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Successful Aging in Adults Who Stutter: Exploring Predictors of Physical and Mental Health-Related Quality of Life

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Successful Aging in Adults Who Stutter: Exploring Predictors of Physical and
Mental Health-Related Quality of Life

by

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A thesis submitted in partial fulfillment
of the requirements for the degree of
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Abstract

This study was conducted to investigate predictors of physical and mental health quality of life in aging adults who stutter (AWS). Our goal was to identify factors contributing to successful aging in this talker group. The aging population is expected to increase exponentially over the next twenty years. Factors influencing self-perceived health-related quality of life have yet to be investigated in aging AWS.

An online survey was completed by a total of 40 AWS, age 50 years and older, recruited from the Greater Tampa Bay region and nationally. The survey comprised multiple measures that probed for information regarding self-perceived health related quality of life, general resilience, health-promoting behaviors, socioeconomic resources, perceptions of aging, social risk associated with stuttering, identity management, neuroticism, and perceived difficulty communicating in daily situations.

Mean physical health quality of life (PH-QoL) was higher for aging AWS versus same-age adults in the general U.S. population. In contrast, mean mental health quality of life (MH-QoL) was only slightly lower for aging AWS relative to same-age adults from the general U.S. population. Further investigation is needed to determine whether such differences are observed in a larger, more representative sample of aging AWS.

Bivariate correlation analysis revealed that awareness of age-related loss was negatively associated with PH-QoL at a statistically significant level. In contrast, five variables were associated with MH-QoL. Age, number of physical activities weekly, and resilience were positively associated with MH-QoL at a statistically significant level, while neuroticism and difficulty communication in daily situations were negatively associated with MH-QoL at a statistically significant level.

Multiple linear regression, controlling for age, gender, and number of chronic conditions, revealed that only one explanatory variable – awareness of age-related loss - significantly predicted PH-QoL, with greater awareness of age-related loss predicting poorer PH-QoL. Multiple linear regression revealed that two explanatory variables predicted increased MH-QoL in aging adults who stutter: resilience and support group attendance. Two explanatory variables also predicted reduced MH-QoL: neuroticism and awareness of age-related loss. None of the explanatory variables interacted with stuttering severity to predict PH- or MH-QoL.

This study adds to a limited body of literature on quality of life in aging AWS by identifying risk and protective factors in PH- and MH-QoL in this talker group. Possible interventions for coping with age-related loss and neuroticism in addition to promoting resilience may be beneficial. Additional research will be needed to understand how the constructs of awareness of age-related loss, neuroticism, and resilience develop in aging adults who stutter and interact with physical and emotional functioning. Additional research will also be necessary to understand experience of aging in a more diverse sample of aging adults who stutter, and effects of resilience-focused interventions on quality of life in aging AWS. In the meantime, speech-language pathologists should

endorse, organize, and facilitate support groups for aging AWS and help aging AWS minimize the impact of stuttering on daily communication in aging AWS.

Chapter One: Introduction

Nearly three million adults in the United States, and 70 million adults worldwide, live daily with persistent developmental stuttering (Craig, Hancock, Tran, Craig & Peters, 2002), a chronic disruption of speech production characterized by audible or silent repetitions or prolongations of sounds and syllables, not readily controllable, and exacerbated by speech-related struggle (Wingate, 1964). Importantly, a growing body of evidence has shown that young adults who stutter (AWS) are at increased risk for negative affective, behavioral, and cognitive experiences including negative listener perceptions, heightened risk for social anxiety, restricted educational and career opportunities, and adversely impacted quality of life (Connery, McCurtin & Robinson, 2020). In contrast, almost nothing is known about effects of stuttering on quality of life in aging AWS (65+ years old). This topic was addressed from the perspective of resilience, the ability to maintain biological and psychological homeostasis under stress (Fredriksen-Goldsen, 2007; Lavretsky, 2012). Research has been underway to identify factors that contribute to resilience in aging adults. Following suit, this study investigated physical and mental health, risk and protective factors, and self-evaluation of quality of life in aging AWS. Results identified factors contributing to successful aging in this talker group.

Stuttering: Defined

Definitions of stuttering have evolved and expanded over time. In one of the most well-known, early definitions of stuttering, Marcel Wingate (1964) focused primarily on surface features as follows.

“The term ‘stuttering’ means:

1. a) Disruption in the fluency of verbal expression, which is b) characterized by involuntary, audible, or silent, repetitions or prolongations in the utterance of short speech elements, namely: sounds, syllables, and words of one syllable. These disruptions c) usually occur frequently or are marked in character and d) are not readily controllable.”
2. Sometimes the disruptions are e) accompanied by accessory activities involving the speech apparatus, related or unrelated body structures, or stereotyped speech utterances. These activities give the appearance of being speech-related struggle.
3. Also, there are not infrequently f) indications or report of the presence of an emotional state, ranging from a general condition of “excitement” or “tension” to more specific emotions of a negative nature such as fear, embarrassment, irritation, or the like. g) The immediate source of stuttering is some incoordination expressed in the peripheral speech mechanism; the ultimate cause is not presently known and may be complex or compound.”

(Wingate, 1964, p. 488).

Importantly, this definition, along with others (e.g., Van Riper, 1982) acknowledges that stuttering can include both overt features and covert features. Although Wingate's (1964) definition was agnostic about stuttering cause, other definitions have defined stuttering as an organic disorder (e.g., West, Nelson & Berry, 1939), a psychopathogenic disorder (e.g., Coriat, 1943), a psychosocial disorder (e.g., Fletcher, 1928), and even a learned disorder (e.g., Johnson & Leutenegger, 1955; Brutten & Shoemaker, 1967). In contrast to these explanations, a modern-day perspective is that stuttering is caused by complex, nonlinear interactions of motor, linguistic and emotional factors (Smith & Weber, 2017).

In addition to definitions that focus on overt and covert features of stuttering, other definitions have focused on the speaker's experience with stuttering. For example, Perkins (1990) defined stuttering as a "...loss of control of the ability to voluntarily continue a disrupted utterance" (p. 376). Similarly, the World Health Organization (1977) defined stuttering as "Disorders of rhythm of speech in which the individual knows precisely what he wishes to say, but at the time is unable to say it because of involuntary, repetitive prolongation or cessation of a sound." Definitions of stuttering based on the speaker's experience continue to be developed (e.g., Tichenor & Yaruss, 2018, 2019a, 2019b).

Other definitions of stuttering have focused on the level of impairment, disability and handicap caused by stuttering (e.g., Yaruss & Quesal, 2006). This perspective is based on the International Classification of Functioning, Disability and Health (ICF; WHO, 2001). Within the ICF framework, impairment refers to the extent to which stuttering impedes bodily function and structure. Disability refers to the extent to which

speech production does not conform to social expectations. Handicap refers to the extent to which social participation is not achieved. As pointed out by Yairi and Seery (2015), viewing stuttering through the ICF framework is useful for considering what stuttering involves, rather than providing a definition of what stuttering is.

Epidemiology of Aging Individuals and Aging Individuals who Stutter in the U.S.

It is estimated that nearly 1% of adults stutter (Craig et al., 2002). As of 2018, the American Community Survey (ACS) Demographic and Housing Estimates for the United States Census Bureau calculated that individuals under 18 years old make up 22.4% of the U.S. population while those older than 18 years make up 77.6% of the population. Adults aged 50 years and older comprise slightly more than 30% of the U.S. population (~98,471,857+ adults). Thus, it can be estimated that slightly less than one million AWS age 50 years and older live in the U.S. According to the U.S. Department of Health and Human Services Administration on Aging, significant increases in the older population are projected through at least the year 2040 (Administration on Aging, 2017). Thus, the population of aging AWS is expected to grow.

Quality of Life Impacts of Stuttering in Young Adults

As mentioned previously, a growing body of evidence has shown that young AWS are at increased risk for negative affective, behavioral, and cognitive experiences including negative listener perceptions, heightened risk for social anxiety, restricted career opportunities, and adversely impacted quality of life. Negative listener perceptions of stuttering by nonstuttering individuals can begin to develop in early childhood (see Culatta & Sloan, 1977; Ambrose & Yairi, 1994; Weidner, Louis, Nakisci

& Ozdemir, 2017) and continue to persist among nonstuttering adults in the general public (e.g., Hughes, Gabel, Irani & Schlagheck, 2010; Craig, Hancock, Tran & Craig, 2003; Dorsey & Guenther, 2000; Van Borsel, Verniers & Bouvry, 1999). AWS are commonly stereotyped as more nervous, shy, withdrawn, tense and anxious.

In addition to negative listener perceptions, AWS are 16 to 34 times more likely to experience social anxiety (social phobia) than nonstuttering adults (Iverach, O'Brian, et al., 2009). Social anxiety is the experience of marked or intense fear of social or performance-based situations that may involve scrutiny or evaluation by others (DSM-5; American Psychological Association, 2013). Speaking in public, meeting new people, and talking with authority figures are among feared situations in social anxiety (Ballenger et al., 1998). People with social anxiety may experience any number of symptoms including blushing, trembling, sweating, and speech arrest, which the speaker may fear are visible to listeners (Bogels et al., 2010). Exposure to feared situations may be associated with nervous anticipation, distress, and avoidance. Importantly, AWS with social anxiety disorder report more speech dissatisfaction, avoidance of speaking situations, significantly more psychological problems, and a greater negative impact of stuttering (Iverach et al., 2018).

In terms of restricted career opportunities, a study conducted by Rice and Kroll (1997) surveyed 568 National Stuttering Project members regarding perceptions of their past work experiences and career choices. Results showed that these individuals a) believed they could have had a better job if they did not stutter, b) chose a career that required less speaking, c) believed stuttering had affected their chances of being promoted, d) reported feeling discriminated against in the hiring process, and e)

perceived that their supervisors had misjudged their performance because they stuttered (also see Blumgart, Tran & Craig, 2010; Plexico, Hamilton, Hawkins & Erath, 2019). Consistent with those results, surveyed employers reported perceiving that stuttering can interfere with job performance and promotion possibilities (Klein & Hood, 2004). Even when employed, AWS experience income disparities. A recent study discovered that AWS in the United States earn an average of \$7,000 less, annually, than nonstuttering adults (Gerlach, Totty, Subramanian & Zebrowski, 2018). Employment concerns may be compounded by the fact that AWS incur an average of \$5,500 every five years in personal cost for products or services associated with managing their stuttering (Blumgart, Tran & Craig, 2010).

Finally, quality of life in young AWS has been broadly investigated. In a well-known study (Craig, Blumgart & Tran, 2009), AWS frequently reported reduced vitality, or increased risk of feeling fatigued. AWS also frequently reported reduced social functioning, emotional stability, and mental health. Another study found that moderate-to-severe stuttering impacted quality of life in several domains of functioning including speech, emotion, cognition, pain, daily activities, and anxiety/depression (Koedoot, Bouwmans, Franken & Stolk, 2011). A systematic review of research on quality of life in AWS confirmed that stuttering can have profound and predominantly negative impacts on individuals' life experiences (Connery, McCurtin & Robinson, 2020). Those authors found that AWS commonly use avoidance to manage stuttering, that stuttering can negatively shape self-identity, that stuttering impacts relationships adversely, and that stuttering leads to negative reactions. Specific personality traits, such as increased neuroticism and reduced extraversion, seem to increase the severity of perceived

impacts of stuttering on quality of life (Bleek, Reuter, Yaruss, Cook, Faber & Montag, 2012). On the other hand, greater self-esteem, and self-advocacy, along with social support from family, appear to offset negative quality of life impacts of stuttering on adults (Boyle, 2015). Self-efficacy, the internal appraisal of one's ability to execute an action successfully to achieve a desired outcome, also appears to offset negative impacts of stuttering on quality of life in adults (Carter, Breen, Yaruss & Beilby, 2017). Connery, McCurtin & Robinson (2020) advised that quality of life impacts of stuttering should be evaluated, and targeted in treatment, with AWS. As outlined next, negative impacts of stuttering on quality of life can be seen in aging adults too.

Stuttering and Quality of Life Impacts of Stuttering in Aging Adults

Importantly, stuttering persists beyond young adulthood. In terms of surface features, AWS >50 years old were found to exhibit an increase in motoric breaks (but not formulaic breaks) with increasing age (Manning & Monte, 1981). Another early study found that AWS >50 years old and young AWS had similar scores on the Perceptions of Stuttering Inventory (Woolf, 1967), the Erickson Scale (Erickson, 1969; Andrews & Cutler, 1974), and the Self-Efficacy Scale (Ornstein & Manning, 1983), which require individuals to self-identify their stuttering behaviors, their negative communication attitudes associated with stuttering, and their ability to approach and perform in specific speaking situations, respectively (Manning, Dailey & Wallace, 1984). In this same study, however, a large majority of the older adults perceived stuttering to be less handicapping than the young adults and expressed less desire to seek treatment.

