) found that while the S-24 warranted findings of PWS scoring 3 standard deviations (SD) above the mean of their fluent peers, the BigCAT revealed PWS mean scores that fell 5 ½ SD above the mean of the control group. The researchers concluded that, based on this information, the BigCAT was the more powerful discriminative tool in measuring speech-associated attitude (Vanryckeghem & Brutten, 2012). What can be taken from this BigCAT investigation, and others which have administered the test to PWS and PWNS (Vanryckeghem & Brutten, 2011; Valinejad et al., 2020; Weiserska et al., 2018), is the extremely divergent group difference, providing strong evidence into just how much more negatively PWS think about their speech compared to individuals who do not stutter.

1.5 Interaction of the ABC's in PWS

As demonstrated, the affective, behavioral and cognitive components of stuttering interact and influence one another (Ezrati-Vinacour & Levin, 2004; Iverach et al., 2017: Miller & Watson, 1992; Tichenor & Yaruss, 2018; Vanryckeghem et al., 2017; Weiserska et al., 2018). Understanding the link between negative emotion, speech disruption, communicative attitude and a PWS' utilization of concomitant behaviors provides a more thorough picture of what living

with the condition entails. It also plays a critical role in informing differential diagnosis and treatment practices, so that clinicians can attend to a PWS holistically.

Research utilizing comprehensive assessment tools have captured the relationship between these variables, sometimes allowing for their scrutinization in a quantitative way. In their most recent re-standardization investigation, Vanryckeghem and Brutten (2018), by way of the BAB, provided evidence for inter-relationships between the ABC components, establishing criterion-related validity for the measures. Relating to situation-specific negative emotion and speech disruption, for example, they found significant, medium correlations between the two tests (Vanryckeghem & Brutten, 2018), corroborating other SSC studies (Brutten & Vanryckeghem, 2003a; Vanryckeghem et al., 2017). This, paired with mean scores of PWS sampled that were close in numerical value for both test instruments, highlight the compelling link between how a PWS' experience of negative emotion in various scenarios can, to a more or lesser degree, influence stuttering, and vice-versa. Shown in a different way, this was also the case in an investigation by Ezrati-Vinacour and Levin (2004), who found a correlation between reports of negative emotion via the SSC-ER and PWS' percentage syllables stuttered.

Relative to the cognitive aspects of stuttering, Vanryckeghem and Brutten (2018) found slightly lower, but still medium and significant correlations between scores on the BigCAT and SSC-ER, and between the BigCAT and SSC-SD. This furnishes evidence that, as a PWS thinks more negatively about their speech, so do they report a more negative emotional reaction and speech disruption relative to different speaking situations. This phenomenon is corroborated by reports of how PWS who held a more positive pre-treatment speech-associated attitude were more likely to maintain fluency post-treatment (Andrews & Cutler, 1974), or evidence that in-

the-moment communicative spontaneity generally results in less speech disruption (Constantino et al., 2020).

Relationships between state anxiety, stuttering, and communicative attitude are echoed in other investigations, which utilize different outcome measures and methods (Alm, 2004; Constantino et al., 2016; Jackson et al., 2015; Lowe et al., 2017; Miller & Watson, 1992; Yaruss & Quesal, 2016). As mentioned, a PWS' engagement in safety behaviors has been shown to maintain state anxiety (Lowe et al., 2017). Also, the link between affect, behavior and cognition is well documented in reports of how a PWS' anticipation of stuttering, which manifests in thoughts or feelings of impending disfluency (Jackson et al., 2015), often lead to subsequent behavioral reactions of avoidance and/or escape from stuttering (Tichenor & Yaruss, 2018). Looking into the relationship between cognition and anxiety in PWS, researchers have found that anxiety can be influenced by one's attitude toward a particular communication situation (Miller & Watson, 1992) and that the frequency and strength of negative speech-associated cognitions lead to higher levels of social phobia in those who stutter (Iverach et al., 2011). These findings closely resemble a phenomenon in the psychology-based literature which is referred to as self-focused attention theory (Ingram, 1990). This theory stipulates that disproportionate self-focused attention and thinking influences the development of various psychopathological symptoms: in this case, levels of negative affect or state anxiety. Such excessive self-focused attention before, during, and after social interactions is said to create and maintain social phobia (Bögels & Mansell, 2004) and "safety behaviors" (Lowe et al., 2017). Without a doubt, these are clearly the experiences of many individuals who stutter, given literature documenting PWS' high prevalence of social phobia (Iverach & Rapee, 2014). The maintenance of negative speech-associated thoughts can feed into aspects of a PWS' personality and vice-versa, as evidenced by research

showing that PWS who held a more negative speech-associated attitude also scored lower on measures of extraversion (Stipdonk et al., 2014). Overall, it has been demonstrated how ABC components reinforce one another.

1.6 Psychological Distress

Psychological distress (PD) has been defined as a state of emotional suffering, characterized by psychophysiological and behavioral symptoms that are non-specific to any one mental pathology (Arvidsdotter et al., 2015). While the literature characterizes PD as a collection of various symptoms of psychopathology, a consensus exists that the psychopathological domains of PD mainly include anxiety (feelings of nervousness and tension) and depression (sadness or depressed mood) (Mirowsky & Ross 2002), which are sometimes accompanied by somatization (distress, pain and discomfort arising from perceptions of bodily dysfunction) (Drapeau et. al, 2012). Importantly, nearly 80% of psychiatric disorders found in community and medical populations are anxiety and depressive disorders (Derogatis & Wise, 1989). PD stems from exposure to psychological stressors that threaten an individual's physical or mental health. An individual's struggle to cope effectively with a stressor, and the consequential emotional suffering that results from it, lays the foundation for how PD is developed and maintained (Horwitz, 2007; Ridner, 2004). While some researchers believe PD is eliminated when a stressor ceases to exist or the individual in question learns to cope effectively with the source of stress (Ridner, 2004), others think that individuals can experience PD within the context of the absence of a stressor, given the fact that symptoms of PD also happen to be a diagnostic criterion for various mental health disorders. Regardless, PD is an emotional disturbance that impacts the social functioning and life participation of individuals who experience it (Wheaton, 2007).

1.6.1 Psychological Distress in PWS

Psychological health, the presence of personality dysfunction and psychopathological symptoms have been studied in AWS utilizing various research methods. Studies have concluded that, at the very least, AWS are at an increased risk for negative psychological health outcomes, particularly related to negative affectivity (Craig et al., 2009; Iverach et al. 2009; Tran et. al, 2011). Utilizing the International Personality Disorders Examination Questionnaire (IPDEQ), Iverach et al. (2009) concluded that the presence of personality dysfunction was significantly higher for their treatment-seeking AWS than matched controls, with AWS demonstrating at least threefold increased odds for the development of any one Axis-II personality disorder. Under the framework of the Diagnostic and Statistical Manual of Mental Disorders 4th edition (DSM-IV; American Psychiatric Association, 2000), Axis-II disorders referred to all existing personality disorders as well as down syndrome. Later, in a rebuttal, Manning and Beck (2011) noted several issues with the self-report test used in the study which might have resulted in the exceptionally high rate of personality dysfunction in the experimental group. Additionally, they pointed out that the 38.15% rate of personality disorders in the control (PWNS) group far exceeds the range of normative figures from various research investigations (Manning & DiLollo, 2017). Manning and Beck (2013a) later investigated treatment-seeking AWS using the Assessment of the DSM-IV Personality Disorders questionnaire (ADP-IV, Schotte & De Doncker, 1994, 1996) along with structured interviews and found that four out of 50 participants met clinical thresholds for one personality disorder, while just one participant exhibited criteria for two personality disorders. Their findings led to the conclusion that treatment-seeking AWS' rates for potential personality disorders were similar to those of community samples. Using different investigative methods to uncover possible psychopathological symptomatology in PWS, Tran and colleagues (2011) explored psychological distress in AWS by way of the Symptom Checklist Revised

(SCL-90-R; Derogatis, 1994), which assesses nine psychopathology symptom domains. The researchers referred to distress as negative affectivity including a range of negative mood states (Tran et al., 2011). A comparison of these mood states between AWS and AWNS showed that AWS had significant and clinically elevated negative mood states compared to AWNS, with medium to large effect sizes. Substantially elevated negative mood symptoms were evidenced for domains of interpersonal sensitivity, anxious mood, phobic anxiety as well as for the global severity measure (GSI) of the SCL-90-R (overall negative affect), while medium group effects were found for the remaining SCL-90-R domains, including somatization, obsessive compulsiveness, depressive mood, hostility, paranoid ideation and psychoticism.

In pursuit of examining how mood states in AWS might change over time, Tran and colleagues (2018) followed 129 AWS who completed a variety of assessments at baseline and once a month for six months. Once more, utilizing the SCL-90-R, three specific mood states were examined: interpersonal sensitivity, depressive mood, and anxiety. Findings showed that the majority (~60%) of AWS had healthy mood states which were stable over time, suggesting that the participants were likely to be resilient as they adapt to the ever-changing experience of their fluency disorder. Around 40% of participants, however, were found to belong to negative mood sub-types, reporting symptoms consistent with experiencing difficulty in emotional and psychological functioning. This percentage of individuals, the authors noted, is similar to the portion of AWS who met criteria for SAD in other studies (Blumgart et al., 2010). Additionally, the levels of negative mood states in these sub-types were said to be similar to those found in psychiatric outpatient normative samples.

