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Resilience Training and Quality of Life in Stuttering Therapy: A Systematic Review

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RESILIENCE TRAINING AND QUALITY OF LIFE IN STUTTERING THERAPY:

A SYSTEMATIC REVIEW

by

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ABSTRACT

This study investigated correlations between resilience and quality of life relative to stuttering therapy. A systematic review and meta-analysis of articles published with focuses on stuttering, resilience training, and quality of life was conducted. Electronic databases, PubMed, and Google Scholar, were used to gain results of relevant published articles. Both search engines in this review produced relevant articles. Google Scholar produced more articles that met all 3 inclusion criteria, while PubMed produced more results that met at least 1 or 2 inclusion criteria. From both databases, numerous articles included the need for a multidimensional therapy emphasizing personal resilience. However, no such program appears to exist, relative to mentoring children who stutter cope with adversity and negative aspects of stuttering. Therefore, the goal of stuttering therapy should focus on improving the individual's quality of life by instilling resilient mindsets to help manage the negative effects and consequences associated with stuttering.

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1.0 INTRODUCTION

1.1 Define Stuttering

Stuttering is historically defined as a speech disorder that affects 1% of the population and is typically characterized by repetitions, prolongations, and inaudible postural fixations during speech production (Bloodstein & Bernstein-Ratner, 2008). Developmental stuttering affects approximately 5% of children, and typically surfaces between the ages of 3 to 5 (Yairi & Ambrose, 2013); while the majority of incipient pediatric stuttering cases spontaneously recover, with or without treatment, (Bloodstein, 2006), remaining cases (approximately 1% of the global population) persist throughout the lifespan (Frigerio-Domingues & Drayna, 2017). While the etiology of stuttering remains contentious (Prasse & Kikano, 2008), data suggests an underlying genetic genesis (Fisher, 2010; Kang et al., 2010; Yairi et al., 1996), specifically involving the AP4E1 process (Raza et al., 2015) and is thus considered a chronic neurological disease (Raza et al., 2012; Craig et al., 2011; Raza et al., 2015). While stuttering is typically recognized in speech production, the phenomenon also extends into multiple expressive modalities, which are documented to include: written, musical, and sign language modalities (Snyder, 2009)

1.2 Consequences of Stuttering – Impacting Quality of Life

Those living with persistent developmental stuttering are also confronted with negative social consequences and stereotypes (Horsley & Fitzgibbon, 1987; Zeigler-Hill et al., 2020). These stereotypes are normally seen as undesirable and assign negative traits to people who stutter (i.e., introversion, shyness, and nervousness) which have been documented (Blood et al, 2001; Betz et al., 2008). Poor academic performance is also correlated with childhood stuttering (Guitar, 2013). In addition, pediatric stuttering is associated with additional challenges relative to social communication and opportunities (i.e., creating social relationships, rejection of peers, and being viewed as more vulnerable in comparison to fluent peers) (Tran et al., 2011; Walden & Lesner, 2018; Evans et al., 2008). Consequently, data shows that children who stutter (CWS) are at a greater risk of receiving dominance behavior from their peers, which may include: mocking, name calling, mimicking, threats, or even physical abuse (Langevin & Prasad, 2012; Yaruss et al., 2018). The negative stereotypes also put CWS at risk for stereotype threat, which instills a negative mindset resulting in the children fulfilling the roles of predicted negative behaviors (Schmader et al., 2008).

Researchers document that the negative social consequences of stuttering threaten the quality of life of CWS (Beilby et al., 2012). Quality of life has been viewed as the variance of realistic outcomes and unmet aspirations (Brown et al., 1989), or a personal assessment of one's satisfaction of life (Plexico et al., 2019). The negative social consequences of stuttering may result in the inability of an individual to engage in everyday actions (Yaruss & Quesal, 2004), which places possible frustration in the attempt to execute these actions lowering the rate of quality of life (Klompas & Ross,

2004). In CWS, low self-esteem, social isolation, higher levels of anxiety, and withdrawal are all aspects of quality of life known to reduce the rate of quality of life (Iverach & Rapee, 2014; Klein & Hood, 2004; Carter et al., 2019). Nevertheless, all of these negative feelings and emotions largely impact children who stutter quality of life negatively (Croft & Byrd, 2020).