Along this same line, more recent evidence demonstrated that AWS >65 years old reported significantly higher quality of life than younger AWS (Boyle, 2015). Participants responded to the Quality-of-Life Enjoyment and Satisfaction Questionnaire – Short Form (Q-LES-Q) (Endicott, Nee, Harrison, & Blumenthal, 1993). The Q-LES-Q comprises 14 items that evaluate enjoyment and satisfaction with physical health, mood, work, household and leisure activities, social and family relationships, daily functioning, sexual life, and economic status. Responses are scored on a 5-point Likert scale ranging from ‘not at all or never’ to ‘frequently or all the time’. Numerical responses to the 14 items are summed to generate a total Q-LES-Q score. Higher scores indicate better enjoyment and satisfaction with life. In Boyle (2015), Q-LES-Q total scores were higher, on average, in AWS >65 years old than in AWS 25-34 years old and 55-64 years old, driving a statistically significant main effect of group. Unfortunately, Boyle (2015) did not identify specific aspects of life experience that were perceived as more enjoyable or satisfying to the older AWS. Nor did Boyle (2015) attempt to identify explanatory factors behind greater perceived quality of life in the older AWS.

Although Boyle (2015) found better perceived quality of life in older versus younger AWS, there is evidence that stuttering can continue to have significant, negative impacts on quality of life in aging adults. In a focus group study of AWS >55 years old (Bricker-Katz, Lincoln & McCabe, 2010), those who continued to work – and whose work involved unpredictable speaking situations with unfamiliar people – felt constrained by their stuttering. Conversely, those who had retired reported feeling relief from no longer having to communicate in work contexts. Some participants indicated

that self-acceptance - developed over time - helped reduce fear of negative consequences of stuttering, while others continued to struggle with fear of speaking and fear of negative evaluation by listeners.

In another study (Bricker-Katz, Lincoln & McCabe, 2009), quality of life was assessed in AWS 55 years and older using a variety of self-report scales including the Fear of Negative Evaluation Scale (FNES) (Watson & Friend, 1969), the Endler Multi-dimensional Anxiety Scales-Trait (EMAS-T) (Endler, Edwards & Vitelli, 1991), the Australian Personal Wellbeing Index (PWA-I) (Cummins, 2004), and the Overall Assessment of the Speaker's Experience with Stuttering (OASES) (Yaruss & Quesal, 2006). Compared to age-matched participants who do not stutter, aging AWS reported fear of negative evaluation in the social phobia range (on the FNES and EMAS-T). The aging AWS in this sample also reported reduced quality of life (on the OASES) related to their stuttering. Specifically, they perceived having negative affective, behavioral, and cognitive reactions to their stuttering. They also perceived that stuttering negatively impacted their ability to communicate in daily situations. The authors did not attempt to probe how these perceptions impact quality of life at a broader level. Importantly, the aging AWS also reported that they were significantly less satisfied with their health than controls (on the PWA-I), although more specific information was not provided. Based on these findings, the purpose of the current study was to investigate further into perceived health-related quality of life in aging AWS.

Resilience Framework for Investigating Health-Related Quality of Life in Aging AWS

Health-related quality of life is defined as “an individual’s or group’s perceived physical and mental health” (Centers for Disease Control, 2000, p. 8). According to the CDC (2000), efforts to improve quality of life and well-being should include tracking perceived physical and mental health quality of life. Perceptions of physical and mental health quality of life can be used as indicators of successful aging (Fredriksen-Goldsen, Kim, Shiu, Goldsen & Emler, 2015). From a health care perspective, tracking health-related quality of life is also important because physical and mental health factors can be directly impacted by healthcare workers and healthcare policy, while general quality of life (i.e., one’s sense of well-being) includes components outside of the control of healthcare workers and healthcare policy (Francic & Bothe, 2008).

The 36-Item Short Form Survey (SF-36) is a survey tool created to obtain inclusive and informative quality-of-life measures. It is also used as part of Medical Outcome Studies (MOS) for routine monitoring as well as assessment in the care of outcomes in adult patients as well as for the general U.S. population (RAND, n.d.; Ware, Kosinski & Keller, 1994) The SF-36 assesses eight health concepts: 1) limitations in physical activities because of health problems; 2) limitations in social activities because of physical or emotional problems; 3) limitations in usual role activities because of physical health problems; 4) bodily pain; 5) general mental health (psychological distress and well-being); 6) limitations in usual role activities because of emotional problems; 7) vitality (energy and fatigue); and 8) general health perceptions.. Researchers have used these patient self-reported measures to document health-

related quality of life in adults. SF-36 normative data regarding health-related quality of life in the general U.S population exists for healthy individuals aged 18 to over 75 years old (N= 2,474), as well as those who suffer from chronic illnesses. The SF36 survey was the primary outcome measure used here to document health-related quality of life in aging adults who stutter in comparison with general U.S. norms (Ware, Kosinski & Keller, 1994).

An important question is how aging adults maintain health-related quality of life and successful aging in the context of adversity? In other aging populations, this question has been addressed using a resilience framework. Resilience is defined as behavioral, functional, social, and cultural capacities and resources utilized to achieve positive adaptation under adverse circumstances (Fredriksen-Goldsen, 2007; Fredriksen-Goldsen et al., 2015). The extent to which individuals or groups can be resilient can be determined by investigating risk factors, and protective factors, that limit or facilitate positive adaptation (Lavretsky, 2012).

In this project, we investigated the association of eight broadly defined variables with health-related quality of life in aging AWS. These include: 1) general resilience (the extent to which an individual possesses resources that facilitate positive adaptation); 2) health-promoting behaviors (participation in leisurely activity, physical activity, routine healthcare, and substance nonuse); 3) socioeconomic status (education, employment and income status); 4) perceptions of aging (the extent to which an individual recognizes positive and negative physiological and psychosocial changes in aging); 5) social risk (experience with discrimination or victimization due to stuttering and other factors); 6) identity management (positive or negative identity as a person who stutters);

7) neuroticism (a personality trait that involves constant preoccupation with things that might go wrong and a strong emotional reaction of anxiety to such thoughts); and finally 8) perceived difficulty communicating in daily situations (at work, home, and socially). Depending on their status, each of these variables may serve as a risk factor (negatively impacting health-related quality of life and successful aging) or protective factor (positively impacting health-related quality of life and successful aging).

Some of the variables listed above are known to impact quality of life in all aging adults. Specifically, general resilience, health-promoting behaviors, socioeconomic status, and perceptions of aging, generally impact quality of life in aging adults (Kempen, van Heuvelen, van Sonderen, van den Brink, Kooijman & Ormel, 1999; Earvolino-Ramirez, 2007; Hicks & Conner, 2014; Low, Molzahn & Schopflocher, 2013; Fredriksen-Goldsen et al., 2015; Ingrand, Paccalin, Gil & Ingrand, 2018). As reviewed previously, there is some evidence that aspects of resilience (e.g., social functioning, self-concept, self-efficacy), health satisfaction, socioeconomic resources, and perceptions of aging life, may be reduced in some AWS but not others. Unknown is whether individual differences in these variables are associated with perceptions of health-related quality of life in aging AWS.

The two variables – social risk and identity management – uniquely impact quality of life in aging groups that have been marginalized (e.g., due to race, socioeconomic status, health, ability status, and/or sexual orientation) (Becker & Newsome, 2005; Emlet, Tozay & Raveis, 2011; Fredriksen-Goldsen et al., 2015; Harris, 2008; Manning, Carr & Kail, 2016; Wild et al., 2013). As reviewed previously, young, and aging AWS often experience or perceive social risk (i.e., discrimination or

victimization) due to stuttering. Additionally, there is evidence that AWS may develop a more positive or negative identity anchored in stuttering (Daniels & Gabel, 2004) and those with a more positive stuttering identity may have a better sense of well-being (Boyle, Milewski & Beita-Ell, 2018). Unknown is whether individual differences in social risk and identity management are associated with perceptions of health-related quality of life in aging AWS.

The variable – neuroticism – uniquely impacts health-related quality of life in aging individuals with disabilities (Kempen et al., 1999). As reviewed previously, AWS are known to differ in their level of neuroticism, and AWS with increased neuroticism seem to perceive greater negative impacts of stuttering. Unknown is whether individual differences in neuroticism are associated with perceptions of health-related quality of life in aging AWS.

Finally, the variable – perceived difficulty communicating in daily situations – was investigated for its unique association with stuttering. Earlier we mentioned that health-promoting behaviors can impact quality of life in aging. A critically important health-promoting behavior in aging is participation in communication activities of daily living (Simmons-Mackie, Raymer, Armstrong, Holland & Cherney, 2010). As reviewed previously, AWS commonly experience or perceive difficulty communicating in situations at work, socially, and at home. Unknown is whether individual differences in perceived difficulty communicating are associated with perceptions of health-related quality of life in aging AWS.

The resilience approach followed here also allows us to investigate moderating effects of stuttering severity. As mentioned previously, young adults who stutter with greater severity sometimes perceive greater negative impacts on quality of life than young adults who stutter with lesser severity. Unknown is whether perceived health-related quality of life in aging AWS differs as a function of stuttering severity.

Summary and Research Questions

The aging population is growing at an exponential rate, and this includes the aging population of AWS. It is well-documented that stuttering can profoundly impact life experience in young AWS, in predominantly negative ways. A few published studies also suggest that aging AWS may also experience similar adverse impacts. However, little is known about health-related quality of life in aging AWS.

Health-related quality of life was assessed in aging AWS in two domains: physical health quality of life and mental health quality of life. Following a resilience framework, eight broadly defined variables were investigated as potential risk or protective factors in health-related quality of life and successful aging. Associations among health-related quality of life and these eight variables were determined.

The overall hypothesis of this study was that the eight variables of interest would be associated with perceived health-related quality of life in aging AWS. **One research question** was how does health-related quality of life in aging adults who stutter resemble that in typically fluent aging adults? **A second research question** was how does decreased resilience, decreased health-promoting behaviors, decreased socioeconomic resources, negative perceptions of aging, increased social risk, negative

identity, increased neuroticism, and increased difficulty communication in daily situations predict decreased physical and mental health quality of life in aging AWS? **A** **third research question** was how do the explanatory variables interact with stuttering severity to predict health-related quality of life? Discoveries will inform approaches for mitigating risk factors and/or enriching protective factors to improve health-related quality of life in aging AWS.

Chapter Two: Method

Participants

A total of 99 individuals clicked on the link to the survey. Of those, a total of 66 people completed a majority of the survey. Eight of those individuals were excluded because they did not provide their birthday. Seven additional individuals were excluded because they were younger than 50 years old. One individual completed the survey twice and only his original response was included. Seven individuals were not born in the United States and reported that English was not their native language; these individuals were excluded. Finally, five individuals were excluded because they reported that they did not identify as someone who stutters at time of survey completion.

When reviewing partially completed surveys, no notable patterns of subject attrition were observed. Two respondents were too young to be included, three provided no birthdate, three did not identify as people who stutter, and three were not born in the U.S. and English was not their native language. Two of seven potentially usable partial responses did not make it past the participant background portion of the survey. Of the remaining five, two did not fill out the SF-36, our main outcome measure. Of the remaining three partial responses, one completed the SF36 portion in addition to the section assessing resilience. None of these partially completed surveys were included.

Of those who completed the survey and met all the inclusion criteria, there was a total of 40 participants who stutter (12 identified as female, 28 identified as male), ages 50 to 84 years old (mean=65.28 years, SD=9.78). All were able to read English and identified as someone who stutters at the time of the survey. Thirty participants reported that they had been formally diagnosed with stuttering as children (ranging from age 2 to 12 years old), while the other 10 participants had not been formally diagnosed with stuttering as children. We included these participants on the assumption that they stuttered as children but may not have had access to speech-language services, keeping in mind that the profession of speech-language pathology was relatively new and access to services may have been limited. As described below, participants were required to confirm the presence of stuttering using a self-report scale. None of the 10 participants without a formal childhood stuttering diagnosis had histories of stroke or cancer, which might have contributed to acquired neurogenic stuttering.