1.6.2 Factors that Influence Psychological Distress in PWS

While reported levels of psychopathological symptoms in PWS differ throughout the literature, an area of interest important to further advancing our knowledge of stuttering relates to *why* such symptoms occur, or the confounding factors that coincide with or influence the development and maintenance of such psychological dysfunction. As Craig et al. (2011) write, "It is regrettable that little or no emphasis has been placed on research that has investigated factors that protect people from negative outcomes due to their chronic stuttering, and this has led to a deficit in our knowledge about resilience processes in people who stutter." (p. 2). Fortunately, research in recent years has increasingly recognized the importance of examining contributing factors that might influence psychological well-being in AWS, given it has never been clearer to researchers and clinicians alike just how deep the psychosocial effects of stuttering extend. Taken as a whole, some of the variability of psychological health impact in AWS might be explained, in part, by the array of individual differences of how AWS think, feel or behave in relation to their stuttering identity (Gerlach et al., 2021), aspects of their personality (Bleek et al., 2012) or the presence of co-morbid psychopathology (Manning & Beck, 2013b), the individual's temperament (Lucey et al., 2019), one's communication attitude and/or self-reported stuttering severity (Miller & Watson, 1992), their ability to adopt and maintain resilience processes, and a variety of other social and environmental factors (Boyle et al., 2018; Craig et al., 2011).

In an investigation examining resilience to psychological distress in AWS, Craig and colleagues (2011) administered the Symptom Checklist Revised (SCL-90-R; Derogatis, 1994), the Lifestyle Appraisal Questionnaire (LAQ; Craig et al., 1996), Medical Outcomes Study Short Form–36 (SF-36; Ware & Gandek, 1998) and the Significant Others Scale (SOS; Power et al., 1988). They divided the sample into two groups based on participants' SCL-90-R GSI scores (used to measure and determine clinically significant thresholds of psychological distress)

(Derogatis, 1990): a resilient group and a non-resilient group. The researchers reported that the following factors distinguished the resilient group from the non-resilient group: lower health risk status, higher self-efficacy, higher perceived social support, fewer physical limitations due to physical health, superior social functioning, and superior levels of vitality. Interestingly, stuttering frequency and annual income were not found to be significantly different between the two groups. In a correlational analysis comparing GSI scores to the other aforementioned tests' scores, Craig and colleagues discovered three major and significant factors that provided protection against the development of distress or negative affectivity in the participants studied: a strong sense of control over one's life and daily functioning (self-efficacy), helpful social support networks, and successful integration into society. These findings validated and expanded on previous research from Craig and colleagues (2009), which highlighted the negative impact of stuttering on QoL in the domains of vitality, social and emotional functioning and mental health status.

Utilizing the same sample of AWS and AWNS as in their other studies (Craig et al., 2009; 2011; Tran et al., 2011), Blumgart et al. (2014) showed that AWS not only have lower levels of social support when compared to controls who do not stutter, but the AWS 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. These data highlight the importance of PWS to seek out social integration and support as such experiences have a clear positive relationship with psychological well-being. Possibly, such social integration may not only serve as a support system for PWS but allows for desensitization of speech-related anxiety and a subsequent change in negative speech-associated thinking.

Related to social support, particularly with like-minded persons who share similar experiences, evidence exists speaking to the positive psychosocial effects of individuals who engage in stuttering support group organizations (Bradberry, 1997; Trichon & Tetnowski, 2011; Yaruss et al., 2002). Boyle (2013b) examined the effect of stuttering support groups on various psychological health markers including self-efficacy, life satisfaction and self-stigma. His findings showed 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. Descriptively, they were also less likely to believe that stuttering would go away and were less probable to perceive fluent speech production as being an important factor in communicating. Additionally, he found that PWS who claimed to join such groups with the motivation to help other PWS demonstrated significantly higher levels of self-esteem, self-efficacy, life satisfaction, and lower levels of internalized stigma and perceived stuttering severity. One of Boyle's (2013b) major conclusions was that self-help groups for PWS help to limit the internalization of a negative attitude about oneself. These data speak not only to how support group involvement influences psychological well-being, but show how cognitive changes occurring in PWS due to engagement in such experiences lead to a positive change psychosocially.

Manning and Beck's (2013b) investigation of trait anxiety, social anxiety, depression, and personality pathology on adverse psychosocial impact of stuttering uncovered that social and trait anxiety were the only significant predictors of overall adverse impact of stuttering, as measured by the OASES. 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 (CSI), Gerlach et al. (2021) set out to determine if and how stigma-identity constructs influence AWS' psychological health. In their study, they examined how constructs of salience, centrality, concealment, and verbal self-disclosure might relate to self-reported levels of psychological distress and adverse impact of stuttering, determined through the Spielberger Trait Anxiety Scale (STAI-T; Spielberger et al., 1980), the Center for Epidemiological Studies – Depression Scale (CES-D; Radloff, 1977) and the OASES (Yaruss & Quesal, 2006). The most notable finding of the investigation was that, of all the constructs examined, concealment was the strongest predictor variable of adverse impact related to stuttering, while also having a positive relationship with psychological distress. These data highlight how the behavioral component, or one's motivation to conceal stuttering (which could manifest in behaviors of escape and/or avoidance of stuttering), influence levels of psychopathology in PWS.

While the aforementioned studies consider an array of factors that may or may not influence levels of self-reported PD in AWS, none look specifically at how underlying mechanisms of the experience of stuttering relating to its affective (situation-specific speech anxiety), behavioral (situation-specific speech disruption and utilization of behaviors secondary to stuttering) and cognitive (communicative attitude) components are to account for these changes in psychological well-being. One exception is an investigation by Miller and Watson (1992) where the relationship between communication attitude, depression and anxiety was explored in PWS and PWNS by means of the Beck Depression Inventory (Beck, 1987), the State-Trait Anxiety Inventory (STAI; Spielberger, 1983) and the modified Erickson S-24 Scale (Andrews & Cutler, 1974). Interestingly, they found that communication attitudes became more negative as self-rated stuttering severity increased. Surprisingly, however, no significant group

differences were found for measures of anxiety or depression in the study. In both the experimental and control groups, the highest correlational values were found between Erickson S-24 scores and those on the T-Anxiety (trait) portion of the STAI, highlighting the relationship between communicative attitude and generalized anxiety. It should be noted that later, in a paper commenting on Miller and Watson's (1992) investigation, Craig (1994) attempted to point out methodological flaws related to their sample and the study's design, while also citing issues pertaining to their analyses' lack of statistical power.

It is apparent that research relating to the prevalence of psychopathology in AWS is mixed, and the factors that influence distress need to be more closely studied and further identified. Nevertheless, recent advancements in this realm have had important clinical implications which have resulted in a further expansion of the treatment of the *person* who stutters rather than just the stuttering itself. Paradigm shifts in stuttering treatment have increasingly turned toward including cognitive-behavioral interventions which are anxiolytic and are proven to be efficacious in improving communication attitude and reducing avoidance (Beilby et al., 2012; Menzies et al., 2009). As stated, the experience of PD is characterized by emotional suffering, and thus the importance of improving a person's psychological well-being should be a clinician's top priority.

1.7 Purpose

Given that less evidence exists relative to how ABC factors that are unique to the experience of stuttering might have an effect on psychological distress, methodologically sound research utilizing reliable and valid test instruments, generalizable samples and repeatable research designs are needed to establish more solid conclusions about what components in PWS have most influence on psychological health. Information related to established ABC correlates

associated with stuttering and how these components influence one's psychological well-being will provide valuable information to better describe the nature of the condition. At the least, knowing *which* of these ABC factors most highly influence a person's potential existence of PD is certainly worthy of investigation.

The ABC variables presented compose a multi-dimensional framework for the differential assessment and treatment of PWS. Understanding relationships between these variables through a 'view from within' will provide a more holistic comprehension of the experience of stuttering. Further exploring how these established variables relate to one's psychological health will only serve to better understand and treat individuals who stutter. The following research questions are posed:

1. What is the prevalence of self-reported psychological distress in PWS?
2. What is the relationship between PWS' indication of speech situation-specific anxiety and speech disruption, use of coping behaviors, and communicative attitude, to self-reported levels of psychological distress?

CHAPTER 2: METHODOLOGY

2.1 Participants

Inclusion criteria required participants to be at least 18 years old, be a person who stutters, as well as currently live in the United States of America. The age of stuttering onset needed to occur prior to age eleven. Exclusion criteria required not having a current diagnosis of a speech and/or language disorder other than stuttering. Additionally, information was obtained relative to experiences surrounding stuttering onset in order to exclude any participants who might possibly have a fluency disorder of a psycho- or neurogenic origin. All those included in the final sample met these criteria as determined via a demographic questionnaire.

Sixty-four individuals opened the survey. Eighteen persons' data were omitted due to having incomplete responses to subtests. Two were removed for indicating currently living outside the U.S. Four participants' data were not reported due to their stuttering onset occurring after the age of eleven. The final sample included 40 PWS. Twenty-four (60%) were male and sixteen (40%) were female. Ages ranged from eighteen to seventy-six (M=34.20, SD=11.63). PWS were from seventeen different contiguous states including California, Colorado, Florida, Illinois, Louisiana, Maryland, Massachusetts, Michigan, Minnesota, New Jersey, New York, Pennsylvania, Rhode Island, Texas, Virginia and Washington. Relative to education, thirteen subjects (32.5%) said to hold a bachelor's degree, nineteen (47.5%) a master's degree, and one (2.5%) held a doctoral degree. Four (10%) had a High School Diploma and three (7.5%) indicated "Other". Thirty-six (90%) individuals were born in the United States, whereas four (10%) individuals were born elsewhere, including: Canada (n=1), China (n=1), South Africa (n=1), and Venezuela (n=1).

All participants indicated being a PWS. Thirty-eight participants (95%) reported being diagnosed by either a Speech-Language Pathologist (n=34; 85%), a Board-Certified Fluency Specialist (n=1; 2.5%) or "Other" (n=3; 7.5%). Thirty-eight out of forty participants (95%) reported having been in therapy for stuttering at some point in the past, while only eleven (27.5%) indicated currently being in therapy for stuttering. Seven (17.5%) participants said to have a current diagnosis of a mental-health disorder. Eight (20%) reported currently being in therapy for mental health related reasons.