1.3 Conventional Stuttering Therapy

Conventional stuttering therapy seeks to enhance fluency, and reduce overt stuttering behaviors (Prasse & Kikano, 2008). However, conventional stuttering treatment commonly results in a high rate of relapse (Craig & Calver 1991; Craig et al., 2009). Researchers, who reported a high rate of relapse, suggesting conventional stuttering treatment goals target overt symptoms of stuttering, instead of the overall stuttering experience, which includes both overt and covert aspects of stuttering (Guntupalli et al., 2006). While overt stuttering speech behaviors include: prolongations, sound/syllable repetitions, speech interjections, or body movements (Murphy et al., 2007), covert stuttering is when a PWS attempts to conceal their stuttering behaviors as a means of avoiding social punishment (Douglass et al., 2018; Guntupalli et al., 2006), and it is believed to have a greater overall impact on quality of life (Constantino et al., 2017).

1.4 Personal Resilience Helps Improve Quality of Life

With stuttering being a chronic neurological disease and resistant to conventional stuttering treatment, researchers have suggested a need for revised assessment strategies and treatment supplements focusing on the clients' overall quality of life (Yaruss et al., 2012). Treatment methods that aim towards quality of life have shown a higher client

satisfaction rate (Yaruss, 2010). Since stuttering is a chronic neurological disease with no known cure (Raza et al., 2015), PWS may benefit from a treatment method focusing on quality of life (Craig et al., 2011), highlighting factors such as: "physical functioning, emotional and mental health, social interaction, vocational experiences, ability to fulfill expected roles, and ability to achieve goals" (Yaruss, 2010).

Another predictive factor of a higher quality of life is the idea of personal antifragility which is defined as the capability to thrive as a consequence of stressors, mistakes, attacks, failures, and shocks (Taleb, 2014). One characteristic that correlates with a higher quality of life and antifragility is resilience (Werner, 1995; Craig et al., 2011). Resilience has been defined as "the capacity of a system to adapt successfully to significant challenges that threaten its function, viability, or development" (Masten, 2018), or having the skills to maintain a functional quality of life when dealing with the stresses and strains of life (Taylor et al., 2011; Craig et al., 2011). People with resilience have been described with characteristics as showing high self-esteem, self-efficacy, and the stronger ability to adapt (Freud & Amir, 2020; Rutter, 1985). With resilience, there are positive correlates to a person's communication and problem-solving skills, and the active mindset to change an outcome with their own actions (Werner, 1995). Due to the negative stereotypes and reduced social opportunities associated with pediatric stuttering, CWS are at higher risk for a lack of personal resilience (Freud & Amir, 2020). However, research indicates that personal resilience can be taught, and is a strong predictor for a higher quality of life especially in CWS (Caughter & Crofts, 2018).

1.5 Resilience Training as a Supplement to Conventional Stuttering Treatment

While research indicates that resilient children have more emotional stability and higher quality of life (Craig et al., 2011), which correlates with increased client investment in stuttering therapy (Druker et al., 2019), there is a scarcity of data specifically applying resilience (training or strategies) within stuttering treatment (Caughter & Crofts, 2018). While there are limited examples of resilience training within pediatric stuttering treatment (Caughter & Dunsumir, 2017; Craig et al., 2011), there are a few of existing resilience training strategies from other treatment paradigms that could be integrated into conventional stuttering treatment. Druker et al. (2019) implemented a resilience training program for parents to use that would translate those resilient behaviors to the CWS. Components administered were aspects of training modules and activities that were drawn from contemporary, published, efficacious resilience training programs for early childhood. The results indicate that the resilience training impacted the parents positively, which increased resilience in the CWS. Caughter & Crofts (2018) approached the phenomenon of resilience training using the "Reaching In Reaching Out" program that is designed to instill a resilient mindset in children from birth to 8 years old, and the "Penn Resilience Program", which provides cognitive-behavioral therapy and advance coping skills, as a means of developing a resilient mindset in children. Druker et al., (2019) reviewed methods derived from different research studies on resilience, but did not offer details specific to stuttering therapy, and instead focused on parental training. While both studies suggest positive results when incorporating these variations of resilient training methods on CWS, neither study detailed replicable clinical training specific for CWS. Caughter & Crofts (2018) incorporates the RIRO program that is meant to build resilient mindsets, but there is an age criterion of birth to 8 years old.