Symptoms of stuttering were documented in each participant using the *Wright and Ayre Stuttering Self-Rating Profile* (WASSP; Wright & Ayre, 2000). The WASSP is comprised of 26 statements in five different sections aimed at characterizing the severity of symptoms in the following domains: 1) Stuttering behaviors, 2) thoughts about stuttering, 3) feelings about stuttering, 4) avoidance due to stuttering, and 5) disadvantage due to stuttering. A variety of symptoms under each domain are presented and subjects self-rate their severity on a 7-point scale as follows: 1 (none), 2 (mild), 3 (mild/moderate), 4 (moderate), 5 (moderate/severe), 6 (severe), and 7 (very severe).

Participants were recruited using a database of individuals who previously gave permission to be contacted for research opportunities. The study was also advertised to self-help groups and informal social media networks (e.g., Facebook groups, Reddit groups). Additionally, snowball sampling was utilized to recruit participants (Bernard et al., 2017). All study procedures were approved by the University of South Florida Institutional Review Board. Participants read a consent form and provided written informed consent before completing the survey.

Outcome Variables

The outcome variables were physical and mental health quality of life, as measured using the *SF-36 health survey* (Turner-Bowker et al., 2003). The SF-36 assesses eight health concepts as mentioned earlier in the Introduction: 1) limitations in physical activities because of health problems; 2) limitations in social activities because of physical or emotional problems; 3) limitations in usual role activities because of physical health problems; 4) bodily pain; 5) general mental health (psychological distress and well-being); 6) limitations in usual role activities because of emotional problems; 7) vitality (energy and fatigue); and 8) general health perceptions. Two sets of scores are derived from the SF-36: 1) a profile of eight section scores, and 2) two summary scores, one measuring physical health quality of life (**PH-QoL scores**) and the other measuring mental health quality of life (**MH-QoL scores**). Higher scores indicate better perceived PH-QoL and MH-QoL (i.e., reduced limitations of disability in social or usual role activities, with higher levels of well-being, and/or more favorable personal health evaluations). The PH-QoL scores and MH-QoL scores from the SF-36 were used as outcome variables in the analysis described later.

Explanatory Variables

As outlined in the Introduction, eight explanatory variables were investigated as potential risk or protective factors. These variables were measured using the following scales along with a background questionnaire.

1. *Connor-Davidson Resilience Scale* (CD-RISC; Connor & Davidson, 2003):

General resilience was assessed using the CD-RISC, which includes 25 statements, each rated on a 5-point scale (0-4), with higher scores indicating greater resilience. Items on the CD-RISC are sensitive to five constructs: Personal competence, acceptance of change and secure relationships, trust/tolerance/strengthening effects of stress, control, and spiritual influences. Of several available resilience scales validated in English, the CD-RISC was determined to be among the best based on evaluation of psychometric properties (Windle, Bennett & Noyes, 2011).

2. *Awareness of Age-Related Change 10-item Short Form* (AARC10-SF; Kaspar,

Gabrian, Brothers, Wahl & Kaspar, 2019): Perception of aging was assessed using the AARC10-SF, which includes 10 questions drawn from a more extensive, 50-item *Awareness of Age-Related Change Questionnaire* (Kaspar et al., 2018). The ten items include a prompt, "With increasing age, I realize that...", followed by one of 10 statements (e.g., "...I pay more attention to my health."). The statements probe awareness of health and physical functioning, cognitive functioning, interpersonal relations, social-cognitive and social-emotional functioning, and lifestyle engagement. Five items probe for awareness of gains in these domains while the other five items probe for awareness of loss in these

domains. Higher scores indicate greater perceived aging-related gains or losses, respectively.

3. *Everyday Discrimination Scale* (EDS; Williams, Yu, Jackson & Anderson, 1997):

Social risk was assessed using the Everyday Discrimination Scale, which attempts to measure chronic, routine, and relatively minor experiences of unfair treatment. Nine questions ask participants how often they perceive the following: 1) being treated less courteously than other people; 2) being treated with less respect than other people; 3) receiving poorer service than other people at restaurants or stores; 4) other people acting as if they think you are not smart; 5) other people acting as if they are afraid of you; 6) other people acting as if they think you are dishonest; 7) other people acting as if they're better than you; 8) being called names or insulted; and 9) being threatened or harassed.

Participants indicate the frequency with which they perceive each of these situations as follows: Never, Less than once a year, A few times a year, A few times a month, At least once a week, Almost every day. A higher average score indicates greater perceived every day discrimination. For any item to which participants respond at least "A few times a year", participants are asked to give the main reason(s) for these experiences including due to Ancestry or National Origin, Gender, Race, Age, Religion, Height, Weight, Some Other Aspect of Physical Appearance, Sexual Orientation, Education or Income Level, Physical Disability, Shade of Skin Color, or Tribe. An additional response for Stuttering was included.

4. *Stereotype Agreement Subscale of the Self-Stigma of Stuttering Scale (4S-SA; Boyle, 2015)*: Identity management was assessed using a subscale of the 4S-SA that probes the extent to which AWS agree with stuttering stereotypes (e.g., “I believe that most people who stutter are insecure”). The subscale is comprised of nine items. Participants respond to each item on a 5-point scale: 1=strongly disagree, 2=somewhat disagree, 3=neither agree nor disagree, 4=somewhat agree, 5=strongly agree. Scores are averaged. Higher scores indicate greater stuttering self-stigma.
5. *Neuroticism Subscale of the Eysenck Personality Questionnaire (EPQ-N; Eysenck, Eysenck & Barrett, 1985)*: Neurotic personality trait was assessed using the EPQ-N, a 12-item subscale. Items are comprised of statements (e.g., “Do you ever feel ‘just miserable’ for no reason?”) to which participants respond Yes or No. Scores are summed, ranging from 0 to 12, with a higher total score indicating greater neuroticism.
6. *Communication in Daily Situations Subscale of the Overall Assessment of the Speaker’s Experience with Stuttering (OASES-CDS; Yaruss & Quesal, 2006)*: Perceived difficulty communication in daily situations was assessed using the OASES-CDS, a 25-item subscale. Items are comprised of statements to which participants respond on a 5-point scale ranging from 1= “Not at all Difficult” to “Extremely Difficult.” Questions probe perceived difficulty communicating in a variety of general situations (e.g., talking one-on-one, talking under time pressure, talking on the telephone) (n=10), situations at work (n=5), social situations (n=5), and situations at home (n=5). Scores are summed and divided

by the total number of items completed to calculate an impact score. A higher impact score would indicate greater perceived difficulty communicating in daily situations.

7. *Demographic questions probing health-promoting behaviors:* Physical activity was defined as being engaged, on a weekly basis, in at least moderate activities that cause an increase in breathing or heart rate (Centers for Disease Control, & Prevention, 2011). To assess leisure activity, participants were asked how often in a week they were engaged in activities that do not cause an increase in breathing or heart rate, such as reading, meditation, and drawing (Fredriksen-Goldsen et al., 2011). Social network size was determined by asking participants to report the number of people (e.g., friends, family members, colleagues, and neighbors) they have interacted within a typical month by age (age 50 and older or younger than 50). Religious or spiritual activity was measured by the frequency of attending spiritual or religious services and activities in the last 30 days. We assessed routine health check-up by asking whether, within the past year, participants visited a physician for a routine check-up defined as a general physical exam, not an exam for a specific injury, illness, or condition. Those not engaged in any of the following behaviors were coded as substance nonusers: Current smoking defined as having ever smoked 100 or more cigarettes and currently smoking every day or some days (Centers for Disease Control, Prevention (US), & National Center for Infectious Diseases 1994); excessive drinking defined as five or more drinks on one occasion during the

past 30 days (Substance Abuse and Mental Health Services Administration, 2007); and, use of drugs other than those required for medical reasons.

8. *Demographic questions probing socioeconomic resources:* Household income was categorized into six different levels of annual salary: <\$20,000; \$20,001-44,999; \$45,000-139,999; \$140,000-149,999; \$150,000-199,999; \$200,000+. Education level was dichotomized as, ≤high school vs some college.

Employment was dichotomized as not employed vs employed.

9. *Demographic questions probing background characteristics:* Background characteristics included gender (male, female, other); ethnicity (Not Hispanic or Latino, Hispanic or Latino); race (American Indian/Alaska Native, Asian, Native Hawaiian or other Pacific Islander, Black or African American, White, More than one race); geographic area (rural, suburban, urban); diagnosis of stuttering in childhood (yes, no); current identity as a person who stutters (yes, no); and number of chronic health conditions. To assess the number of chronic health conditions, participants were asked whether they had ever been told by a doctor that they had any of the following: high blood pressure, high cholesterol, heart attack, angina, stroke, cancer, arthritis, diabetes, asthma, or HIV/AIDS. The number of chronic health conditions was summed, with a range of 0–10.

Relationship status were dichotomized into being partnered or married versus not partnered or married (including single, widowed, separated, and divorced).

Procedure

Participants completed the background questionnaire and surveys individually online. Online participation took place from a personal computing device via the

Qualtrics survey platform. Before completing the survey, participants read an informed consent form on the initial page (see Appendix A). After agreeing to participate, individuals signed the consent form by clicking 'I consent'. The background questionnaire was administered first, followed by the WASSP, SF-36, CD-RISC, AARC10-SF, EDS, 4S-SA, EPQ-N, and finally the OASES-CDS (see Appendix B). Participants responded to a total of 182 questions. Along with the consent process, this study took approximately ~45 to 60 minutes to complete.

Analysis Plan

For descriptive analysis, means and standard deviations (for continuous variables) and counts (for categorical variables) are reported for the outcome variables (PH-QoL and MH-QoL scores) along with the explanatory variables. **To answer the first research question** - How does health-related quality of life in aging adults who stutter resemble that in typically fluent aging adults? - PH-QoL scores and MH-QoL scores for the sample of aging adults who stutter collected here, were informally compared with same-age norms from the general U.S. population (Ware, Kosinski & Keller, 1994).

To answer the second and third research questions - How do resilience, health-promoting behaviors, socioeconomic resources, perceptions of aging, social risk, identity management, neuroticism, and difficulty communication in daily situations all predict physical and mental health quality of life in aging AWS and how do these explanatory variables interact with stuttering severity to predict health-related quality of life, respectively? - two analysis steps were carried out using SPSS (version 27)

statistical analysis software. The first step was to determine zero-order correlations between each explanatory variable and each outcome variable. Pearson-r correlations were computed between each continuous explanatory variable and each outcome variable (PH-QoL or MH-QoL scores), while Spearman-rank correlations were computed between each categorical explanatory variable and each outcome variable. Explanatory variables that were correlated with either outcome variable at a statistically significant level ($p < .05$) were identified.

In step 2, we sought to determine the direct numerical relationship between each explanatory variable and each outcome variable. For this purpose, we used multiple linear regression. Each explanatory variable was entered into a multiple regression analysis with PH-QoL or MH-QoL scores entered as the outcome variable. Additionally, age, gender, and number of chronic health conditions were entered as control variables, as all three have been shown to impact PH-QoL and MH-QoL scores in the general U.S. population (Ware, Kosinski & Keller, 1994). This allowed us to determine whether each explanatory variables predicted each outcome variable, beyond chance level, with age, gender, and number of chronic health conditions held constant. Additional multiple regression analyses were also conducted using the same outcome, explanatory, and control variables, but with an interaction term included to investigate the interaction of stuttering severity and the explanatory variable being analyzed.

Before conducting the correlation and regression analyses, multiple imputation was used to replace any missing values. For the multiple regression analyses, robust standard errors were used to determine statistical significance of the regression coefficients of explanatory variables.

Chapter Three: Results

Descriptive Statistics

Descriptive statistics for background characteristics, explanatory variables, and outcome variables are shown in Table 1. Participants were comprised of both males and females at a 3:1 ratio respectively, which is an accurate representation of the distribution of stuttering among people who stutter (Conradi, 1904). The average age was 65.28 years old, with a standard deviation of 9.66. Most of the participants were white and not Hispanic or Latino, residing in suburban neighborhoods. On average, the number of chronic health conditions the participants reported was less than two, suggesting this was a relatively healthy sample of aging adults who stutter. Regarding social resources, most of the participants were partnered or married. There was large variation in social network size. In terms of health promoting behaviors, it was more common to be engaged in weekly leisure activities than physical activities. As seen in Table 1, participants averaged approximately one routine health checkup annually. Almost one quarter of the participants reported substance use. Most of the participants reported an annual household income above the federal poverty line at between \$45,000 to \$139,999, half of them still being employed and more than three quarters receiving at least some education at the college level. Two participants reported that they had seen a speech-language pathologist in the past year and fifteen participants reported attending stuttering support groups in the past year.