When asked how they would currently rate their stuttering severity on a five-point Likert scale ranging from Very Mild to Very Severe, subjects rated their perceptions of stuttering severity as follows: Very Mild (n=4; 10%), Mild (n=12; 30%), Moderate (n=20; 50%), Severe (n=3; 7.5%) and Very Severe (n=1; 2.5%). Thirty-two (80%) participants reported being a member of a stuttering support group. As to the length of time they participated in a support group, participants noted: 0-1 year (n=6; 15%), 1-3 years (n=5; 12.5%), 3-5 years (n=4; 10%) and more than 5 years (n=17; 42.5%). In response to the question, "Do you actively try to conceal (hide) your stuttering? If so, to what extent?", participants reported: Not at all (n=8; 20%), Sometimes (n= 12; 30%), Often (n=10; 25%), A lot (n=5; 12.5%) and Always (n=5; 12.5%).

2.2 Materials

2.2.1 Behavior Assessment Battery for Adults Who Stutter (BAB)

Participants were administered all subtests of the Behavior Assessment Battery (BAB; Vanryckeghem & Brutten, 2018). The BAB is a series of self-report tests that assess the multidimensional aspects of stuttering, including its affective, behavioral and cognitive

components which provide insight into the impact stuttering has on a person. The battery is comprised of the Speech Situation Checklist - Emotional Reaction (SSC-ER) and Speech Situation Checklist - Speech Disruption (SSC-SD), the Behavior Checklist (BCL) and the Communication Attitude Test for Adults Who Stutter (BigCAT).

The SSC-ER explores negative emotional reaction experienced by PWS in various situations, assessing the affective component of the disorder. It provides respondents with 38 speech situations which they are asked 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 five-point Likert scale ("1" indicating "not at all" to "5" representing "very much") to assess anxiety, fear, worry (SSC-ER), or speech disruption (occurrence of stuttering; SSC-SD). Total scores are tallied by adding the score 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 (Brutten & Janssen, 1981; Brutten & Vanryckeghem, 2003a; Vanryckeghem & Brutten, 2018; Vanryckeghem et al., 2017).

Another portion of the BAB, the Behavior Checklist (BCL; Vanryckeghem & Brutten, 2018), was administered to examine PWS' usage of various types of coping responses they typically report to use when trying to avoid speech disruption or to escape the occurrence of disfluent speech. The BCL is a self-report test which collects data on the number, nature and

frequency of the concomitant behaviors PWS report to use in daily communication. In this study, respondents were instructed to indicate whether or not they use each of the 60 presented behaviors when trouble producing a sound, syllable or word is anticipated, or during stuttering (when experiencing trouble getting speech out). Respondents were to indicate "Yes" (score of 1) or "No" (score of 0) to indicate if they use a particular coping device. Thus, scores could range from zero to sixty. As is the case with the other BAB subtests, the BCL has evidence for its content and face validity (Brutten & Vanryckeghem, 2003a; Vanryckeghem & Brutten, 2018; Vanryckeghem et al., 2004; Wesierska et al., 2018)

To investigate the cognitive aspect of stuttering, specifically negative communication attitude, participants were administered the Communication Attitude Test for Adults who Stutter (BigCAT; Vanryckeghem & Brutten, 2018). The BigCAT is a self-report test consisting 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. For example, if a respondent were to choose "False" for the statement: "Speaking is no problem for me.", that item would be given a score of 1, indicating a negative communication attitude. If "True" is chosen, 0 points are awarded, conveying positive cognition. A response of "True" to the test item "The way I speak troubles me." would reflect a negative communication attitude and would be scored as 1, whereas a "False" response would imply positive speech-associated thinking and receive a score of 0. BigCAT scores can range between 0 and 34. The BigCAT is a singularly cognitive-based measure of communication attitude specifically designed for AWS. Studies repeatedly show significant dichotomies between PWS and PWNS' scores, a strong discriminative power,

and good reliability (Valinejad et al., 2018; Vanryckeghem & Brutten, 2011, 2012, 2018; Vanryckeghem & Muir, 2016).

Overall, the BAB gives valuable information into a person's lived experiences with stuttering, shedding light on the various ABC components that make up the disorder. In accordance with the WHO ICF (2001) framework, such variables provide critical insight and a holistic view of PWS, offering self-perception relative to how such factors might impact QoL and offering clinicians valuable information as it relates to differential diagnosis and targets for intervention (Vanryckeghem & Brutten, 2018).

2.2.2 Brief Symptom Inventory – 18 (BSI-18)

The Brief Symptom Inventory - 18 (BSI-18; Derogatis, 2001) is an 18-item self-report checklist predominately utilized as a screener for symptoms of psychological distress and psychiatric disorders in community and medical populations. It contains items from, and is a shortened version of, its parent scales, the 53-item Brief Symptom Inventory (BSI; Derogatis, 1993) and the original 90-item Symptom Checklist-90-Revised (SCL-90-R; Derogatis, 1994). The BSI-18 provides eighteen symptom descriptions which are to be rated by respondents along a five-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 providing three symptom scales: Anxiety (e.g., general nervousness, fear and panic), Depression (e.g., apathy, sadness, suicidal ideation), and Somatization (perception of physical problems; e.g., muscular/stomach pain, cardiovascular problems), consisting of six items for each domain. Upon scoring, BSI-18 raw scores are suggested to be transformed to T-scores based on gender-specific normative data from non-patient community dwelling U.S. adults. Respondents who have either a T-score of ≥ 63 on

the tests Global Severity Index (GSI; summation of all test item scores) or a T-score of ≥ 63 on any two of the three symptom scales (Somatization, Depression, and Anxiety), per the test's manual, should be 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). Psychometric investigations scrutinizing the test show it has a good internal reliability (Galdón et al., 2008), construct validity (Zabora et al., 2001), factor structure (Li et al., 2015) and reliability (Meachen et al., 2008).

2.2.3 Infrequency Validity Scale

Insufficient effort responding (IER) has been shown to occur in survey research due to lack of compliance by survey takers with low or reduced motivation, 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 and colleagues (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 reliability, criterion-related validity and uni-dimensionality, showing effectiveness in detecting IER (Huang et al., 2015).

2.3 Procedure

Approval for this study was obtained from the University of Central Florida Institutional Review Board (IRB) prior to implementing the investigation (#STUDY00002778). Upon opening the

survey, participants provided their consent to participate in the study by electronically signing a consent form. AWS completed the study via Qualtrics (Qualtrics, Provo, UT), an online survey software system. The average time to complete the entire survey was approximately 20 minutes.

The first component in the survey was the demographic questionnaire, followed by the five aforementioned self-report tests, administered in a computer-randomized order. In-between the various tests, one of the four Infrequency Validity Scale questions was presented. Participants needed to complete at least 90% of the questions from each test for the results to be included in the final sample. Missing data points were filled in via the use of item mean scores for that individual within a particular test. Additionally, subjects were required to have completed all subtests, or their data were omitted, given the nature of the statistical analyses used.

2.3.1 Data Analysis

Participants' data were entered into IBM SPSS Statistics V27 software for analysis. Measures of central tendency and variation for total raw scores on the BAB subtests were obtained and compared to 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 AWS scores on the BSI-18. Single sample t-tests' were carried out to determine whether males or females total scores on the BSI-18 were different from the test's normative community sample.

For reasons later described, four separate linear regressions covarying for age were performed between scores on the SSC-ER, SSC-SD, BCL and BigCAT and the GSI raw scores of the BSI-18.

CHAPTER 3: RESULTS

3.1 Total Score Analysis

3.1.1 BAB Subtests Scores

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 (SSC-ER: M=105.08, SD=34.86; SSC-SD: M= 105.75, SD=27.70). The average score on the BCL and BigCAT were 29.68 (SD=14.32) and 22.10 (SD=8.50), respectively.

When compared to normative data for PWNS provided by the tests' manual (Vanryckeghem & Brutten, 2018), SSC-ER scores for the sample of PWS fell approximately 4 SD above the mean of PWNS and slightly less than 6 SD above the mean for SSC-SD. Relative to participants' use of coping behaviors and speech-associated thinking, PWS scored slightly higher than 6 SD above the mean for PWNS on the BCL and just less than 6 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 .5 SD below the average PWS' scores for each test. Regarding the BCL, the present sample reported using more coping behaviors, scoring, on average, 1.3 SD above the mean of the standardization sample. On the BigCAT, individuals' scores averaged between .5 and 1 SD below the mean of the normative sample of PWS.

Table 1 Measures of Central Tendency and Variation for AWS' Total Scores on the BAB Subtests

	SSC-ER	SSC-SD	BCL	BigCAT
Mean	105.08	105.75	29.68	22.10
Standard Deviation	34.86	27.70	14.32	8.50
Median	100.50	108.50	32.00	23.00
Mode	127	107, 109, 110, 112	32	26
Minimum	40	44	1	0
Maximum	180	157	59	33

3.1.2 BSI-18 GSI T-Scores

Descriptive statistics for gender-specific GSI T-scores can be found in Table 2. While males (M=49.38, SD=9.25), on average, scored descriptively lower than females (M=52.00, SD=6.41), this difference was not statistically significant (t(38)=-1.034, p=.308). Compared to the norms of the BSI-18 non-clinical normative sample of community dwelling adults (M=50, SD=10; Derogatis, 2001), GSI scores for males and females in the current investigation were also found to not be statistically significantly different (t(23)=-.331, p=.743; t(15)=1.327, p=.204). In other words, levels of psychological distress for both male and female AWS groups were not found to be systematically different from that of the general community.

Table 2 Measures of Central Tendency and Variation for AWS' Gender Specific GSI T-Scores on the BSI-18

	Male AWS (n=24)	Female AWS (n=16)
Mean	49.38	52.00
Standard Deviation	9.25	6.41
Median	50.00	50.00
Mode	36	48
Minimum	36	39
Maximum	68	66

Relative to the proportion of individuals meeting Derogatis' (2001) threshold of what is considered clinically significant distress (≥ 63), four participants (10%) in the present study had GSI scores exceeding this value. This approximates the percentage of the top 9% participants in Derogatis' (2001) standardization sample of community dwelling adults who met or exceeded this threshold.