While children by the age of 8 years old have already developed thinking styles and world views (Caughter & Crofts, 2018), CWS need a streamlined program administered throughout adolescence that specifically targets stressors the CWS may face. Resilience training therapy can be overall beneficial for CWS to learn how to create coping skills that combat the everyday stressors, and to manage the additional negative consequences associated with stuttering (Plexico et al., 2019).

1.6 Purpose

As previously stated, conventional stuttering often targets fluency enhancement, while not addressing covert stuttering or quality of life, and is known for its high rate of therapeutic relapse. However, resilience training based on the individual has been known to improve quality of life, which is particularly apposite, as stuttering is now classified as a chronic neurological disease. Nevertheless, the implementation of resilience training into the stuttering treatment model is inadequately represented. Therefore, the purpose of this systematic review and sequential meta-analysis is to review all existing data relative to the following: stuttering, resilience or resilience training, and quality of life.

2.0 METHODS

This systematic review and meta-analysis were administered by following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) checklist and guidelines. The search for articles was completed and independently verified by another reader. Different search methods were administered for the systematic review and meta-analysis. The databases PubMed and Google Scholar were used to select and find journal articles.

2.1 Key Concepts/ Search Terms and Inclusion Criteria

For this review, the key concepts investigated were first pilot tested within the PubMed database. Administering these concepts, PubMed's Boolean search was utilized for the means of optimizing the results within the specific search keywords. The optimal key words from the search on PubMed were then utilized as keywords for the following search on Google Scholar's database. The key words were plugged into Google Scholar's algorithm to provide more useful results. For each search, the inclusion criteria included at least one of the following key concepts: stuttering, quality of life, resilience training. The variation of articles included at least one of the concepts, two of the concepts, or the article met all three inclusion criteria concepts. All articles within the search were limited to only published articles in English.

2.2 Data Search and Extraction

For the review, a search was started using PubMed in the initial stages on January 24, 2022, at 11:30 A.M and ended via Google Scholar on February 20, 2022, at 10:00 A.M. Initially on PubMed, various combinations of keywords were tested using the "advanced search" option to fulfill the use of the Boolean search method. The combinations of keywords inputted initially were broad and numerous, but the most conclusive results were produced from more refined keywords. The most applicable results came from using the following targeted search terms: **((stutter or stuttering or stammer or stammering) and (child or children or pediatric or adolescent) and (resilience or mindfulness or emotional or training) and (quality of life or satisfaction or self-perception)).** Many articles were found to have met inclusion criteria; therefore, this indicated the specific keywords provided a valid search. These fkeywords were then applied to the search using Google Scholar with the keywords as the following: **resilience, quality of life, stuttering**. This provided a wide range of results that also met inclusion criteria which highlights the validity of the search keywords.

2.3 Exclusion Criteria

Initially with the search on PubMed, a total of 69 articles resulted from the targeted search terms. When the database search was complete through PubMed with viable keywords, the articles were then sorted from the 69 results based on the inclusion criteria. Out of the resulting 69 articles, the exclusion of 51 articles was made based on the title relevance within the inclusion criteria concepts above. The remaining 18 articles were left for formal review based on each article's abstract and title having met at least one of the inclusion criteria (i.e., included at least one, a combination of two, or all three

inclusion criteria). Seven of the articles were then excluded after viewing the abstracts which did not meet the inclusion criteria. Of the 11 remaining articles, three met all three inclusion criteria according to the objective of this review (see Figure 1).