Table 1. Sample Description of Background Characteristics and Key Study Variables. Averages and SDs are shown for continuous variables. Sums per category are shown for categorical variables.

Key Study Variables	Level of Categorical Variables	Average or Sum	SD
Background Characteristics			
Age		65.28	9.66
Gender			
	Females	12	n/a
	Males	28	n/a
Race			
	White	35	n/a
	Black or African Americans	3	n/a
	Asian	1	n/a
	More than one race	1	n/a
Ethnicity*	Non-Hispanic or Latino	39	n/a
Geographic Area			
	Urban	10	n/a
	Suburban	28	n/a
	Rural	2	n/a
Chronic Health Conditions		1.25	1.24
Social Resources			
	Partnered/Married	31	n/a
	Single/Widowed/Divorced	9	n/a
	Social Network Size Under 50	22.4	20.82
	Social Network Size Over 50	20.7	20.22
	Religious Activity	1.61	3.3
	Social Support Group	3.33	5.88
Health Promoting Behavior			
	Physical Activity	4.95	2.92
	Leisure Activity	7.55	5.2
	Routine Health Check up	1.3	0.87
	Substance use	8	
Socioeconomic Resources			
Income, above 200% FPL*			
	Above poverty	29	n/a
	Hovering at poverty	8	n/a
	Below poverty	1	n/a

Table 1 continued.

Key Study Variables	Level of Categorical Variables	Average or Sum	SD
Income*			
	Less than \$20,000	1	n/a
	\$20,001 to \$44,999	4	n/a
	\$45,000 to \$139,999	21	n/a
	\$140,000 to \$149,999	3	n/a
	\$150,000 to \$199,999	5	n/a
	\$200,000 +	4	n/a
Employment*			
	Unemployed	19	n/a
	Employed	20	n/a
Education*			
	High school or less	4	n/a
	Some college +	35	n/a
SF-36			
	PH-QoL scores	50.51	8.95
	MH-QoL scores	49.38	10.27
Self-Stuttering Profile			
<i>Wright and Ayre Stuttering Self-Rating Profile</i>			
	WASSP Behaviors	3.05	1.23
	WASSP Thoughts	3.07	1.62
	WASSP Feelings	3.17	1.76
	WASSP Avoidance	2.51	1.24
	WASSP Disadvantage	2.3	1.2
Resilience			
Connor-Davidson Resilience Scale		73.25	12.95
Aging Awareness			
<i>Awareness of Age-Related Change 10-item Short Form</i>			
	AARC Gain	4.02	0.59
	AARC Loss	2.15	0.61
Social Risks			
Everyday Discrimination Scale		1.69	0.6
Identity management resources			
Stereotype Agreement Subscale of the Self-Stigma of Stuttering Scale		1.13	0.38

Table 1 continued.

Key Study Variables	Level of Categorical Variables	Average or Sum	SD
Neuroticism			
Neuroticism Subscale of the Eysenck Personality Questionnaire		4.3	3.49
Stuttering Discrimination			
<i>Communication in Daily Situations Subscale of the Overall Assessment of the Speaker's Experience with Stuttering</i>		2.22	0.66

* Indicates that responses did not total n=40 due to missing data.

As mentioned previously, the WASSP (Wright & Ayre, 2000) was used to elicit self-ratings of the severity of physical, emotional, and burden symptoms of stuttering. As shown in Table 1, averages for each of the five domains hovered around 2 or 3 with minor variation, indicative of physical, emotional, and burden symptoms of stuttering in the mild to moderate range.

Comparison of PH-QoL and MH-QoL Scores with General U.S. Population Norms

The first research question was whether health-related quality of life in aging adults who stutter resembles that seen in typically fluent aging adults? Table 2 shows general U.S. population norms for the SF-36 for physical health quality of life (PH-QoL scores) and mental health quality of life (MH-QoL scores) in three different age groups (Ware, Kosinski & Keller, 1994). Also shown in Table 2 are average PH-QoL and MH-QoL scores (and SDs) for the participants in this study. Keeping in mind that the average age of participants in the current sample was ~65 years old, mean PH-QoL was higher among aging adults who stutter than mean PH-QoL for individuals 55-64

and 65-74 years old in the U.S. population, indicating better perceived physical health among aging adults who stutter. PH-QoL standard deviation in aging adults who stutter was also smaller than PH-QoL SDs for individuals 55-64 and 65-74 years old in the U.S. population, indicating less variation in perceived physical health among aging adults who stutter.

Table 2. U.S Stuttering Population Norms and AWS from Current Study.

		PH-QoL		MH-QoL	
		Mean	SD	Mean	SD
General U.S. population normative sample					
	45-54 yo	49.64	9.67	50.53	10.02
	55-64 yo	45.9	11.24	51.05	9.69
	65-74 yo	43.33	11.16	52.68	9.29
	75+ yo	37.89	11.16	50.44	11.66
Adults who stutter in the current study					
		50.51	8.95	49.38	10.27

Mean MH-QoL was 1.5 to 2 points lower (and SD slightly higher .58-.98) among aging adults who stutter relative to same-age adults from the general U.S. population. This suggests that aging adults who stutter in our sample perceived having mental health quality of life that was somewhat lower than the general US population and similar variability in perceived mental health.

Correlations Among Explanatory Variables and PH-QoL Scores

The second research question was how do the explanatory variables predict physical or mental health quality of life in aging adults who stutter? This question was addressed using both simple correlation analysis and multiple regression analysis.

Correlation analysis revealed that only one explanatory variable was associated with PH-QoL scores at a statistically significant level as seen in Table 3. Specifically, AARC loss scores had a moderate, negative correlation with PH-QoL scores ($r=-.438$, $p=.005$). This indicates that as AARC loss scores decreased PH-QoL scores increased, and vice-versa. Lower AARC loss scores reflect reduced awareness of age-related loss and higher PH-QoL scores reflect better perceived physical health.

Regression of PH-QoL Scores onto Explanatory Variables

Just one explanatory variable was found to significantly predict PH-QoL scores as noted in Table 4. A significant regression equation was found when AARC loss was entered as the explanatory variable ($F(4,40)=2.91$, $p=.035$), with an adjusted r-square value of .16. AARC loss scores were significant predictors of PH-QoL scores (Beta=-.434, $t(36)=-2.98$, $p=.005$), controlling for age, gender, and number of chronic health conditions. Higher AARC loss scores (i.e., greater awareness of age-related loss) drove lower PH-QoL scores (i.e., lower perceived physical health).

The third research question was how does stuttering severity interact with each explanatory variable to predict PH-QoL scores. An additional multiple regression analysis was conducted regarding the interaction between stuttering severity and AARC loss scores to predict PH-QoL scores. The findings were not statistically significant.

Correlations Among Explanatory Variables and MH-QoL Scores

Correlation analysis revealed that five explanatory variables were associated with MH-QoL scores at a statistically significant level seen in Table 5. These included Age ($r=.335$, $p=.035$), Number of Physical Activities Weekly ($r=.333$, $p=.036$),

CDRISC scores ($r=.442$, $p=.004$), EPQ-Neuroticism scores ($r=-.51$, $p<.001$), and OASES-CDS scores ($r=-.331$, $p=.037$). As these results demonstrate, Age, Number of Physical Activities Weekly and resilience (measured using CDRISC scores) were all positively associated with MH-QoL scores. In contrast, Neuroticism, and impact of stuttering on daily communication (measured using OASES-CDS scores) were negatively associated with MH-QoL scores.

Regression of MH-QoL Scores onto Explanatory Variables

Four explanatory variables were found to significantly predict MH-QoL scores, shown in Table 6. For the model including CDRISC scores as the explanatory variable, a significant regression equation was found ($F(4,40)=4.99$, $p=.003$), with an adjusted r -square value of .29. CDRISC scores were significant predictors of MH-QoL scores ($Beta=.51$, $t(36)=3.64$, $p<.001$), with higher CDRISC scores (i.e., greater resilience) driving higher MH-QoL scores (i.e., better perceived mental health). An additional multiple regression analysis found no interaction between stuttering severity and CDRISC scores in predicting MH-QoL scores.

For the model including EPQ-Neuroticism scores as the explanatory variable, a significant regression equation was found ($F(4,40)=3.59$, $p=.015$), with an adjusted r -square value of .21. EPQ-Neuroticism scores were significant predictors of MH-QoL scores ($Beta=-.45$, $t(36)=-3.24$, $p=.002$), with higher EPQ-Neuroticism scores (i.e., increased neuroticism) driving lower MH-QoL scores (i.e., lower perceived mental health). An additional multiple regression analysis found no interaction among stuttering severity and EPQ-Neuroticism scores in predicting MH-QoL scores.

For the model including AARC loss scores as the explanatory variable, a significant regression equation was found ($F(4,40)=3.09, p=.03$), with an adjusted r-square value of .18. AARC loss scores were significant predictors of MH-QoL scores ($Beta=-.401, t(36)=-2.63, p=.013$), with higher AARC loss scores (i.e., increased awareness of age-related loss) driving lower MH-QoL scores (i.e., lower perceived mental health). No interaction among AARC loss scores and stuttering severity in predicting MH-QoL scores was detected.

Finally, for the model including Support Group Attendance as the explanatory variable, the regression equation approached statistical significance ($F(4,40)=2.62, p=.05$), with an adjusted r-square value of .14. Number of Support Groups Attended Annually was a significant predictor of MH-QoL scores ($Beta=.35, t(36)=3.47, p=.03$), with more support groups attended driving higher MH-QoL scores (i.e., better perceived mental health). No interaction among number of support groups attended and stuttering severity in predicting MH-QoL scores was detected.

Table 3. Correlations Among Explanatory Variables and PH-QoL Scores.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1 PH-QoL	-																							
2 Age	-0.226	-																						
3 Chronic Health Issues	-0.247	.46**	-																					
4 Routine Health Checks	-0.092	0.133	.35*	-																				
5 Physical	-0.46	0.225	0.142	0.12	-																			
6 Leisure	0.094	.43**	0.134	-0.24	0.29	-																		
7 Under 50	0.197	-0.253	-0.271	-0.31	-0	-0.06	-																	
8 Over 50	0.12	0.12	-0.148	-0.18	0.29	0.14	.68**	-																
9 Religious	0.005	.36*	0.066	-0.11	-0.1	.41**	-0.02	0.23	-															
10 Support	0.09	-0.173	-0.073	-0.07	0.02	0.11	.32*	0.27	0.04	-														
11 CDRISC	0.304	-0.157	-0.035	0.24	0.16	0.07	.38*	.31*	0.16	0.3	-													
12 AARC gain	0.036	-0.123	0.049	.46**	0.2	-0.02	0.08	-0	0.06	0.05	.64**	-												
13 AARC loss	-.44**	0.182	0.14	0.19	-0.1	-0.06	-0.16	-0.3	0.11	0.1	-0.255	-0.1	-											
14 EDS	-0.06	-0.171	-0.179	-0.15	-0.1	-0.16	0.31	0.18	-0.24	0.03	0.114	0.12	-0.1	-										
15 Neuroticism	-0.06	-.34*	-0.181	-0.25	-0.2	-.37*	-0.09	-0.3	-0.18	-0.2	-.49**	-0.2	0.09	0.08	-									
16 OASES	-0.007	-0.172	-.35*	-0.05	0.2	-0.11	-0.19	-0.1	-0.06	-0.2	-.36*	-0.1	-0.1	0.05	.41**	-								
17 SelfStigma	0.301	-.33*	-0.062	0.24	-0.1	-0.27	0.08	-0.1	-0.21	0.16	.34*	0.19	-0.2	0.13	-0.11	0.06	-							
18 WASSPb	0.131	-.40*	-.36*	0.1	0.12	-0.24	-0.11	-0.1	-0.02	0.13	0.069	0.21	-0.1	0.02	0.26	.67**	0.21	-						
19 Gender	-0.009	-0.09	-0.03	-0.06	0.06	-0.01	0.07	-0.2	-0.01	-0	-0.166	-0.1	0.19	0.01	0.07	0.01	-0.3	0.1	-	0.11	-0.1	0.17	-0.3	-0.3
20 Work	0.264	-.54**	-.35**	-0.04	0.06	-0.24	.58**	0.09	-.33*	0.11	.35*	0.22	-0.3	.32*	0.18	0.25	.38*	.44*	0.11	-	0.23	0.06	-0.3	0.21
21 Education	-0.043	0.016	-0.059	-0.15	0.21	0.13	0.22	0.18	0.02	0.15	-0.033	0.04	0.07	-0.1	0.07	0.07	-0.2	0.07	-0.08	0.28	-	0.16	0	-0.2
22 Relationship	0.06	0.176	0.088	0.01	0.19	-0.1	0.1	-0	0.04	-0.2	0.031	0.04	0.07	-0	0.06	-0.03	-0	-0.1	0.17	0.06	0.16	-	0.18	-0
23 Substance	0.135	.37*	.33*	.42**	-0	-0.15	-0.25	0.01	0.01	0.09	-0.057	0.08	-0	-0.1	-0.15	-0.03	0.3	-0.1	-.33*	-0.3	0	0.18	-	0.88
24 Region	0.175	-0.046	-0.211	0.02	-0.1	-0.01	0.14	0.18	0.14	0.12	0.237	0.18	-0.1	0.23	0.02	0.02	.32*	0.24	-0.28	0.21	-0.2	-0	0.09	-

Note: *p<.05, **p<.01, ***p<.00

Table 4. Regression of PH-QoL Scores onto Explanatory Variables.