3.2 Analysis of Relationships Between ABC Factors of Stuttering and PD

In order to scrutinize the relationships between BAB and GSI scores, first executed were zero-order correlations to explore possible confounds related to demographic variables. Age was found to relate to four variables of interest, while gender only influenced one variable. This led to include age as a covariate. A hierarchical linear regression model, which contained all relevant variables, showed a variance inflation factor (VIF) for two independent variables (SSC-ER and SSC-SD scores) exceeding 4.30, indicating issues with multicollinearity. Multicollinearity occurs when two or more factors in the model are highly correlated, which can, in turn, affect regression coefficients. VIF's exceeding 4.0 have been found to be problematic (Hair et al., 2010). Because of this, four separate linear regressions covarying for age were conducted between total scores of each BAB subtest and BSI-18 GSI raw scores. In each, studentized residuals never crossed a +/-3, indicating no outliers.

Three of the four regression models covarying for age (SSC-ER, SSC-SD and BigCAT) predicted participants' GSI scores to a significant extent. While the overall model containing BCL scores showed a non-significant F-statistic, the regression coefficient obtained did reach significance, as was the case in the three other regressions. Overall, the strongest relationship uncovered was between SSC-ER and GSI scores, where the model captured 21% of the shared variance (adj. $R^2 = .21$, $F(2, 37)= 6.21$, $p =.005$) and a medium and significant regression

coefficient was obtained (β = .51 p= .003). This means that, as PWS indicated more negative emotional reaction relative to different speaking scenarios, so did they tend to report higher levels of psychological distress, as visually portrayed in the scatterplot shown in Figure 1.

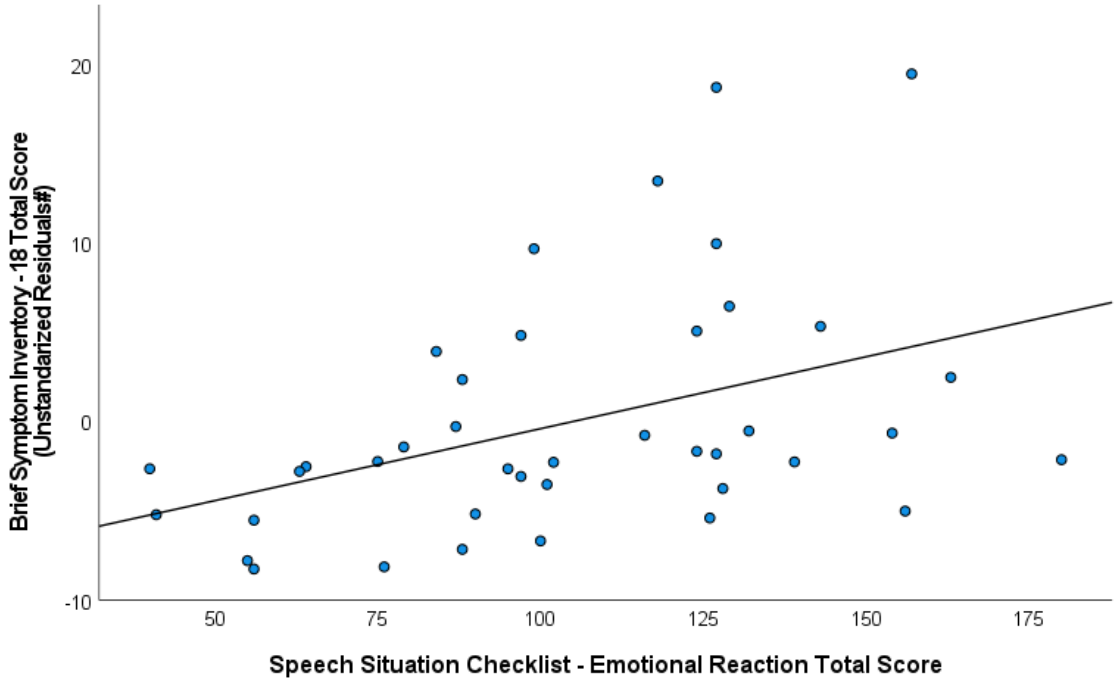

Figure 1: Scatterplot of the relationship between AWS' situation-specific negative emotion and psychological distress

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 = .19, F(2, 37)= 5.528, p =.008). As depicted in Figure 2, a significant medium positive regression was evidenced (β = .50, p= .005), indicating that the more a PWS indicated situation-specific speech disruption, so did they report higher levels of distress or psychopathology.

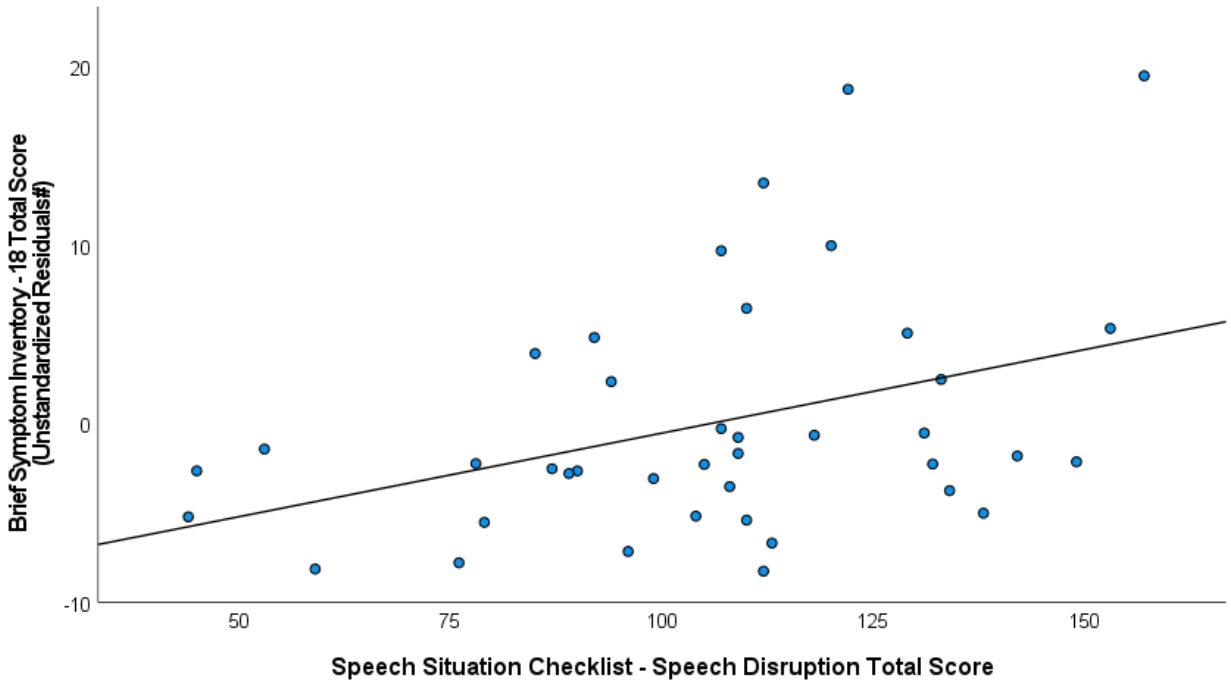

Figure 2: Scatterplot of the relationship between AWS' situation-specific speech disruption and psychological distress

As shown in Figure 3, the weakest relationship was obtained with the BCL. This was evidenced by the lowest amount of shared variance captured (R^2 =.09) and an F-statistic (F(2, 37)= 3.005, p =.062) that could be considered marginally significant, although not below the .05 level. The significant beta coefficient found (β = .33, p= .048) speaks more to the potential for a positive relationship between the number of coping behaviors PWS reported to use and their levels of psychopathology.

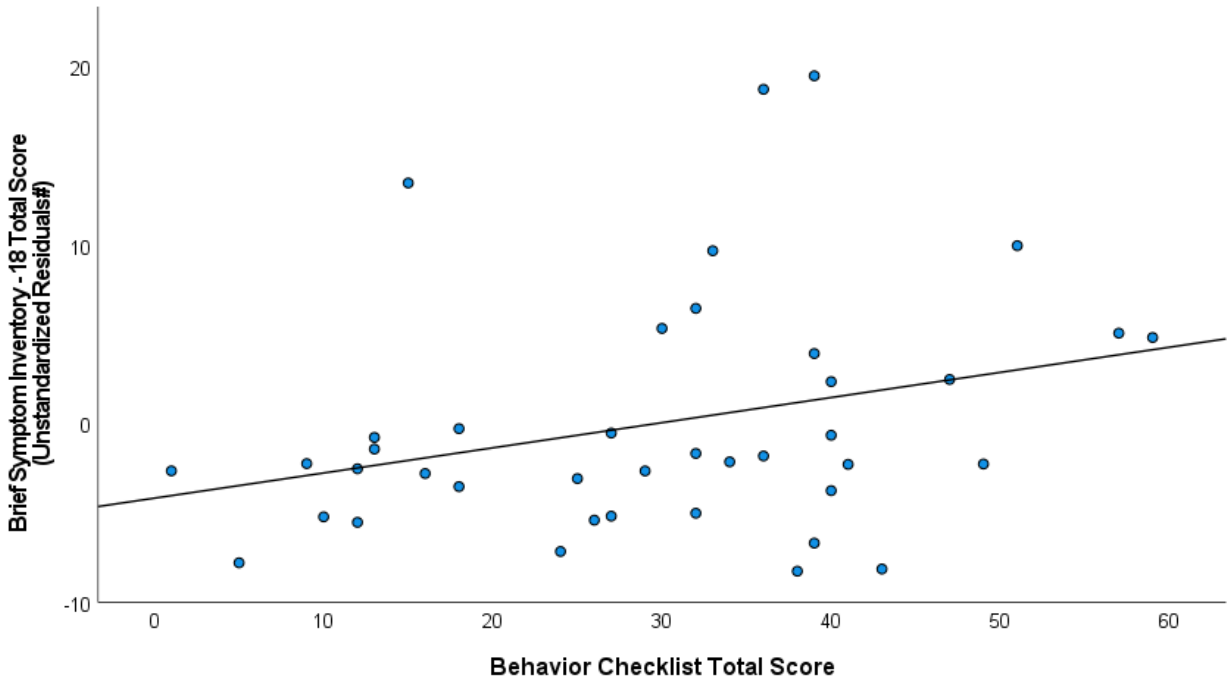

Figure 3: Scatterplot of the relationship between AWS' use of coping behaviors and psychological distress

Lastly, for BigCAT total scores, a less robust amount of shared variance was evidenced between independent and dependent variables when compared to the models containing SSC-ER and SSC-SD mean scores. However, the model was still significant (adj. R^2 = .12, F(2, 37)= 3.729, p =.033) and a significant low-medium regression coefficient was found (β = .38, p= .024). That is, the more negative a PWS' attitude toward their speech was, the more they were to indicate poorer psychological health.