From the key words used for the search via Google Scholar, a total result of 11,800 articles was provided. Google Scholar uses an unknown algorithm, which was used to ensure that the top ranked and relevant articles were found based on this review's inclusion criteria. Due to the high number of results from Google Scholar, the search was deemed concluded once 20 articles in a row were not relevant and did not meet the inclusion criteria. A general search was then administered through Google Scholar of the results before the 20 consecutive articles not meeting criteria with the key words resilience, quality of life, and stuttering. There were 45 articles left as potential results with 5 of the articles having been previously found via PubMed. This left 40 articles to be reviewed for inclusion criteria. Out of these, 34 articles were precedingly excluded based on the title and abstract not meeting the inclusion criteria. This left six potential articles meeting at least one of the inclusion criteria that were relevant to this review (see Figure 2).

3.0 RESULTS

3.1 PubMed

A formal review of the remaining 11 articles after exclusions was conducted. These 11 articles were then ranked on a 3-tiered system, relative to the number of the inclusion criteria met. The bottom tier indicated that the article met one of the inclusion criteria concepts (i.e., *stuttering* or *resilience* or *quality of life*). The middle tier indicated that the article met a combination of two inclusion criteria concepts (i.e., *stuttering* and *resilience* or *stuttering* and *quality of life* or *resilience* and *quality of life*). The top tier indicated that the article met all three inclusion criteria (i.e., *stuttering, quality of life,* and *resilience*). All 11 articles were then evaluated based on the criteria met. The results of articles meeting this review's criteria can be found in Table A-1.

3.2 Articles Meeting One of the Criteria

3.2.1 Key Concepts: *Stuttering*

Relative to the Pubmed Boolean search, only one article was found to have met just one of the inclusion criteria concepts which was *stuttering*. Sander & Osborne (2019) describe and define stuttering while addressing the leading adverse secondary effects on adults and children with stutter. It explains how traditional stuttering therapy aids to push the person through the action and eliminate any ineffective compensatory behaviors as a result of the stutter. There is also a brief description of the psychosocial effects from

stuttering on a PWS. Following this, the importance of acknowledging other individuals that have an impact on the child's life is introduced with providing insight that these certain people like teachers, coaches, physicians etc. need to be aware of the many challenges a CWS faces every day to be better equipped to help them in every aspect. This article highlights the basic level of understanding on current conventional stuttering treatment, but it also shows what current therapy may not include or lack with supplementation of other people being knowledgeable in the challenges that occur for these children.

3.3 Articles Meeting Two of the Criteria

3.3.1 Key Concepts: *Stuttering and Quality of Life*

Relative to the PubMed Boolean search, the majority of middle-tiered articles focused on the combination of two of the inclusion criteria concepts, which were *stuttering* and *quality of life*. Iverach et al., (2017) investigated the psychological impacts on children that stutter and the correlation of these effects on a child's quality of life. In total, 102 participants were included in this study that were 11-17 years old trying to obtain stuttering treatment. Linear models were used to show the relationship between the stuttering severity, psychological factors, and the impact on quality of life. The results indicated higher stuttering severity correlated with higher anxiety and coping difficulties associated with stuttering. Examining this article shows how stuttering may negatively impact a CWS quality of life which could lead to the inability of being able to cope or deal with the negative situations that may be a consequence of stuttering. In another study, Boyle (2015) looked at the quality of life in adults who stutter and the relationship

between empowerment, social support, and self-help support group participation. 249 participants who stutter were included in the study and each completed a survey with each measure stated before (i.e., empowerment, social support, self-help support). The results indicated that improved self-esteem, self-efficacy, and social support from family correlates to improved quality of life in adults who stutter. Boyle (2015) also pointed to possible treatment methods that could help elevate empowerment and give stronger social support which should be a possibility for adults who stutter (AWS) that have issues with coping to help improve their quality of life. It showed the correlation between stuttering and empowerment that is a characteristic of resilience which is known to improve one's quality of life. Nicolai et al., (2018) investigated the psychological effects on AWS who were cyberbullied as an adolescent, specifically looking into depression, anxiety, and stress levels. A survey method was administered with a two-way between-groups multivariate analysis of variance (MANOVA). The Depression Anxiety and Stress Scales (DASS) was completed in an online survey to determine the stressors found. The conclusion of the study was that the cyberbullied and stuttering group had significantly higher levels of anxiety, depression, and stress levels compared to the non-stuttering group. This surrounded the notion of negative effects that stuttering can have on a person's overall mental health and well-being when faced with stressors, which may lower one's quality of life and the ability to manage their emotions. De Nardo et al., (2016) examined the relationship between stuttering and self-acceptance alongside psychosocial factors, treatment history, and previously reported variables like age and stuttering severity. In total, 80 participants were involved that completed an electronic survey that included an acceptance of stuttering scale, psychosocial scales, and a participant information questionnaire. Significant correlations were noted between self-