Predictor Variable (holding age, gender, # chronic conditions constant)	Is the model significant?	Beta	Robust SE
Routine Health Checks	no (p=.57)	-0.006	0.14
Physical	no (p=.57)	0.007	0.17
Leisure	no (p=.35)	0.219	0.14
Under 50	no (p=.49)	0.121	0.11
Over 50	no (p=.48)	0.125	0.16
Religious	no (p=.53)	0.09	0.21
Support	no (p=.55)	0.05	0.12
CDRISC	no (p=.18)	0.293	0.23
AARC gain	no (p=.56)	0.032	0.26
AARC loss	yes (p=.035)	-0.434	0.15
EDS	no (p=.48)	-0.12	0.14
Neuroticism	no (p=.43)	-0.16	0.2
OASES	no (p=.503)	-0.109	0.16
Self Stigma	no (p=.178)	0.326	0.16
WASSPb	no (p=.57)	0.007	0.17
Work (employed vs not employed)	no (p=.311)	-0.076	0.42
Education (some college vs high school or less)	no (p=.643)	0.193	0.27
Relationship (partnered vs not partnered)	no (p=.545)	0.015	0.34
Substance (use vs nonuse)	no (p=.19)	-0.787	0.38
Region	no (p=.59)		
Urban	Ref	-	-
Suburban		0.101	0.23
Rural		-0.547	0.24

Table 5. Correlations Among Explanatory Variables and MH-QoL Scores.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
MH-QoL	-																							
Age	.34*	-																						
Chronic Health Issues	.18	.46**	-																					
Routine Health Checks	.12	.13	.35*	-																				
Physical	.33*	.23	.14	.12	-																			
Leisure	.22	.43**	.13	-.24	.29	-																		
Under 50	.14	-.25	-.27	-.31	-.04	-.06	-																	
Over 50	.30	.12	-.15	-.18	.29	.14	.68**	-																
Religious	.15	.36*	.07	-.11	-.11	.41**	-.02	.23	-															
Support	.28	-.17	-.07	-.07	.02	.11	.32*	.27	.04	-														
CDRISC	.44**	-.16	-.04	.24	.16	.07	.38*	.31*	.16	.30	-													
AARC gain	.25	-.12	.05	.46**	.20	-.02	.08	-.02	.06	.05	.64**	-												
AARC loss	-.31	.18	.14	.19	-.11	-.06	-.16	-.27	.11	.10	-.26	-.15	-											
EDS	-.02	-.17	-.18	-.15	-.05	-.16	.31	.18	-.24	.03	.11	.12	-.11	-										
Neuroticism	-.51**	-.34*	-.18	-.25	-.25	-.37*	-.09	-.30	-.18	-.16	-.49**	-.19	.09	.08	-									
OASES	-.33*	-.17	-.35*	-.05	.20	-.11	-.19	-.10	-.06	-.21	-.36*	-.09	-.13	.05	.41**	-								
SelfStigma	.00	-.33*	-.06	.24	-.14	-.27	.08	-.13	-.21	.16	.34*	.19	-.18	.13	-.11	.06	-							
WASSPb	-.24	-.04*	-.36*	.10	.12	-.24	-.11	-.07	-.02	.13	.07	.21	-.07	.02	.26	.67**	.21	-						
Gender	.01	-.09	-.03	-.06	.06	-.01	.07	-.16	-.01	-.03	-.17	-.11	.19	.01	.07	.01	-.29	.10	-	.11	-.08	.17	-.33*	-.28
Work	-.15	-.54**	-.35*	-.04	.06	-.24	.58**	.09	-.33*	.11	.35*	.22	-.28	.32*	.18	.25	.38*	.44**	.11	-	.23	.06	-.25	.21
Education	.08	.02	-.06	-.15	.21	.13	.22	.18	.02	.15	-.03	.04	.07	-.11	.07	.07	-.19	.07	-.08	.23	-	.16	.00	-.15
Relationship	-.05	.18	.09	.01	.19	-.10	.10	-.03	.04	-.24	.03	.04	.07	-.04	.06	-.03	-.01	-.07	.17	.06	.16	-	.18	-.01
Substance	.09	.37*	.33*	.42**	-.03	-.15	-.25	.01	.01	.09	-.06	.08	-.03	-.10	-.15	-.03	.30	-.06	-.33*	-.25	.00	.18	-	.09
Region	-.03	-.05	-.21	.02	-.06	-.01	.14	.18	.14	.12	.24	.18	-.09	.02	.02	.02	.32*	.24	-.28	.21	-.15	-.01	.09	-

Note: *p<.05, **p<.01, ***p<.001

Table 6. Regression of MH-QoL Scores onto Explanatory Variables.

Predictor Variable (holding age, gender, # chronic conditions constant)	Is the model significant?	Beta	Robust SE
Routine Health Checks	no (p=.339)	0.065	0.15
Physical	no (p=.111)	0.283	0.01
Leisure	no (p=.317)	0.102	0.11
Under 50	no (p=.136)	0.263	0.1
Over 50	no (p=.115)	0.28	0.1
Religious	no (p=.351)	0.036	0.12
Support	marginal (p=.051)	0.346	0.1
CDRISC	yes (p=.003)	0.51	0.14
AARC gain	no (p=.096)	0.293	0.11
AARC loss	yes (p=.028)	-0.401	0.13
EDS	no (p=.35)	0.038	0.16
Neuroticism	yes (p=.015)	-0.447	0.13
OASES	no (p=.101)	-0.3	0.15
Self Stigma	no (p=.305)	0.118	0.16
WASSPb	no (p=.297)	-0.127	0.16
Work (employed vs not employed)	no (p=.345)	-0.415	0.44
Education (some college vs high school or less)	no (p=.267)	-0.34	0.43
Relationship (partnered vs not partnered)	no (p=.367)	0.507	0.53
Substance (use vs nonuse)	no (p=.301)	-0.31	0.52
Region	no (p=.523)		
Urban	Ref	-	-
Suburban		0.267	0.56
Rural		-0.289	0.37

Chapter Four: Discussion

This study investigated predictors of physical and mental health quality of life in aging AWS. The outcomes variables were PH-QoL scores (reflecting physical health) and MH-QoL scores (reflecting mental health) from the SF36 health-outcomes survey. Key predictor variables included background characteristics of participants, social resources, health-promoting behaviors, socioeconomic resources, stuttering severity, a measure of resilience, a measure of awareness of age-related loss and gain, a measure of every discrimination, a measure of stuttering self-stigma, a measure of neuroticism, and a measure of difficulty communicating in daily situations. PH-QoL scores and MH-QoL scores were informally compared to general U.S. population norms. Correlation analysis was used to identify explanatory variables significantly associated with PH-QoL scores or MH-QoL scores. Multiple regression analysis was used to determine whether any explanatory variables significantly predicted PH-QoL scores or MH-QoL scores with age, gender, and number of chronic health conditions held constant. One explanatory variable was found to significantly predict PH-QoL scores and four explanatory variables were found to significantly predict MH-QoL scores in aging adults who stutter. Finally, additional multiple regression analyses were conducted to determine whether stuttering severity interacted with any of the explanatory variables to predict PH-QoL scores or MH-QoL scores; no such interactions were detected.

Overall Physical and Mental Health Quality of Life in Aging Adults who Stutter

Based on a comparison of PH-QoL scores with general U.S. population norms, aging adults who stutter in the current sample appeared to perceive having better physical health quality of life as a group (without an unusual amount of variation in perceived physical health among aging adults who stutter). The mean PH-QoL score in aging adults who stutter was about four points higher than the mean PH-QoL score for 55–64-year-olds in the general U.S. population and about seven points higher than the mean PH-QoL score for 65–74-year-olds in the general U.S. population. It is unknown how aging adults who stutter might perceive a 4- to 7-point advantage in PH-QoL scores relative to the general population.

To our knowledge, this is the first investigation to document perceived physical health in aging adults who stutter. Thus, there is little existing evidence for comparison. As mentioned in the Introduction, Boyle (2015) found better overall perceived quality of life in adults who stutter age 65+ years relative to younger and middle-aged adults who stutter. Although self-ratings of physical health were included on the quality-of-life measure used by Boyle (2015), he did not specifically report results of those questions. Thus, it is difficult to determine to what extent physical health may have contributed to the overall perception of improved quality of life in his sample of aging adults who stutter. Another study did use the SF-36 health outcomes survey to investigate physical and mental health quality of life in young adults who stutter (ages 18-32 years) living in Iran (Kasbi, Mokhlesin, Maddah, Noruzi, Monshizadeh & Khani, 2015). That study found that young adults who stutter perceived poorer physical health and greater limitations due to physical problems relative to typically fluent young adults. We observed the

opposite, suggesting that as adults who stutter age perceived physical health improves and may even surpass that of typically fluent aging adults. This is consistent with Boyle's (2015) finding that aging adults who stutter perceive better overall quality of life than younger and middle-aged adults who stutter. The reasons for this trend are unknown.

On the other hand, relative to general U.S. population norms, aging adults who stutter in the current sample perceived having somewhat lower mental health quality of life as a group (again, without an unusual amount of variation in perceived mental health among aging adults who stutter). The mean MH-QoL score in aging adults who stutter was about 1.5 points lower than the mean MH-QoL score for 55–64-year-olds in the general U.S. population and about 3 points lower than the mean MH-QoL score for 65–74-year-olds in the general U.S. population. Again, it is unknown how aging adults who stutter might perceive a 1.5- to 3-point disadvantage in MH-QoL scores relative to the general population.

As reviewed in the Introduction, this is not the first study of perceived mental health in adults who stutter including aging adults who stutter. For example, Boyle (2015) found no differences in empowerment and self-esteem/self-efficacy in aging adults who stutter versus younger or middle-aged adults who stutter. In contrast, Bricker-Katz et al. (2009) found that aging adults who stutter had fear of negative evaluation in the social phobia range and other negative affective reactions to their stuttering. Bricker-Katz et al. (2010) found evidence that these effects were more likely to be amplified in aging adults who stutter who continued to work as well as for aging adults who stutter who continued to struggle with self-acceptance of stuttering. In the

current study, about half of the participants were still employed and slightly less than half reported any involvement in self-help groups (which are designed to foster self-acceptance and emotional well-being). One speculation is that continued employment by several participants and/or lack of involvement in self-help groups had a role in driving down MH-QoL scores in the current group of aging adults who stutter relative to the general U.S. population.

In regard to the 4- to 7-point advantage in mean PH-QoL scores and the 1.5- to 3-point disadvantage in mean MH-QoL scores aging adults who stutter (aged 55-64 and 65-74 years old) reported relative to the general U.S. population, we consulted the literature to find a frame of reference on how to interpret these differences. Our literature search led us to the concept of minimal clinically important differences (MCIDs) in SF36 scores. MCIDs estimate the minimal change in score associated with a perceived change in physical or mental health quality of life (see McGlothlin & Lewis, 2014). Developers of the SF36 survey determined MCIDs for people with hypertension, congestive heart failure, myocardial infarction, type II diabetes, or clinical depression who experienced reduced, steady, or worsening symptoms over a period of 12 months. PH-QoL scores changed an average of +/-5.42 points while MH-QoL scores changed an average of +/-6.33 points (Ware, Kosinski & Keller, 1994). Thus, for people in those groups, a change in PH-QoL and MH-QoL scores of approximately +/-6 points was associated with minimal clinically important change in health symptoms.