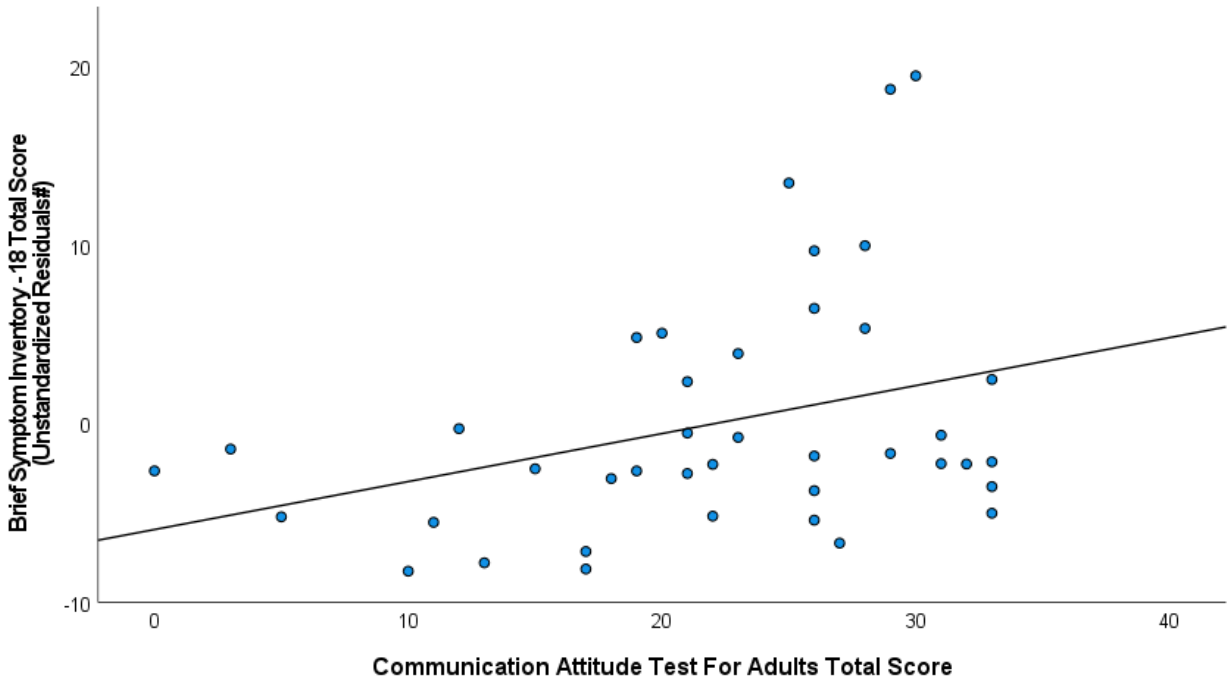

Figure 4: Scatterplot of the relationship between AWS' communication attitude and psychological distress

CHAPTER 4: DISCUSSION

4.1 ABC Components Present in PWS

Comparing the current PWS' data relative to their affective, behavioral and cognitive reactions to stuttering with that of the standardization samples provided by Vanryckeghem and Brutten (2018) allows one to further draw inferences on the representativeness of the sample studied. First, there are the clinically significant differences in the BAB scores compared to the PWNS normative sample. That is, like in other BAB studies (Vanryckeghem et al., 2018; Weiserska et al., 2018), PWS in the present investigation reported clinically significantly more in the way of negative emotion and speech disruption related to particular speaking scenarios, an increased use of coping behaviors to avoid and/or escape stuttering, and negative communication attitude. These data, which are unsurprising, provide evidence supporting the fact that the PWS studied are in fact what they report to be: individuals who stutter. Additionally, the findings do justice in highlighting the ever-present psychosocial impact that this particular fluency disorder has on the individuals studied. When compared to normative data for PWS, the participants' reports of the aforementioned ABC factors were shown to be similar as determined via group means. As it relates to situation-specific negative emotion and speech disruption, the use of avoidance and escape behaviors, and the presence of mal-attitude, PWS in the current study scored essentially within one standard deviation of the average normative PWS. Based on this information, it can be inferred that the participants in this study strongly represent individuals who stutter in the general community. This speaks to the investigation's external validity and the generalizability of the sample in question.

4.2 Presence of PD in PWS

Early theories of stuttering posited it as a disorder stemming from psychological neuroses (Coriat, 1915), indicating such aspects of the condition were its *cause*, rather than a *result* of the experience. Over the years, etiological bases for stuttering have more so accounted for its speech-motor impairments being linked to neurophysiological differences present in those who stutter, and genetic factors being highly causal to its prevalence (Bloodstein et al., 2021; Chang et al., 2019; Perkins, 1990; Smith & Weber, 2017; Van Riper, 1982). While it is presently the general consensus that the negative psychosocial sequelae often seen in PWS are a *result* of the experiences surrounding the condition, rather than the *cause* of the disorder itself (Craig & Tran, 2006), the question still remains as to the extent of psychopathological symptoms present in PWS, which are certainly the consequence of a culmination of adverse communicative interactions and their subsequent psychological impact.

The current data provide support for the notion that, as a group, levels of psychological distress in PWS do 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. Similarly, the same percentage (10%) of PWS in the current study met what is considered the clinical threshold for PD. While clinically significant symptoms of PD and meeting thresholds for Axis-II personality disorders are not one and the same, the percentages corroborated by both of these investigations do mirror prevalence rates for personality disorders globally (Winsper et al., 2020). Furthermore, both the findings from Manning and Beck (2013a) and the current data closely approximate the levels of psychological distress present in Derogatis' (2001) non-clinical sample of community dwelling adults.

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). While the methodological procedures of different research investigations can account for some of the incongruity in findings across the literature, it should be noted that the current data directly contradict results obtained in research employing the parent scale of the BSI-18 (the SCL-90-R) in which PWS' global psychopathology scores are reported to be significantly elevated over PWNS' (Tran et al., 2011). When comparing PWS' data to that of their controls who do not stutter and grouping their subjects based on normative data of clinical and non-clinical samples provided in the SCL-90-R manual (Derogatis, 1994), Tran and colleagues (2011) conveyed that only 32% of their stuttering participants fell into what they considered a 'normal' range based on GSI total scores. The rest of their participants, they concluded, belonged to either a medium severity of psychopathology (30.5%) or a psychiatric outpatient range (37.5%). Considering their high rate of psychopathological dysfunction reported, reasons for the variation in findings compared to the present data might be due to the way the researchers grouped individuals based on three levels of global psychopathology: non-patient/normal range (GSI scores of $\leq$.5), medium severity range (GSI scores of >.5 to <.1.2), and psychiatric outpatient range ($\geq$1.2) (p. 21). Research has established the BSI-18 and SCL-90-R's high convergent validity relating to their global severity measures (Derogatis, 2001; Prinz et al., 2013), complicating reasons for the differences seen in findings. Perhaps, it is what either studies' authors have considered as psychopathological dysfunction or distress which accounts for the deviation in comparative findings: GSI T-scores greater than or equal to 63 in the current study, or the aforementioned groupings which Tran and colleagues used. This points again to how procedural implications in prevalence-related research

might be a major factor for fluctuating results across the literature examining psychopathological dysfunction in PWS. In conclusion, the PWS' data related to psychological well-being in the present study, which approximates normative non-clinical samples, and the findings of Tran and colleagues who reported markedly higher rates of personality dysfunction in PWS, are noted.

The psychopathological domains examined in the current study with the BSI-18 capture anxiety, depression and somatization. Related symptoms may co-occur with, but are different from, state or phobic anxiety which has been established as highly prevalent in PWS (Craig & Tran, 2014). While GSI scores typically represent a composite measure of these three symptom domains, established as psychological distress in the present study, different operational definitions of PD and a countless number of measures to capture this construct have been employed throughout the literature**.**

4.3 Relationship between ABC Factors of Stuttering and PD

Overall, the results of the current investigation show that, of the variables in question, a PWS' indication of situation-specific negative emotional reaction has the strongest predictive value when determining one's amount of experienced psychological distress, followed closely by a PWS' indication of speech disruption in speaking scenarios, wherein both models showed medium-large effect sizes. To a lesser but still significant degree, one's communicative attitude accurately predicted levels of psychopathology. Lastly, a weak, positive relationship may exist between PWS' reports of the number of coping behaviors they use and levels of psychological distress.

4.3.1 Situation-Specific Emotional Reaction and PD

The most compelling relationship between variables unearthed in the present study exists between a PWS' extent of speech situation-specific negative emotional reaction and levels of self-reported psychological distress. As mentioned in the introductory paragraphs and further corroborated via participants' SSC-ER scores, the experience of stuttering can involve repeated and varying degrees of state anxiety. Given the amount of conditioned fear a PWS has for particular speaking scenarios and one's approach or avoidance of these situations, further conditioning of speech-related concern or, on the other hand, desensitization and fear extinction might occur (Brutten & Shoemaker, 1967; Iverach et al., 2017; Scheurich et al., 2019). Research investigations have established a positive correlation between trait and state anxiety (Horikawa & Yagi, 2011), meaning that those who report one of these types of anxiety tend to also experience the other. This is further documented within the population of individuals who stutter by mounting evidence pointing to a PWS' proclivity to experience both forms of anxiety at higher rates than PWNS (Craig & Tran, 2014). Because communication is essential to the human experience and omnipresent, it can be assumed that PWS who report higher levels of speaking related worry or concern will encounter more negative emotional reaction overall, given the number of communicative scenarios they are presented with, ruminate about, and/or eventually choose to enter in. Pertaining to the current data, PWS' feelings of chronic speech-related worry or concern are thought to radiate into a more generalized stress trait, influence levels of depression and perceived bodily symptoms of somatization, as captured by the BSI-18 global severity index.