acceptance of stuttering and self-esteem. Self-esteem was positively correlated with self-acceptance and hostility towards others, while perceived discrimination was negatively correlated with self-acceptance. The notions of the correlations are an important breakdown of the negative emotions a person who stutters (PWS) may face. Lucey et al., (2019) completed a study that was determining self-reported temperament traits between AWS and AWNS. Correlations were viewed between temperament and frequency, and temperament and quality of life. The Adult Temperament Questionnaire was used alongside with the Overall Assessment of the Speaker's Experience with Stuttering (OASES). The results proved again that AWS tend to have a decreased positive affect, which shows the delay stuttering may bring to individuals with their emotional decision-making processes. Bray et al., (2003) investigated the relationship of self-efficacy for fluency, academic self-efficacy, and depression. Two separate analyses were completed with one using self-efficacy and depression scores as response variables and the fluency classification as a grouping variable. The second analysis only used speech self-efficacy as the predictor of being a group member. The results showed that PWS may have a lower sense of self-efficacy when it comes to speaking compared to PWNS. The results also appeared to show that classification of PWNS was better than PWS. Self-efficacy was shown to be an important predictor in PWS.

3.3.2 Key Concepts: *Resilience and Stuttering*

Relative to the PubMed Boolean search, one article from the middle-tiered articles met a combination of two of the inclusion criteria concepts, which were *resilience* and *stuttering*. Iverach and Rapee (2014), highlighted the relationship between anxiety and

stuttering and the impact on one's quality of life. It points toward a collaboration between the speech-language pathologists and psychologists to create a type of comprehensive assessment and treatment program for social anxiety with PWS. The study explains the possible improvement the collaboration of this approach could have on quality of life and involvement in everyday life for PWS. Iverach and Rapee (2014) also mention the many characteristics that encompass resilience, including self-efficacy and self-esteem, which need to be highlighted for each individual case of a PWS. These explanations show a major pointing towards a new method of collaboration therapy to combat the negative consequences a PWS may face.

3.4 Articles Meeting All Three of the Criteria

3.4.1 Key Concepts: *Stuttering, Resilience, and Quality of Life*

Relative to the PubMed Boolean search, three articles met all three inclusion criteria. These articles were deemed most important because of meeting all the inclusion criteria. Caughter and Crofts (2018) focused on the methods, rationale, and potential benefits of nurturing resilience in school-aged children who stutter. It shows that it is not routinely explored or incorporated into therapy to instill the ability to cope from adversity while viewing the importance of the construct of resilience. Two frameworks were introduced called the "Reaching In Reaching Out Resiliency Program" and the "Penn Resiliency Program" that included the skills such as emotional regulation, impulse control, empathy, self-efficacy, and self-awareness. The major conclusion from this study showed that CWS may benefit from targeted support to build resilience to help overcome challenges from negative stimulus. The framework from the RIRO is a start or base to

lead to advancements and future implementations of creating a type of therapy to help instill resilience in CWS. Carter et al., (2019) focused on a qualitative study to explore the nature of self-efficacy beliefs expressed by AWS to have successful interventions. Semi-structured interviews were used with 29 AWS to describe experiences and explain self-efficacy beliefs. Conflict was found between communication and fluency while stuttering was viewed as more than fluency, and each of perspective shaped communication confidence. The study on the individual experiences of each person showed that stuttered creates a wide range of ways to interpret and create the best intervention and treatment ways for PWS. The findings indicated a need for a multidimensional therapy approach for the treatment of AWS. This would include fluency and psychosocial aspects into therapy. Craig et al., (2011) focused on the factors that could potentially help and protect people through the negative aspects of chronic stuttering. In total, 200 adults who stuttered since childhood participated and were separated into groups of having resilience or not having resilience based on their global psychopathology scores. The three factors that were found to be causation of resilience were self-efficacy, social support, and healthy social functioning. These factors were also found to be able to act as protective factors against adversity. Articles meeting all inclusion criteria were charted (see Table A-2).