For people with rheumatoid arthritis, a change in PH-QoL and MH-QoL scores as low as 2.5 points and as high as 10 points has been associated with minimal clinically important change in arthritis symptoms (reviewed by Ward, Guthrie & Alba, 2015). For

patients with systemic lupus erythematosus who reported feeling better over two consecutive clinical visits, PH-QoL scores increased an average of 2.1 points and MH-QoL scores increased an average of 2.4 points. For lupus patients who reported feeling worse over two consecutive clinical visits, PH-QoL scores decreased an average of 2.2 points and MH-QoL scores decreased an average of 1.2 points (Colangelo, Pope & Peschken, 2009). Thus, minimal clinically significant change is not always associated with the same magnitude of change in SF36 scores in positive and negative directions.

In adults with bilateral hearing impairment, regular use of hearing aids (versus no or irregular use) improved PH-QoL scores an average of 2 points and MH-QoL scores an average of 1 point (Chia, Wang, Rohtchina, Cumming, Newall & Mitchell, 2007). In patients with unilateral vocal fold paralysis, PH-QoL scores improved an average of 2 points and MH-QoL scores improved an average of 6 points following vocal fold surgery (Spector et al., 2001). As these findings demonstrate, depending on the health condition, different changes in PH-QoL or MH-QoL scores are associated with minimal clinically important change in health symptoms. Although it is unknown how much change (positive or negative) in PH-QoL or MH-QoL scores represents minimal clinically important change in aging adults who stutter, we believe that the higher 4-7 point advantage in our sample's PH-QoL scores and 1.5-3 point disadvantage in our sample's MH-QoL scores (compared to general U.S population norms) are likely to be noticeable daily to some extent and deserve to be further explored in terms of functional impact.

To summarize, the current results point to better perceived physical health but slightly worse perceived mental health in aging adults who stutter when compared to the general U.S. population. One question is whether this mismatch between perceived

physical and mental health is potentially significant in shaping successful aging. Another question concerns potential sources of this mismatch. In the section that follows, we discuss explanatory variables that predict increases as well as decreases in perceived physical and mental health quality of life in aging adults who stutter.

Predictors of Physical Health Quality of Life in Aging Adults who Stutter

The possibility that explanatory variables targeted in this study predicted physical health quality of life in aging adults who stutter was partially supported. Specifically, one explanatory variable - increased awareness of age-related loss - predicted lower perceived physical health in aging adults who stutter. This same finding has been very common in studies on aging adults (Sabatini et al., 2020). Sabatini et al. (2020) speculated that people who perceive more age-related loss may view age-related changes as physically limiting and, thus, engage in fewer health-promoting behaviors such as physical activity, leisure activity, and visits to the doctor. Such individuals might also engage more often in substance abuse. However, none of these behaviors were found to be associated with PH-QoL scores in the current study (an additional review of correlations revealed no associations among AARC loss scores and any health-promoting behaviors in the current data set). Thus, it does not appear that aging adults who stutter who perceive greater age-related loss also perceive poorer physical health because they engage in fewer health-promoting behaviors. Based on the current results, it is not clear what mediating factors may have resulted in increased awareness of age-related loss driving worse perceived physical health quality of life in this group.

It is also worth noting that several explanatory variables shown to predict perceived physical health quality of life in other aging groups were not detected here. For example, health-promoting behaviors (e.g., number of physical and leisure activities weekly, number of routine health checks annually, substance nonuse) have been found to predict perceived physical health quality of life in the heterosexual as well as LGBT aging populations (Fredriksen-Goldsen et al., 2015). It is not clear why such factors were not found to predict physical health quality of life in aging adults who stutter. Perhaps these factors were not found to be predictors of PH-QoL because of how healthy, in terms of chronic illnesses, this group was. Since they averaged about one chronic illness, it may be possible that they do not participate in any excess physical or leisure activities to assist in their increasing their perceived physical health, do not go to the doctor any more than once a year, and/or do not abuse substances.

Predictors of Mental Health Quality of Life in Aging Adults who Stutter

The possibility that explanatory variables targeted in this study predicted mental health quality of life in aging adults who stutter was also partially supported. Specifically, two explanatory variables – neuroticism and awareness of age-related loss – predicted worse perceived mental health while two explanatory variables – resilience and number of support groups attended annually – predicted better perceived mental health. In terms of neuroticism, Friedman (2019) points out that people are sometimes high on neuroticism but very low on conscientiousness, known as unhealthy neuroticism; this condition is reliably correlated with depression, alcohol abuse, and debilitating anxiety and panic disorders. Perhaps increased neuroticism predicts decreased mental health

quality of life in aging adults who stutter because members of this group lack conscientiousness, manifesting as unhealthy neuroticism.

In terms of awareness of age-related loss, a moderate correlation between increased awareness of age-related loss and reduced mental health has been consistently observed in the aging population (Sabatini et al., 2020). It has been suggested that high levels of age-related loss increase reflection on mortality and limited time to live (Greenberg, Pyszczynski & Solomon, 1986; Brothers, Gabrian, Wahl & Diehl, 2016). This, in turn, may drive an increase in negative thoughts and feelings; in fact, increased awareness of age-related loss has been found to predict the onset and persistence of depression (Wurm & Benyamini, 2014; Freeman et al., 2016). Since increased awareness of age-related loss was also found to drive lower perceived mental health in aging adults who stutter, care should be taken to monitor for depressive symptoms in this group.

In contrast, we found that increased resilience predicted better perceived mental health quality of life in aging adults who stutter. Fredriksen-Goldsen (2007) defined resilience as behavioral, functional, social, and cultural resources and capacities utilized under adverse circumstances. As outlined in the Introduction, a common finding has been that adults who age more successfully are better at utilizing such resources to cope, which promotes stronger mental functioning. This same process seems to be present in aging adults who stutter. Unfortunately, the current results do not reveal much about which behavioral, functional, social, or cultural resources aging adults who stutter might leverage to be resilient. For example, health-promoting behaviors and

social network variables were not found to be associated with mental health quality of life in the current study, with one exception.

We did find that attending more support groups for stuttering annually (at least for the 15 individuals who reported support group attendance) predicted better perceived mental health in aging adults who stutter. This finding is consistent with other evidence that support group attendance is beneficial for adults who stutter (e.g., Trichon & Tetnowski, 2011; Boyle, 2013; 2015). Boyle (2013) found that support group attendance reduced internalized stigma about stuttering and improved psychological well-being, particularly when an individual attended support groups with the intention of helping others. Trichon and Tetnowski (2011) found that support group involvement can help minimize negative impacts of stuttering on daily functioning and help participants communicate more easily.

Finally, it is worth noting that several explanatory variables shown to predict perceived mental health quality of life in marginalized aging groups were not detected here. For example, a larger social network has been found to be a protective factor for mental health quality of life among LGBT aging adults while increased experience with discrimination has been found to be a risk factor for reduced mental health quality of life in this group (Fredriksen-Goldsen et al., 2015). It is not clear why such factors were not found to predict mental health quality of life in aging adults who stutter. One possibility as to why a larger social network has not been found to be a protective factor for older adults who stutter is that their social network shifts more towards quality over quantity. As observed in Boyle's 2015 study, social support specifically from family increased an adult who stutter's perceived overall quality of life. In regard to an increased experience

with discrimination not being a risk factor for aging adults who stutters' MH-QoL, one possibility is that these individuals do not believe they are being discriminated solely for their stutter. Nineteen of our forty participants shared "your stuttering" as one of the main reasons for why they have been discriminated against in their daily life. Of those nineteen, only ten listed their stuttering alone as the reason for being discriminated, meaning the other nine already feel as if they are being discriminated against for other reasons.

Potential Clinical Implications

It seems important to point out that only one explanatory variable specifically related to stuttering – stuttering support group attendance – was found to predict one of the outcome variables of the study (specifically, greater support group attendance annually predicted better perceived mental health). Therefore, one tentative implication of this study is that speech-language pathologists should endorse, and even organize and facilitate, support groups for aging adults who stutter. It also seems worth mentioning that OASES-CDS scores were significantly associated with perceived mental health in a positive direction, although those scores were not found to significantly predict MH-QoL scores. Still, there does seem to be an association between a reduction in the impact of stuttering on daily communication (as measured by the OASES-CDS) and better perceived mental health. Therefore, speech-language pathologists should also seek ways of helping aging adults who stutter minimize the impact of stuttering on daily communication. Examples might include encouraging aging adults who stutter not to avoid speaking situations, teaching them how to stutter with

reduced struggle, and enriching the expressive language and pragmatic abilities of aging adults who stutter.

None of the other explanatory variables that were found to predict PH-QoL SCORES or MH-QoL SCORES were unique to aging adults who stutter (i.e., all these relationships have been observed at-large in the aging population). One of those explanatory variables – awareness of age-related loss (measured using AARC loss scores) – predicted decreases in perceived physical as well as mental health in aging adults who stutter. Thus, this seems like a particularly important variable to target for promoting successful aging in adults who stutter. Over the lifespan, people continuously define and pursue personal goals and projects within a system of age-graded constraints and resources (Brandtstadter & Rothermund, 2002). Sabatini et al. (2020) speculated that physical health in aging adults who perceive greater age-related loss may be improved by teaching these individuals to cope with, and compensate for, negative age-related changes. Mental health in aging adults who perceive greater age-related loss may be improved by promoting ego-integrity, engaging in fulfilling relationships, and engaging in mindfulness-based interventions that “...teach individuals to accept age-related changes and be compassionate toward themselves” (Sabatini et al., 2020). Support organizations, such as the National Stuttering Association, may serve as important vehicles for bringing such interventions to aging adults who stutter.

In terms of the negative relationship between neuroticism and mental health, Friedman (2019) suggests that individuals exhibiting unhealthy neuroticism are not necessarily candidates for psychotherapy and permanent medication. Rather, he suggests that interventions aimed at increasing physical activity, reducing substance

abuse, improving social and community ties, and increasing self-control and executive function, may help individuals reduce detrimental effects of neuroticism. Speech-language pathologists along with stuttering support organizations may play an important role in promoting such interventions to aging adults who stutter. Cognitive-behavioral intervention, designed to address core temperamental vulnerabilities, has also proven to decrease neuroticism (Barlow, Sauer-Zavala, Carl, Bullis & Ellard, 2018).

Finally, the positive relationship between resilience and perceived mental health suggests that efforts should be made to enhance resilience in aging adults who stutter. Several approaches have been developed to enhance resilience in aging adults including programs promoting creative engagement (e.g., McFadden & Basting, 2010), physical well-being (e.g., Huffman, Schafer & LeBrasseur, 2016), environmental modifications (e.g., Netherland, Finkelstein & Gardner, 2011), and improved self-concept (e.g., Fullen & Gorby, 2016). Stress-management and stress-prevention have also been shown to be beneficial resilience-promoting interventions (Steinhardt & Dolbier, 2008). Moreover, improving social support, social functioning, and self-efficacy may be important for protecting aging adults who stutter from the adversity of chronic stuttering (Craig, Blumgart & Tran, 2011). Once again, speech-language pathologists and stuttering support organizations may play a central role in providing interventions focused on improving resilience in aging adults who stutter.

Study Limitations

The current study was limited by several factors. In terms of participants, the sample size was relatively small for a study of this scope and there was a lack of ethnic

and racial diversity, despite a variety of recruitment campaigns. The old-old age range was not well-represented, nor were individuals from rural regions well-represented. On the other hand, female participants were fairly well-represented in the current study. Our participants were also relatively healthy. Modeled after a study by Fredriksen-Goldsen, Kim, Shiu, Goldsen, and Emler (2015), our survey included: High Blood Pressure, High Cholesterol, Angina, Stroke, Heart Attack, Cancer, Arthritis, Diabetes, Asthma, and HIV/AIDS as options for chronic health conditions they have been diagnosed with by a doctor. Investigating the aging population, adding hearing loss or impairment, depression, and depression or memory problems as options may have been more informative when calculating both PH-QoL and MH-QoL scores.

Because our participants were recruited via stuttering self-help groups, informal social media groups and known individuals willing to participate in research opportunities, our sample may be biased and more representative of individuals who have reached out for help in some way. This study therefore may not be as representative of people who stutter who have not sought help. Those individuals may be more isolated and stigmatized (Boyle, 2015).