The psychological distress reported by PWS who indicated increased communicative anxiety speaks to just how discomforting this form of anxiety can be. Some of the things individuals who suffer from anxiety report include feelings of impending panic, great unease,

somatic features such as increased heart rate, increased autonomic arousal, hyperventilation, insomnia, and impaired attention and ability to concentrate, all possibly impacting one's ability to problem solve and handle demands of daily life (Stirling & Hellwell, 2013). When 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 other psychopathological symptoms.

A growing amount of literature supports AWS' tendency, as a group, to experience depressive symptoms at higher rates than AWNS (Briley et al., 2021; Craig et al., 2015; Iverach et al., 2010). It should be noted that depression highly co-exists with social phobia, generalized anxiety or other anxiety-related disorders (Dalrymple & Zimmerman, 2007). This is evidenced in studies showing that approximately 50-60% of persons with a history of major depressive disorder (MDD) report a lifetime incidence of one or more anxiety-related disorders which were typically pre-existing prior to the onset of MDD (Kaufman & Charney, 2000; Kessler et al., 1996). Additionally, roughly half of adults with an anxiety or depressive disorder also display a simultaneous presence of the other pathology (Kircanski et al., 2017). Because individuals living with social fears or other forms of anxiety show an inclination to experience depression, it can be anticipated that PWS in the current investigation who indicate heightened negative emotion to various speaking scenarios and increases in PD will experience depressive symptoms.

Further investigation into reasons why stuttering-related fears might influence the development of depression requires a more nuanced understanding of the cognitive and behavioral aspects of social anxiety, and how they might manifest in PWS. Iverach et al. (2017), in a review and application of cognitive-behavioral models of social anxiety to individuals who stutter, illustrate how specific thought-based and behavioral processes occurring before, during,

and after social interactions maintain and exacerbate social phobia in this population. These processes might help explain the current data corroborating their potential influence on the development of depressive symptoms, too. Key aspects from the review include how PWS suffering from social anxiety often assume they will be negatively perceived and evaluated by others. They might form tarnished, irrational and negative mental representations of themselves as perceived by listeners which are further compounded by negative self-focused attention. Furthermore, PWS demonstrate attentional biases towards social threat, and engage in anticipatory and post-event processing which many times serves to further condition maladaptive thoughts and negative self-perceptions (Iverach et al., 2017). Research outside of the field of stuttering establishes how ruminating negative cognitions are known to fuel both anxiety and depression (Muris et al., 2015). This has been confirmed to also apply to PWS, specifically as it relates to social fears (Iverach et al., 2011; Iverach et al., 2015), with some evidence suggesting that the frequency and strength of negative speech-associated cognitions are associated with depressive symptoms (Iverach et al., 2015). With this in mind, it is thought that the cycle of negative emotional reaction to speaking scenarios and subsequent internalization of self-defeating ideation leads to not only maintenance and further fostering of anxiety, but the development of depressive symptoms in PWS, as shown by the current data. Feelings of discomfort, predicated on and intensified by the negative stigma surrounding stuttering (St. Louis et al., 2020), forms of delegitimization PWS endure in response to their disfluencies (Boyle, 2013a; Constantino et al., 2017), and negatively impacted life opportunities related to communication, all seem to play a role in inducing psychologically distressing symptoms such as anxiety and depression. This damaging feedback loop might be further compounded by data showing how heightened levels of fear and anxiety - in particular speaking scenarios - are

associated with increased speech breakdown in PWS (Vanryckeghem et al., 2017). In turn, this can lead to more physical struggle while speaking (Tichenor & Yaruss, 2018) and the use of accessory behaviors to avoid or escape stuttering, which are often maladaptive and known to maintain state anxiety (Lowe et al., 2017). Such experiences, which encapsulate affective, behavioral and cognitive manifestations of social phobia in PWS, will certainly lead an individual to further associate specific communicative interactions with negative thoughts and emotions. The overall life impact of stuttering can extend to many if not all life domains involving communication, leading to activity limitations and participation restrictions (Yaruss, 2010). It is clear how PWS might acquire depressive mood states as a result of increased communicative apprehension and anxiety (Tran et al., 2011; Tran et al., 2018).

The social psychology literature points out that depression is not only characterized by reduced social connectedness (Wade & Kendler, 2000), but that one's garnering and improvement of social relationships plays a critical role in the resolution of depressive symptoms (Cruwys et al., 2014). In this regard, Stirling and Hellewell (2013) propose that a model of learned helplessness might be causal to the development of depression in individuals with chronic social difficulties. Within this view, repeated unpleasant experiences in situations that are beyond one's control lead the individual to expect failure in their efforts, causing a sense of helplessness. Such 'lack of control' might be applied to PWS on a molecular and molar level. For example, qualitative reports point to how stuttering moments are characterized by a *lack of control* or the feeling of *getting stuck* (Tichenor & Yaruss, 2018). Or, in a more general sense, self-efficacy (or control over one's life) has been shown to predict adverse psychosocial impacts of the disorder (Carter et al., 2017) and influence resilience processes to the development of negative affectivity (Craig et al., 2011). Research by Boyle (2013a,b), showing how self-

efficacy, social support and connection influence psychosocial health in PWS is relevant here, given the aforementioned and current data relative to stuttering-related fears and their impact on psychological well-being, which are thought to relate closely to social dysfunction. This is echoed by Craig and colleagues (2011) who indicate that increased self-efficacy, social support and social integration are factors that most predicted PWS' resilience to global psychopathology, highlighting, again, the importance of social and self-efficacious factors' effects on distress.

Anxiety and depression are regularly captured together in survey research given their similar emotional, cognitive, and physiological dimensions (Nitschke et al., 2001). Anxiety and depressive disorders have even been found to share a genetic risk (Hettema, 2008), and brain imaging studies have pointed to the activation of similar neural pathways in persons who experience either of these psychopathological symptoms (Messina et al., 2013). Some researchers have concluded that these variables are sometimes indistinguishable, mostly due to limitations of the psychological scales employed. Importantly, both of these psychopathological domains are key components in what is considered psychological distress (Endler et al., 1992). As it relates specifically to the cognitive aspects of anxiety and depression, a reason for symptom overlap might be attributed to negative themes that are known to exist within persons who experience these phenomena. 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 and feed into one another. The implications of anxiety and depression and factors that positively influence their prevalence in PWS are mainly comprised of - what Tran and colleagues (2011) call - a "core negative affectivity factor" (p. 23), which is repeatedly evidenced in research administering psychological scales to individuals who stutter. At the very

least, it can be confirmed from the present data that PWS show an inclination to experience heightened levels of negative affect, which can manifest in a variety of psychopathological domains. Such negative affectivity in PWS is documented in investigations employing personality scales, too, indicating higher levels of neuroticism in PWS compared to PWNS (Bleek et al., 2012; Iverach et al., 2010), which has been defined as a trait disposition to experience negative emotion (Widiger & Oltmanns, 2017). Interestingly, neuroticism has been found to correlate highly with experiences of anxiety and depression in community samples (Muris et al., 2005).

PWS' experiences of possible increased somatization as corroborated via GSI scores can be explained to some extent by research showing PWS' proclivity to report this psychopathological phenomenon in contrast with PWNS (Tran et al., 2011). Within other populations, it has been estimated that roughly a third of patients with somatoform pathologies are also diagnosed with anxiety and depressive disorders, and psychological scales investigating the constructs of anxiety, depression and somatization are repeatedly found to highly correlate (Löwe et al., 2008). Distressing symptoms of somatization by PWS as captured in the current investigation can be viewed as a symptomatology that typically accompanies negative affective states.

Overall, the current data speak to the considerable psychological health impact a PWS reports as a result of speaking related anxiety across communicative scenarios. Activities of daily life requiring communication involving human wants and needs will surely be adversely impacted if linked with high levels of speaking related concern. Communicative anxiety will not only be cause for distress as evidenced by the current findings, but ultimately lead to decreased QoL as documented in the literature (Craig et al., 2009). Given that the SSC-ER examines a wide

array of communicative situations which reflect recurring and key life interactions (e.g. talking with someone you don't know" , "…trying to get your point of view across" , "…introducing yourself"), the relationship between one's indication of negative emotion in various communication scenarios and distress speak directly to the severe psychological impact this form of anxiety can cause.

4.3.2 Situation-Specific Speech Disruption and PD

The current investigation provides evidence for a significant relationship between a PWS' indications of situation-specific speech disruption and levels of psychological distress. Available data relative to these factors mainly concern the relationship between psychological concomitants of stuttering and levels of PWS' stuttering frequency or severity, revealing a complex association based on equivocal results due to both significant and non-significant relationships between these factors (Boyle, 2015a; Kasbi et al., 2015). Firstly, the way stuttering severity is measured across investigations differs. Some researchers have utilized self-rating procedures (i.e. one's perception of their stuttering severity) while others have employed objective measures of observed stuttering frequency. For example, Craig et al. (2009) found no associations between percentage syllables stuttered (%SS) and QoL in AWS and Blumgart et al. (2010) also found that %SS was unrelated to scores on any of the measures of anxiety (state and trait) they administered. Manning and Beck's (2013b) investigation showed no significant associations between %SS and level 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 (SSI-3; Riley, 1994), which scrutinizes frequency of stuttering moments, among other variables. Related specifically to global psychopathology and more relevant to the data at hand are Tran et al.'s (2011) findings of an absence of a significant

relationship between %SS and psychological distress measured via SCL-90-R GSI scores. 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 & Brutten, 2018), provides a more solid evidence base for the apparent the link between self-reported fluency breakdown and one's *situation-specific* anxiety, whereas the connection between stuttering severity/frequency and other types of anxiety is less clear.