3.5 Excluded Articles

From the reviewal of the abstracts of the 18 articles, 7 articles were found to have not met any of the inclusion criteria; therefore, the articles were excluded from the review. Beita-Ell and Boyle (2020) created an examination of self-efficacy of school-

based speech-language pathologists in using a multidimensional treatment with CWS and to find correlations of self-efficacy in treating speech-related, social, emotional, and cognitive domains of stuttering. While the mention of using a multidimensional treatment option for CWS points directly towards the purpose of this review, the perception of speech-language pathologists is not necessary or relevant to resilience training for CWS, so it was excluded on these terms. Boyle et al., (2021) focused on fluency specialists' self-efficacy beliefs for providing multidimensional treatment to CWS and to identify correlations between cognitive, affective, and behavioral correlates of self-efficacy. Again, while the discussion of an all-encompassing treatment for CWS correlates with the purpose of this review, the self-efficacy beliefs and self-perceptions of certified specialists is not necessary or helpful for this specific review. Another exclusion was made of Hertsberg and Zebrowski (2016). The study just focused on CWS and how they perceive their own competence and social acceptance compared to CWNS, and to find the predictors. The self-perception of CWS is necessary on the causation of why they have lower quality of life, but this study does not exceed past just the self-perceptions and how to aid it. Another exclusion of Werle et al., (2021) was also made because of specifics of self-perception of communication competence of AWS and AWNS which did not meet inclusion criteria The exclusion of Hughes et al., (2010) was due to the study only focusing on the negative perceptions of stuttering, which is already supplementally included in the articles like: Bray et al., (2003), Boyle, (2015). The purpose of the study of Klein and Hood (2004) was solely to examine the impacts stuttering had on job performance and employment. While the effects that stuttering has on individual's quality of life is important and noteworthy, the specificity of the effects on job employment led it to be excluded. The final article excluded from the meta-

analysis was by Winters and Byrd (2021). The study's purpose was to search for predictors in preschool-age children by seeing if behavioral characteristics of stuttering severity could predict different communication attitudes. Knowing the predictions of the attitudes of preschool-age children does not apply or meet the criteria of this review, so it was also excluded on this basis. All excluded articles were charted (see Table A-3).

3.6 Google Scholar

After viewing the first page, many of the same articles were the top results that met criteria from PubMed, and potential articles to meet inclusion criteria. Craig et al., (2011) was the very top result which met all the inclusion criteria previously. Boyle, (2015) met two of the inclusion criteria focusing on stuttering and quality of life. Carter er al., (2019) met all the inclusion criteria. Iverach & Rapee (2014) also met two of the inclusion criteria focusing on stuttering and resilience. The final article found in the results was Caughter & Crofts (2018) which met all inclusion criteria previously. These keywords used for inclusion criteria and searching methods were important to use in finding the relevant and articles to support the objective of this review.

3.7 Cited By

From the articles that were previously found to meet inclusion criteria on PubMed and top results now on Google Scholar, the "cited by" option provided by Google Scholar was utilized to check for conclusive results for already obtained articles. The same criteria were used as when completing the search via PubMed. Each article found in the results that was previously found on PubMed was checked through the "cited by" option. There were five articles found in the Google Scholar results that were previously

acquired. From here, each “cited by” section was checked by looking at each article on the list’s title, abstract, and if it had been cited before on any of the 5 previous articles. Resulting were quite a few duplicating articles that cited each article (see Table A-4).

3.8 Related Articles

Also, from the articles that were previously found to meet inclusion criteria on PubMed that translated to Google Scholar, the “related articles” option was viewed to crosscheck for the articles that were already included in this review. The same criteria were used as when completing the search via PubMed. The same articles as used previously with the “cited by” option was used to also check the related articles. These results also showed duplicating articles from both the cited by and related articles. The many duplicating results not only solidifies the importance of these articles found before via PubMed, but also highlights the notion that the most relevant articles for this review were located. Both sets of results were charted (see Table A-4).