The relatively small sample size also had implications for the analysis approach. The original analysis plan was to include all 23 explanatory variables in two separate multiple regression analyses (one with PH-QoL scores as the outcome variable, the other with MH-QoL scores as the outcome variable). However, a rough guideline is to include at least 10 observations per explanatory variable in multiple regression analysis. With just 40 participants, we were limited to multiple regression models that included no more than four explanatory variables (one explanatory variable and the three control

variables age, gender, and number of chronic conditions). This limits our ability to understand how each explanatory variable relates to each outcome variable with all other explanatory variables included in the same models. On the other hand, the current sample was twice as large as the sample sizes included in the only three previously published papers that investigated quality of life in aging adults who stutter.

While there were no interactions detected between stuttering severity and any of the explanatory variables in predicting PH-QoL scores or MH-QoL scores after multiple regression analyses were conducted, it should be noted that twenty three out of our 40 participants self-rated their stuttering behaviors a 3 or less on the WASSP. As mentioned in the Method section, a score of 3 or lower indicates a more mild perception of one's stuttering. This trend in our results may have skewed this interaction so that there was none observed; however, the majority of people who stutter typically tend to be milder in severity (Manning & Beck, 2013).

Future Directions

A variety of future research directions potentially emerge from this project. For example, it would be interesting to investigate precisely how age-related loss manifests in aging adults who stutter. Similarly, the possibility that unhealthy neuroticism develops in some aging adults who stutter due to low conscientiousness may need to be explored. It will also be important to determine precisely what constitutes resilience in aging adults who stutter, and in what life circumstances resilience may matter most for this group. Surprisingly, many of the potential explanatory variables studied here were not found to predict better or worse physical or mental health quality of life in this group;

it may be important to revisit these potential associations using more focused study designs. Several potential interventions aimed at reducing risk factors for lower health quality of life or enhancing protective factors for better health quality of life, will need to be investigated in aging adults who stutter. Finally, in terms of the current data set, it might be interesting to apply advanced modeling such as partial least-squares regression, which is suitable for investigating relationships among multiple explanatory variables and outcome variables in small data sets such as the current one.

Summary and Conclusions

This study adds to a limited body of literature on quality of life in aging adults who stutter by identifying risk and protective factors in physical and mental health quality of life. Increased awareness of age-related loss was identified as a risk factor for lower perceived physical and mental health in aging adults who stutter. Increased neuroticism was also identified as a risk factor for lower perceived mental health, while increased resilience and support group participation were identified as protective factors predicting better perceived mental health. Possible interventions were discussed for coping with age-related loss and neuroticism in addition to promoting resilience. Additional research will be needed to understand how the constructs of awareness of age-related loss, neuroticism, and resilience develop in aging adults who stutter and interact with physical and emotional functioning. Additional research will also be necessary to understand experience of aging in a more diverse sample of aging adults who stutter, and effects of resilience-focused interventions on quality of life in aging adults who stutter.

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Appendices

Appendix A: Informed Consent to Participate in Research

Information to Consider Before Taking Part in this Research Study

Title: Successful Aging in Adults who Stutter: Physical and Mental Health Quality of Life

Study #001966

Overview: You are being asked to take part in a research study. The information below should help you to decide if you would like to participate.

Study Staff: This study is being led by Dr. Nathan Maxfield, Associate Professor of Speech-Language Pathology at the University of South Florida (USF) Tampa campus. This person is called the Principal Investigator.

Study Details: The purpose of the study is to investigate factors impacting health-related quality of life in aging adults who stutter. This study involves responding to an online survey, which should take about 60 minutes to complete.

Participants: You are being asked to take part because you are an adult who stutters, age 50 years or older.

Voluntary Participation: Your participation is voluntary. You do not have to participate and may stop your participation at any time. There will be no penalties or loss of benefits or opportunities if you do not participate or decide to stop once you start.

Benefits, Compensation, and Risks: You will receive no benefits by participating in this study. There is no cost to participate. You will not be compensated for your participation. This research is considered minimal risk. Minimal risk means that study risks are the same as risks you face in daily life.

Study Procedures

If you take part in this study, you will be asked to complete an online survey through an electronic website. This process includes the following steps:

- You will complete the background questionnaire portion of the survey, which consists of questions related to your personal background (e.g., race, gender, education).
- You will complete a survey about your physical and mental health and a variety of factors linked to health quality of life. This will involve selecting responses, typing in responses, and using rating scales.

Confidentiality: All data will be collected anonymously. Results of this study may be

published. However, we will not publish any information that could reveal your identity. Data will be maintained for 5 years and then permanently deleted.

Contact Information If you have any questions, concerns or complaints about this study, call Nathan Maxfield at (813) 974-6190 (or email at nmaxfield@usf.edu). If you have questions about your rights, complaints, or issues as a person taking part in this study, call the USF Institutional Review Board at (813) 974-5638 (or email at RSCH-IRB@usf.edu).

Do you consent to participate in this study?

- I consent (1)
- I do not consent (2)

Q1.2 When responding to this survey, please do your best to think about your circumstances broadly, before the COVID19 pandemic occurred.

- I acknowledge this instruction (1)

Appendix B: Survey

Q2.1 What was your birth date?

	Month	Day	Year
Please Select: (1)	▼ January (1 ... December (12)	▼ 1 (1 ... 31 (31)	▼ 1900 (1 ... 2049 (150)

Q2.2 What is your gender?

- Male (1)
 - Female (2)
 - Non-binary / third gender (3)
 - Prefer not to say (4)
-

Q2.3 What is your ethnicity?

- Not Hispanic or Latino (1)
 - Hispanic or Latino (2)
-

Q2.4 What is your race?

- American Indian / Alaska Native (1)
 - Asian (2)
 - Native Hawaiian or other Pacific Islander (3)
 - Black or African American (4)
 - White (5)
 - More than one race (6)
-

Q2.5 Which best describes the geographic region in which you live?

- Urban (1)
 - Suburban (2)
 - Rural (3)
-

Q2.6 As a child, were you formally diagnosed with stuttering by a speech-language pathologist / speech therapist?

- Yes. In the box below, please tell us how many years old you were when you began to stutter.
(1) _____
 - No (2)
-

Q2.7 Do you currently identify as a person who stutters?

Yes (1)

No (2)

Q2.8 Have you ever been told by a doctor that you have any of the following conditions? (click all that apply)

High blood pressure (1)

High cholesterol (2)

Angina (3)

Heart attack (4)

Stroke (5)

Cancer (6)

Arthritis (7)

Diabetes (8)

Asthma (9)

HIV/AIDS (10)

Q2.9 How many people currently live in your household? (including you)

▼ 1 (1) ... 150 (150)

Q2.10 What is your current employment status?

- Full time (1)
 - Part time (2)
 - Retired (3)
 - Student (4)
 - Homemaker (5)
 - Temporarily unemployed (6)
 - Permanently unemployed (7)
-

Q2.11 If currently employed, does your job involve unpredictable speaking situations with unpredictable people?

- Yes (1)
 - No (2)
 - Not applicable (3)
-

Q2.12 What is your annual household income?

- Less than \$20,000 (1)
 - \$20,001 to \$44,999 (2)
 - \$45,000 to \$139,999 (3)
 - \$140,000 to \$149,999 (4)
 - \$150,000 to \$199,999 (5)
 - \$200,000 + (6)
-

Q2.13 What is the highest education level you completed?

- Grade school (1)
 - Middle school (2)
 - High school / GED (3)
 - Vocational / Technical school (4)
 - College or University - Undergraduate (5)
 - College or University - Master's Degree (6)
 - College or University - Doctorate (7)
-

Q2.14 What is your relationship status?

- Partnered or married (1)
 - Single (2)
 - Widowed (3)
 - Separated (4)
 - Divorced (5)
-

Q2.15 Estimate how many people UNDER 50 years old you interact with in a typical month (including family, friends, colleagues, neighbors, any others).

▼ 0 (1) ... 500 (501)

Q2.16 Estimate how many people OVER 50 years old you interact with in a typical month (including family, friends, colleagues, neighbors, any others).

▼ 0 (1) ... 500 (501)

Q2.17 How many spiritual or religious events have you attended in the past 30 days?

▼ 0 (1) ... 100 (101)

Q2.18 How many times per week do you engage in physical activity that increases your breathing or heart rate?

▼ 0 (1) ... 100 (101)

Q2.19 How many times per week do you engage in leisurely activity that does not increase your breathing or heart rate (such as reading, meditation, drawing, other)?

▼ 0 (1) ... 100 (101)

Q2.20 In the past year, how many times have you visited a physician for a routine check-up (that is, a general physical exam not related to a specific injury, illness, or condition)?

▼ 0 (1) ... 500 (501)

Q2.21 In the past year, how many times have you visited a speech-language pathologist / speech therapist for stuttering therapy?

▼ 0 (1) ... 500 (501)

Q2.22 In the past year, how many support group functions for people who stutter have you attended?

▼ 0 (1) ... 500 (501)

Q2.23 Which of the following applies to you?

- I currently do not smoke cigarettes (1)
 - I currently smoke cigarettes *every* day and I have smoked 100 or more cigarettes in my lifetime (2)
 - I currently smoke cigarettes *some* days and I have smoked 100 or more cigarettes in my lifetime (3)
-

Q2.24 In the past 30 days, have you consumed five or more drinks on one occasion?

- Yes (1)
 - No (2)
-

Q2.25 Do you currently use drugs for reasons other than medical reasons?

- Yes (1)
 - No (2)
-

Q2.26 Were you born in the United States?

- Yes (1)
 - No (2)
 - Not sure (3)
-

Q2.27 Is English your native language?

Yes (1)

No (2)

End of Block: Background Questions Block

Start of Block: Stuttering Questions Block

Q3.1

Please indicate the severity of your STUTTERING BEHAVIORS using a 7-point scale, 1 indicating 'none' and 7 indicating 'very severe'.

	1 (None) (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 (Very severe) (7)
Frequency of stutters (1)	<input type="radio"/>						
Physical struggle during stutters (2)	<input type="radio"/>						
Duration of stutters (3)	<input type="radio"/>						
Uncontrollable stutters (4)	<input type="radio"/>						
Urgency / fast speech rate (5)	<input type="radio"/>						
Associated facial / body movements (6)	<input type="radio"/>						
General level of physical tension (7)	<input type="radio"/>						
Loss of eye contact (8)	<input type="radio"/>						
Other (describe) (9)	<input type="radio"/>						

Q3.2 Please indicate the severity of your THOUGHTS ABOUT STUTTERING using a 7-point scale, 1 indicating 'none' and 7 indicating 'very severe'.

	1 (None) (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 (Very severe) (7)
Negative thoughts before speaking (1)	<input type="radio"/>						
Negative thoughts during speaking (2)	<input type="radio"/>						
Negative thoughts after speaking (3)	<input type="radio"/>						

Q3.3 Please indicate the severity of your FEELINGS ABOUT STUTTERING using a 7-point scale, 1 indicating 'none' and 7 indicating 'very severe'.

	1 (None) (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 (Very severe) (7)
Frustration (1)	<input type="radio"/>						
Embarrassment (2)	<input type="radio"/>						
Fear (3)	<input type="radio"/>						
Anger (4)	<input type="radio"/>						
Helplessness (5)	<input type="radio"/>						
Other (describe) (6)	<input type="radio"/>						

Q3.4 Please indicate the severity of your AVOIDANCE DUE TO STUTTERING using a 7-point scale, 1 indicating 'none' and 7 indicating 'very severe'.

	1 (None) (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 (Very severe) (7)
Avoidance...Of words (1)	<input type="radio"/>						
Avoidance...Of situations (2)	<input type="radio"/>						
Avoidance...Of talking about stuttering with others (3)	<input type="radio"/>						
Avoidance...Of admitting the problem to yourself (4)	<input type="radio"/>						

Q3.5 Please indicate the severity of your DISADVANTAGE DUE TO STUTTERING using a 7-point scale, 1 indicating 'none' and 7 indicating 'very severe'.

	1 (None) (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 (Very severe) (7)
Disadvantage...At home (1)	<input type="radio"/>						
Disadvantage...Socially (2)	<input type="radio"/>						
Disadvantage...Educationally (3)	<input type="radio"/>						
Disadvantage...At work (4)	<input type="radio"/>						

Q4.1 In general, would you say your health is:

- Excellent (1)
 - Very good (2)
 - Good (3)
 - Fair (4)
 - Poor (5)
-

Q4.2 COMPARED TO ONE YEAR AGO, how would you rate your health in general NOW?