The current findings expand the breadth of knowledge on the relationship between fluency breakdown and psychopathological symptoms, particularly in those three domains (anxiety, depression and somatization) important to this study which comprise psychological distress. However, it should be made clear just what the data in the current study truly mean. The present evidence relates primarily to a PWS' indication of and degree to which they perceive their speech breakdown in various speaking scenarios. That is, the more a PWS indicates higher levels of speech disruption across various communicative situations, so do they tend to report higher levels of psychopathology. These data do not reflect an objective measure of stuttering frequency, nor do they specifically characterize one's subjective perception of overall stuttering severity. The current results speak to the predictive power uncovered between a PWS' indication of perceived fluency breakdown in various communicative scenarios and self-reported levels of psychological distress.

Given that stuttering frequency or severity has rarely been found to predict psychological health outcomes (Blumgart et al., 2010; Craig et al., 2011), reasons for the relationships revealed in the current study might be attributed to the situation-specific nature of the fluency breakdown

reported. As is the case with speech specific emotional reaction, it is thought that the more speech breakdown a PWS reports to encounter in key habitual life interactions that require verbal communication, the higher the chance for what they might perceive as negative experiences which could lead to distressing thoughts and/or feelings. Literature examining others' perceptions of PWS provides support for the adverse environmental ramifications that stuttered speech can occasion. For example, increased stuttering during occupational opportunities, such as job interviews, can negatively affect one's employability (Hurst & Cooper, 1983). Also, those who stutter have been shown to face obstructions to romantic opportunities (Zhang et a., 2009; Van Borsel et al., 2011) and negative judgements toward PWS are even known to be prevalent among teachers (Crowe & Walton, 1981) and speech-language pathologists (Cooper & Cooper, 1996). Implications such as these, paired with the notion that more fluency breakdown can be cause for more physical struggle and further impede communication, might unfortunately lead to more discreditation and participation restrictions, as documented in the qualitative reports of PWS who experience delegitimization due to their stuttering (Constantino et al., 2017).

4.3.3 Behaviors Secondary to Stuttering and PD

The number of coping behaviors PWS reported to use and their relationship with self-reported levels of psychological distress warranted the weakest relationship of all variables included in the analysis. Given the rather limited shared variance this particular regression model captured resulting in an effect that was beyond the .05 level, the existence of a significant relationship could not be established, although the model containing BCL scores could be considered as approaching significance. This, paired with the positive and significant beta coefficient obtained, speaks more to the possibility for a true positive relationship between these factors. Given the n-size in the current study and the limited statistical power, it is thought that a larger sample of

PWS might have captured a more robust shared variance, leading to a statistically significant model effect. It would not be unfair to say that the current data lean in the way of a positive, predictive relationship between the number of accessory behaviors PWS choose to engage in and their levels of psychopathological dysfunction. Careful interpretation of the findings is in order and future replication with an increased sample size will shed light on whether there is a true significant relationship between the variables under discussion.

The positive, limited, relationship discovered would corroborate the research showing how coping behaviors PWS report to use can be maladaptive. Plexico et al. (2009a) discuss how PWS who employ accessory behaviors in communicative scenarios first conduct a *primary appraisal*, or assessment of the listener and contextual factors of the situation that might increase the probability for them, or the listener, to experience the event as threatening. After assessing a variety of factors that might impact their choice of coping related behaviors, a *secondary appraisal* of resources available and/or deemed necessary to cope with the stress of stuttering is conducted. Here, in the "need to survive in a fluent culture" (p. 101), the PWS is often poised to select cognitive, emotional or behaviorally based coping responses to deal with the stuttering moment with the main goal of escaping from physical struggle and/or averting listener penalties and discomfort. The wide array of behavioral coping devices that PWS are known to use to avoid or escape moments of stuttering, as captured in the BCL, are thought to be, at the least, cognitively, physically and emotionally taxing, as presented in the qualitative reports of PWS who employ such behaviors (Connery et al., 2019; Plexico et al., 2009a; Tichenor & Yaruss, 2018). As Plexico et al. (2009b) mention, such emotion-focused and avoidant forms of coping are mal-productive, as the issue they intend to cope with is not being solved, but rather, averted. Taken at face value, one could see why engaging in more types of behaviors aimed to

avoid/escape stuttering could be tiresome and lead to psychologically distressing symptoms. Given the habitual nature of these accessory behaviors, the fact that such speech-aids often fail to induce fluency, and provide only temporary relief, it is seen how they could be cause for a further barrier to communication and subsequent increased levels of distress.

PWS in Tichenor & 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, and employ other avoidance and escape behaviors. Importantly, this goal of not stuttering was said to significantly predict more negative affective, behavioral and cognitive states. The current data which reflect one's desire to avoid having difficulty with their speech by employing behaviors secondary to stuttering support Tichenor and Yaruss' (2019b) findings and corroborate the work by Boyle (2013b), who posits how one's overemphasis on fluency may adversely impact psychosocial health, such as the internalization of stigmatizing thoughts. Given the BCL's instructions, the current data could also reflect an individual's desire to *modify* their stuttering to achieve more effective communication.

Theoretical groundwork for the data at hand is discussed in literature hypothesizing how avoidance and/or escape-related behaviors might have deep-seating effects on one's identity development. Sheehan's (1970) role-conflict theory postulates that due to the PWS' intermittent periods of fluency, which cause an allure to maintain stutter-free speech, the person might suffer from an identity crisis, subsequently leading to an internal problem of self-image and psychological health impact. This phenomenon was recently given a fresh perspective through the lens of viewing stuttering as a concealable stigmatized identity (Gerlach et al., 2021). In their study, *concealment*, or PWS' active attempts to conceal their stuttering from others, was found to

have a significant positive relationship with psychological distress, as measured via a composite measure that included trait anxiety and depression. While the current investigation's independent variable is specifically comprised of avoidance and/or escape behaviors PWS report to use, and not one's indication of concealment of their speech disorder, the present findings, in a way, compliment Gerlach and colleagues' findings given the fact that such behavioral manifestations are a vehicle for choosing to conceal stuttering. Future investigations which might provide more insight into the relationship between these factors could include the *extent* to which PWS report engaging in behaviors secondary to stuttering and their effect on self-reported distress.

4.3.4 Communication Attitude and PD

Accounting for less shared variance than the SSC but still significant was the model containing the positive relationship between PWS' indications of negative communication attitude and reports of psychopathological dysfunction. The current findings corroborate stuttering-related literature which posits negative cognitions, that might manifest as self-focused attention and/or irrational thinking, are cause for the development and maintenance of poorer psychological health in those who stutter (Ingram, 1990; Lowe et al., 2017; Miller & Watson, 1992; Tichenor & Yaruss, 2020). In the present view, the more negatively a PWS was to report their attitude toward speech and stuttering, so was the likelihood for them to indicate symptoms of psychopathology. The data provide support for the findings of Miller and Watson (1992) who, using the S-24 measure of communication attitude, found a positive and significant relationship between increased negative communicative attitude and levels of trait and state anxiety, as well as depression.

While the BigCAT is a singularly cognitive measure of speech-associated attitude representing maladaptive thoughts PWS typically have, the test does not measure the frequency

with which PWS engage in such thoughts, or what is known in the literature as rumination. However, as thoughts persist, they tend to crystalize, becoming a dispositional trait which comprises one's attitude (Vanryckeghem, 2019). Given that the BigCAT presents True/False statements for which the respondent is to indicate how they generally view themselves and their speech, the current findings come in support of literature pertaining to how self-focused attention and repetitive negative thinking, which are concepts that revolve around unhelpful ideations, negatively 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 as a result of adverse experiences tend to report more depressive-like symptoms (Cruwys & Gunaseelan, 2016). Iverach et al. (2015), using the Unhelpful Thoughts and Beliefs About Stuttering (UTBAS) scale which examines unhelpful thoughts associated with speaking-related social phobia in AWS, found that the frequency and strength of negative speech-associated thoughts correlate with measures of trait anxiety, fear of negative evaluation and neuroticism. Interestingly, too, UTBAS' total scores significantly correlated with symptoms of depression measured via the Beck Depression Inventory, Second Edition (BDI-II; Beck et al. 1996). The current findings also show how increased negative speech-associated cognitions influence the development of psychological distress, which might include anxiety and depressive symptoms. As mentioned by Iverach and colleagues (2015), associations between negative speaking-related cognitions and depression in PWS is an area that certainly needs more investigation.

In another study linking negative speech-associated ideations with measures of psychological health, Boyle (2015b) compared PWS' scores on the Self-Stigma of Stuttering

Scale (4S; Boyle, 2013a) to other psychological measures. The 4S assesses negative stuttering-related cognitions particular to self-stigma in three main constructs: awareness, agreement, and application of stigma. Most relevant to the current study are Boyle's findings that total stigma scores were associated with significantly higher indications of anxiety and depression and lower levels of QoL and social support. These findings, and those of Boyle's (2013b) investigation indicating that PWS who put less emphasis on fluent speech production also showed less in the way of internalizing self-stigmatizing thoughts, illuminate how negative cognitions surrounding the experience of stuttering, particularly those related to stigma, 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 psychological distress.