- Much better now than one year ago (1)
 - Somewhat better now than one year ago (2)
 - About the same (3)
 - Somewhat worse now than one year ago (4)
 - Much worse now than one year ago (5)
-

Q4.3 The following items are about activities you might do during a typical day. Does YOUR HEALTH NOW LIMIT YOU in these activities? If so, how much?

	Yes, limited a lot (1)	Yes, limited a little (2)	No, not limited at all (3)
VIGOROUS ACTIVITIES, such as running, lifting heavy objects, participating in strenuous sport (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
MODERATE ACTIVITIES, such as moving a table, pushing a vacuum cleaner, bowling, or playing golf (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lifting or carrying groceries (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Climbing SEVERAL flights of stairs (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Climbing ONE flight of stairs (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Bending, kneeling, or stooping (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Walking MORE THAN A MILE (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Walking SEVERAL BLOCKS (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Walking ONE BLOCK (9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Bathing or dressing yourself (10)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q4.4 During the PAST 4 WEEKS, have you had any of the following problems with your work or other regular daily activities AS A RESULT OF YOUR PHYSICAL HEALTH?

	Yes (1)	No (2)
Cut down the AMOUNT OF TIME you spent on work or other activities (1)	<input type="radio"/>	<input type="radio"/>
ACCOMPLISHED LESS than you would like (2)	<input type="radio"/>	<input type="radio"/>
Were limited in the KIND of work or other activities (3)	<input type="radio"/>	<input type="radio"/>
Had DIFFICULTY performing the work or other activities (for example, it took extra effort) (4)	<input type="radio"/>	<input type="radio"/>

Q4.5 During the PAST 4 WEEKS, have you had any of the following problems with your work or other regular daily activities AS A RESULT OF ANY EMOTIONAL PROBLEMS (such as feeling depressed or anxious)?

	Yes (1)	No (2)
Cut down the AMOUNT OF TIME you spent on work or other activities (1)	<input type="radio"/>	<input type="radio"/>
ACCOMPLISHED LESS than you would like (2)	<input type="radio"/>	<input type="radio"/>
Didn't do work or other activities as CAREFULLY as usual (3)	<input type="radio"/>	<input type="radio"/>

Q4.6 During the PAST 4 WEEKS, to what extent has your physical health or emotional problems interfered with your normal social activities with family, friends, neighbors, or groups?

- Not at all (1)
 - Slightly (2)
 - Moderately (3)
 - Quite a bit (4)
 - Extremely (5)
-

Q4.7 How much BODILY pain have you had during the PAST 4 WEEKS?

- None (1)
 - Very mild (2)
 - Mild (3)
 - Moderate (4)
 - Severe (5)
 - Very severe (6)
-

Q4.8 During the PAST 4 WEEKS, how much did PAIN interfere with your normal work (including both work outside the home and housework)?

- Not at all (1)
 - A little bit (2)
 - Moderately (3)
 - Quite a bit (4)
 - Extremely (5)
-

Q4.9

These questions are about how you feel and how things have been with you DURING THE PAST 4 WEEKS. For each question, please give the one answer that comes closest to the way you have been feeling.

How much of the time during the PAST 4 WEEKS...

	All of the time (1)	Most of the time (2)	A good bit of the time (3)	Some of the time (4)	A little of the time (5)	None of the time (6)
Did you feel full of pep? (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Have you been a very nervous person? (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Have you felt so down in the dumps that nothing could cheer you up? (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Have you felt calm and peaceful? (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Did you have a lot of energy? (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Have you felt downhearted and blue? (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Did you feel worn out? (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Have you been a happy person? (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Did you feel tired? (9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q4.10 During the PAST 4 WEEKS, how much of the time has YOUR PHYSICAL HEALTH OR EMOTIONAL PROBLEMS interfered with your social activities (like visiting with friends, relatives, etc.)?

- All of the time (1)
- Most of the time (2)
- Some of the time (3)
- A little of the time (4)
- None of the time (5)

Q4.11 How TRUE or FALSE is EACH of the following statements for you?

	Definitely true (1)	Mostly true (2)	Don't know (3)	Mostly false (4)	Definitely false (5)
I seem to get sick a little easier than other people (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am as healthy as anybody I know (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I expect my health to get worse (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My health is excellent (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

End of Block: Health Quality of Life Questions Block

Start of Block: Resilience Questions Block

Q5.1 Indicate how much you agree with the following statements as they apply to you over the last MONTH. If a particular situation has not occurred recently, answer according to how you think you would have felt.

	not true at all (1)	rarely true (2)	sometimes true (3)	often true (4)	true nearly all the time (5)
I am able to adapt when changes occur. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have at least one close and secure relationship that helps me when I am stressed. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When there are no clear solutions to my problems, sometimes fate or God can help. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can deal with whatever comes my way. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Past successes give me confidence in dealing with new challenges and difficulties. (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I try to see the humorous side of things when I am faced with problems. (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Having to cope with stress can make me stronger. (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I tend to bounce back after illness, injury, or other hardships. (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Good or bad, I believe that most things happen for a reason. (9)	<input type="radio"/>				
I give my best effort no matter what the outcome may be. (10)	<input type="radio"/>				
I believe I can achieve my goals, even if there are obstacles. (11)	<input type="radio"/>				
Even when things look hopeless, I don't give up. (12)	<input type="radio"/>				
During times of stress / crisis, I know where to turn for help. (13)	<input type="radio"/>				
Under pressure, I stay focused and think clearly. (14)	<input type="radio"/>				
I prefer to take the lead in solving problems rather than letting others make all the decisions. (15)	<input type="radio"/>				
I am not easily discouraged by failure. (16)	<input type="radio"/>				
I think of myself as a strong person when dealing with life's challenges and difficulties. (17)	<input type="radio"/>				

I can make unpopular or difficult decisions that affect other people, if it is necessary. (18)

I am able to handle unpleasant or painful feelings like sadness, fear, and anger. (19)

In dealing with life's problems, sometimes you have to act on a hunch without knowing why. (20)

I have a strong sense of purpose in life. (21)

I feel in control of my life. (22)

I like challenges. (23)

I work to attain my goals no matter what roadblocks I encounter along the way. (24)

I take pride in my achievements. (25)

End of Block: Resilience Questions Block

Start of Block: Perceptions of Aging Questions Block

Q6.1 With my increasing age, I realize that...

	Not at all (1)	A little bit (2)	Moderately (3)	Quite a bit (4)	Very much (5)
...I appreciate relationships and people much more. (1)	<input type="radio"/>				
...my mental capacity is declining. (2)	<input type="radio"/>				
...I pay more attention to my health. (3)	<input type="radio"/>				
...I have to limit my activities. (4)	<input type="radio"/>				
...I have more experience and knowledge to evaluate things and people. (5)	<input type="radio"/>				
...I have less energy. (6)	<input type="radio"/>				
...I have a better sense of what is important to me. (7)	<input type="radio"/>				
...I feel more dependent on the help of others. (8)	<input type="radio"/>				
...I have more freedom to live my days the way I want. (9)	<input type="radio"/>				
...I find it harder to motivate myself. (10)	<input type="radio"/>				

Start of Block: Everyday Discrimination Questions Block

Q7.1 In your day-to-day life, how often do any of the following things happen to you?

	Almost every day (1)	At least once a week (2)	A few times a month (3)	A few times a year (4)	Less than once a year (5)	Never (6)
You are treated with less courtesy than other people are. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
You are treated with less respect than other people are. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
You receive poorer service than other people at restaurants or stores. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
People act as if they think you are not smart. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
People act as if they are afraid of you. (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
People act as if they think you are dishonest. (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
People act as if they are better than you. (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
You are called names or insulted. (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

You are
threatened
or harassed.
(9)



Q7.2 If you experience any of the above situations AT LEAST a few times a year, what do you think is the main reason for these experiences? (check all that apply)

- Your Ancestry or National Origins (1)
- Your Gender (2)
- Your Race (3)
- Your Age (4)
- Your Religion (5)
- Your Height (6)
- Your Weight (7)
- Some other Aspect of Your Physical Appearance (8)
- Your Sexual Orientation (9)
- Your Education or Income Level (10)
- A Physical Disability (11)
- A Psychological Disability (12)
- Your Stuttering (13)

End of Block: Everyday Discrimination Questions Block

Start of Block: Stuttering Self-Stigma Questions Block

Q8.1

Answer what you believe about people who stutter in general.

I believe that people who stutter are generally:

	Strongly disagree (1)	Somewhat disagree (2)	Neither agree nor disagree (3)	Somewhat agree (4)	Strongly agree (5)
Nervous (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Self-confident (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Intelligent (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Capable (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Incompetent (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Insecure (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Outgoing (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Shy (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Optimistic (9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

End of Block: Stuttering Self-Stigma Questions Block

Start of Block: Neuroticism Questions Block

Q9.1 Please answer each question by indicating Yes or No. There are no right or wrong answers, and no trick questions. Work quickly and do not think too long about the exact meaning of the questions.

	Yes (1)	No (2)
Does your mood often go up and down? (1)	<input type="radio"/>	<input type="radio"/>
Do you ever feel 'just miserable' for no reason? (2)	<input type="radio"/>	<input type="radio"/>
Are you an irritable person? (3)	<input type="radio"/>	<input type="radio"/>
Are your feelings easily hurt? (4)	<input type="radio"/>	<input type="radio"/>
Do you often feel 'fed-up'? (5)	<input type="radio"/>	<input type="radio"/>
Would you call yourself a nervous person? (6)	<input type="radio"/>	<input type="radio"/>
Are you a worrier? (7)	<input type="radio"/>	<input type="radio"/>
Would you call yourself tense or 'highly-strung'? (8)	<input type="radio"/>	<input type="radio"/>
Do you worry too long after an embarrassing experience? (9)	<input type="radio"/>	<input type="radio"/>
Do you suffer from 'nerves'? (10)	<input type="radio"/>	<input type="radio"/>
Do you often feel lonely? (11)	<input type="radio"/>	<input type="radio"/>
Are you often troubled about feelings of guilt? (12)	<input type="radio"/>	<input type="radio"/>

End of Block: Neuroticism Questions Block

Start of Block: Difficulty Communication in Daily Situations Block

Q10.1

Indicate how much difficulty you are CURRENTLY experiencing in these situations, not how fluent you are. Unless otherwise indicated, all questions refer to face-to-face or in-person interactions with others.

How DIFFICULT is it for you to communicate in the following general situations?

	Not at all Difficult (1)	Not very Difficult (2)	Somewhat Difficult (3)	Very Difficult (4)	Extremely Difficult (5)
Talking with another person one-on-one (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Talking while under time pressure (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Talking in front of a small group of people (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Talking in front of a large group of people (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Talking with people you DO know well (e.g., friends) (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Talking with people you DO NOT know well (e.g., strangers) (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Talking on the telephone in general (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Introducing yourself (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Continuing to speak regardless of how your listener responds to your speech (9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Standing up for yourself verbally (e.g., defending your opinion, challenging someone who cuts in line in front of you) (10)

Q10.2 How DIFFICULT is it for you to communicate in the following situations at work?

	Not Applicable (1)	Not at all Difficult (2)	Not very Difficult (3)	Somewhat Difficult (4)	Very Difficult (5)	Extremely Difficult (6)
Using the telephone at work (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Giving oral presentations (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Talking with co-workers or other people you work with (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Talking with customers or clients (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Talking with your supervisor or boss (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q10.3 How DIFFICULT is it for you to communicate in the following social situations?

	Not at all Difficult (1)	Not very Difficult (2)	Somewhat Difficult (3)	Very Difficult (4)	Extremely Difficult (5)
Participating in social events (e.g., making "small talk" at parties) (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Telling stories or jokes (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Asking for information (e.g., asking for directions) (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ordering food in a restaurant (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ordering food at a drive-thru (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q10.4 How DIFFICULT is it for you to communicate in the following situations at home?

	Not Applicable (1)	Not at all Difficult (2)	Not very Difficult (3)	Somewhat Difficult (4)	Very Difficult (5)	Extremely Difficult (6)
Using the telephone at home (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Talking to your spouse / significant other (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Talking to your children or grandchildren (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Talking to members of your extended family (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Taking part in family discussions (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

End of Block: Difficulty Communication in Daily Situations Block