4.4 Clinical Implications

Data from the current investigation related to the prevalence of psychological distress in PWS can, at the least, inform clinicians to the varying levels of psychological health impact occurring in this population. While some studies indicate the presence of significantly elevated psychopathological symptomatology in PWS (Tran et al., 2009; Tran et al., 2011), others do not (Manning & Beck, 2013a). As some studies have postulated (Kraaimaat et al., 2002; Preus, 1981), the current data seem to confirm the existence of a *sub-group* 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 psychopathological symptoms such as state and trait anxiety, depression and somatization. Multidimensional assessment batteries investigating both intrinsic and extrinsic factors related to stuttering, such as the BAB, can aid clinicians in not only

differential diagnosis but serve to evaluate psychosocial factors resulting from stuttering, providing a roadmap for holistic treatment of individuals who stutter. In the case of psychological assessments, screening tools with high sensitivity, specificity, and brevity, such as the BSI-18, can serve to compliment the speech-clinician's assessment and treatment of individuals who stutter. Employment of such a scale is certainly in the scope of the SLP's practice. Indications of clinically significant global psychopathology via T-Score cutoffs, like those provided by Deragotis (2001), can be utilized to make psychological referral determinations, further explore distressing symptoms, and measure treatment gains or regressions. Based on the WHO (2001) ICF framework, which provides person-centered scope of practice guidelines for SLPs and other relevant professionals working with persons with communication disorders, the psychological ramifications of stuttering should be evaluated and attended to in therapy by speech therapists.

The existing relationship between the ABC variables in PWS and their impact on levels of psychological distress have clinical implications that should be taken into consideration. These relate mostly to the hierarchy and strength of interaction effects observed. Considering a client's levels of psychological distress should be a priority for SLPs addressing presenting features of speech situation-specific levels of anxiety and speech disruption, negative communicative attitude, and the use of behaviorally based avoidance or escape mechanisms.

Data from the current investigation certainly add support to the use of stuttering treatments which poise reduction of anxiety as a critical component (Menzies et al., 2008; Scheurich et al., 2019; Sheehan, 1953; Van Riper, 1982) as well as treatments that address mal-attitude and psychopathology through cognitive-behavioral therapy (CBT: Menzies et al., 2008). Specifically, particular attention to exposure and desensitization, in which treatment is centered

around a client's approach rather than avoidance of fear-inducing scenarios that occasion stuttering, is employed in Avoidance Reduction Therapy (ARTS; Sheehan, 1953; Sheehan & Sisskin, 2001). Exposure therapy, which is more prevalent in treating other anxiety-related disorders but has less empirical support in stuttering-related research given that it is rarely used in isolation, has preliminary data for its efficacy in reducing social phobia and lessening negative affective, behavioral and cognitive reactions in PWS (Scheurich et al., 2019). CBT, which has a wide variety of therapy techniques, including cognitive restructuring, counseling, exposure, desensitization, problem solving and mindfulness (Menzies et al., 2008), has a growing amount of support for improving psychological health of individuals who stutter (Beilby et al., 2012; Gupta, 2016; Menzies, et al., 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 de-conditioning of overt and covert behaviors as well as establishing a more positive belief system (Brutten, 1973; Brutten & Shoemaker, 1967; Van Riper, 1973).

Overall, the current data highlight the hierarchy of effects observed between the ABC factors of stuttering and psychological dysfunction: leading one to conclude that situation-specific anxiety and speech breakdown are important factors deserving considerable attention, as well as PWS' communicative attitude and use of accessory behaviors to avoid or escape stuttering. Because affective experiences of stuttering can feed into the behavioral and cognitive components of the disorder (Vanryckeghem & Brutten, 2018), attending directly to stuttering-related fears might be the most timely and feasible way for clinicians to help clients decrease the psychologically distressing symptoms of their fluency disorder.

The American Speech-Language Hearing Association (ASHA) instructs speech-language pathologists to integrate three main principles when making treatment determinations for those with communicative disorders. Such evidence-based practice (EBP) is based on 1) clinical expertise, 2) internal or external evidence and 3) client, patient and caregiver perspectives. While the current manuscript has discussed a variety of peer-reviewed evidence, comparing and contrasting current findings to existing data, a critical component in stuttering treatment relates to the client's perspectives. Querying PWS' motivations, values and goals in relation to their intervention is key to unlocking a treatment plan that is client-centered. Education related to stuttering, as well as the findings resulting from a client's comprehensive assessment which include the affective, behavioral and cognitive reactions to their speech disorder and potential adverse mental health impact should certainly be brought to a client's attention and be part of clinical practice.

Lastly, it can also be argued that, while the interactions uncovered between the independent and dependent variables in this investigation were positive and captured some shared variance, large quantities of variance were unaccounted for, pointing to the presence of other factors impacting PWS' levels of psychological distress. With this, it is the authors' hope that the current data, along with existing literature, can help guide future investigations pursuing the further exploration of factors that influence psychological well-being in those who stutter.

4.5 Conclusion

The current data point to a sample of individuals who stutter who reported speech-related affective, behavioral and cognitive reactions which were representative of what is typically conveyed by PWS. They also reported rates of psychopathology that approximate community samples' data. Postulated in the discussion of differing prevalence-related research was the idea that methodological procedures might be a crucial factor in equivocal findings across studies. Overall, the data from this investigation, at the least, affirm the literature surrounding PWS' proclivity to experience negative affective states. They also substantiate the idea that there is much more to being a PWS than experiencing 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 which accompanies negative affectivity and the engagement in behaviors to avoid or escape stuttering.

The relationships uncovered between well-established affective, behavioral and cognitive reactions typically reported by PWS relative to their speech and levels of experienced psychological distress provide an accumulation of meaningful effects which can inform the clinical practice of professionals who treat individuals who stutter. The negative impact that speech situation-specific related anxiety can have on PWS' psychological well-being has been documented in this study. So, too, was the significant influence of situation-specific speech disruption and negative communication attitude on the presence of psychopathological dysfunction. Less clear was the link between PWS' engagement in various coping behaviors and levels of distress. Overall, the current findings shed a light on the importance of holistic treatment interventions which target the psychosocial concomitants of stuttering and view one's psychological health outcomes as highly important.

4.6 Limitations & Future Directions

The data which flow from the current investigation come with some limitations. First, the two research questions posed require methodologies that necessitate statistical power and generalizability of results. With this, one limitation of the present investigation is the n-size, which is smaller when compared to larger scale studies (Tran et al., 2011, 2018). As a result, this may have affected the obtained data and impacted the strength of effects corroborated from the regression analyses conducted. Relative to the relationship between ABC factors of stuttering and participants' levels of psychological distress, it is believed that a higher n-size might have led to more robust statistical effects across the four linear regression models conducted, capturing greater amounts of shared variance, as well as a statistically significant model effect in regards to BCL scores. Given the growing amount of literature in recent years speaking to how manifestation of concealment-related motivations or behaviors in PWS can negatively influence PWS' psychological health (Boyle, 2013b; Gerlach et al., 2021; Tichenor & Yaruss, 2019b), it is possible that a larger sample yielding more statistical power might have led to a model effect that would reach or surpass the .05 level. While the external validity of the current sample is supported via comparisons made between participants' BAB scores and those of normative PWS, replication of the current research design with a larger participant pool would shed more light to the trueness of the conclusions drawn.

The findings of the current study, along with its limitations, give direction to future research which involves not only further determining the prevalence of psychological health-related impact in PWS, but the identification of factors that might predict the development and/or 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. Given that considerable portions of shared variance were unaccounted for in the present investigation, information relative to what other types of life experiences might have a predictive role in determining various psychopathological symptoms in those who stutter is warranted. Identifying such variables will not only lead to a more holistic understanding of what it means to be a PWS, but inform assessment and treatment practices, as the current study aimed to do.

In addition, future research might focus on further teasing out *which* specific affective, behavioral and cognitive experiences of stuttering occasion distress and to what extent. For example, which exact forms of avoidance/escape mechanisms that PWS report to use most influence psychological distress? Does the *extent* to which PWS use different avoidance/escape mechanisms influence their level of psychopathology? Which speaking-related situations that are known to occasion negative emotion and speech breakdown in this population most highly predict negative psychological health? Are there *specific* thoughts or types of ideations that drive the predictive relationship found between negative communication attitude and symptoms of psychopathology? Possibly, factor analyses with the variables in question might capture items of each BAB subtest that most highly influenced reported distress. This would serve to further detail constructs related affective, behavioral and cognitive experiences of stuttering that occasion negative psychological health outcomes in PWS.

APPENDIX: IRB APPROVAL

UNIVERSITY OF CENTRAL FLORIDA

Institutional Review Board
FWA00000351
IRB00001138, IRB00012110
Office of Research
12201 Research Parkway
Orlando, FL 32826-3246

EXEMPTION DETERMINATION

March 1, 2021

Dear Randy Panzarino:

On 3/1/2021, the IRB determined the following submission to be human subjects research that is exempt from regulation:

Type of Review:	Initial Study, Category 2(ii)
Title:	Psychological Distress and Affective, Behavioral and Cognitive Experiences of the Person Who Stutters
Investigator:	Randy Panzarino
IRB ID:	STUDY00002778
Funding:	None
Grant ID:	None
Documents Reviewed:	• HRP 251, Category: Faculty Research Approval; • Behavior Checklist 2018, Category: Survey / Questionnaire; • BSI 18, Category: Survey / Questionnaire; • Communication Attitude Test for Adults Who Stutter 2018, Category: Survey / Questionnaire; • Demographic Information Questionnaire , Category: Survey / Questionnaire; • Email Recruitment , Category: Recruitment Materials; • HRP 254 Informed Consent, Category: Consent Form; • HRP 255 Protocol , Category: IRB Protocol; • Infrequency Validity Scale, Category: Survey / Questionnaire; • SPAI - 23, Category: Survey / Questionnaire; • Speech Situation Checklist Emotional Reaction 2018, Category: Survey / Questionnaire; • Speech Situation Checklist Speech Disruption 2018, Category: Survey / Questionnaire

This determination applies only to the activities described in the IRB submission and does not apply should any changes be made. If changes are made, and there are questions about whether these changes affect the exempt status of the human research, please submit a modification request to the IRB. Guidance on submitting Modifications and Administrative Check-in are detailed in the Investigator Manual (HRP-103), which can be found by navigating to the IRB Library within the IRB system. When you have completed your research, please submit a Study Closure request so that IRB records will be accurate.

If you have any questions, please contact the UCF IRB at 407-823-2901 or irb@ucf.edu. Please include your project title and IRB number in all correspondence with this office.

Sincerely,

Katie Kilgore
Designated Reviewer

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