3.9 Included Articles

A number of articles were found on Google Scholar that met inclusion criteria that were not previously found on PubMed. For example, Freud & Amir, (2020), which met all three of the inclusion criteria, focused on the correlation between resilience and the characteristics of stuttering. The Connor-Davidson Resilience Scale (CD-RISC) and the Overall Assessment of Speaker’s Experience of Stuttering - Adults (OASES-A) were used on 30 AWS along with stuttering severity. All correlations were statistically measured. Quality of life and the overall experience for a PWS was also measured. The role of resilience was demonstrated on how it can shape a person’s stuttering experience.

The study is important to note because this supports and promotes the inclusion of resilience into stuttering therapy. Plexico et al., (2019) also met all three of the inclusion criteria which evaluated self-acceptance and satisfaction of life for PWS with also the influence of coping skills and resilience. Online surveys were dealt to 47 PWS and 47 PWNS that addressed background information, satisfaction of life, coping, avoidance, self-acceptance, and resilience. This study showed the correlation with resilience and satisfaction of life with lower levels of resilience indicating a lower quality of life. It concludes that resilience and coping may aid against diminished self-acceptance and satisfaction of life in PWS. All three inclusion criteria were also met in Druker et al., (2019). In this study, the objective was to examine self-regulation with child fluency along with parent and child psychosocial results. In total, 28 CWS randomly were placed in one of two treatment groups. One group included a preliminary parent administered resilience component along with stuttering therapy, and the other group only included stuttering therapy. The results found that there was a decrease in behavioral and emotional issues with an increase of resilience because of the resilience component by parents into therapy. The study highlights the implementation of a resilience factor positively effecting parent practices and increasing resilient mindsets in CWS. Klompas & Ross (2004) was found to meet two of the inclusion criteria, which were stuttering and quality of life. This study measured the life experiences of a group of participants who stutter in South Africa and the effects and impact of stuttering on their quality of life. In total, 16 adults participated with an age range of 20 to 59 years old. Interviews were administered focusing on life domains of education. The results concluded that most participants felt their stutter to impact their academic performance and relationships with teachers and classmates. It was also found that the majority of participants perceived that

stuttering had affected their self-esteem and self-image. These results provide insight for future coping strategies on PWS. Croft & Byrd (2020) was reviewed to meet two of the inclusion criteria also which were stuttering and quality of life. This study investigated self-compassion levels in adults that did or did not stutter to see if self-compassion was a predictor of quality of life in AWS. In total, 140 participants were included that did or did not stutter. The Self-Compassion Scale was completed along with the Overall Assessment of Speaker's Experience of Stuttering - Adults (OASES-A). The results provided no major differences in self-compassion, but a negative relationship with self-compassion and prediction of quality-of-life impact was indicated. The conclusions were that self-kindness, mindfulness, and self-compassion may reduce negative stuttering reactions with an increase in social opportunities along with an improved quality of life. The final article, Craft & Gregg (2019), met all three inclusion criteria evaluating the effects of a specialized therapy that promoted resilience in CWS, and it also viewed the correlation between resilience and overarching impact from stuttering. In this study, five CWS participated in an eight-week fluency program that aimed to increase resilience targeting self-efficacy, social functioning, and peer support. The results proved that the use of integrated therapy programs can help promote resilience in CWS, which will simultaneously lower the impact of stuttering on their lives. Articles meeting all inclusion criteria were charted (see Table A-5).

4.0 DISCUSSION

The findings of this review suggest that there are beneficial outcomes relative to a resilience-based training on quality of life. However, only seven articles were found that supported this concept. These limited findings presented a layout for the available information on this specific subject along with the future direction of research that is needed.

Craig, (2011) discusses the realities of stuttering for AWS since childhood. The participants were separated into resilient and nonresilient groups based on psychopathology scores. Many different protective factors were investigated within each individual or lack thereof. The study revealed that many PWS realistically may not possess sufficient protective factors that help to cope with the adverse effects of stuttering. This study highlights the negative realities of stuttering, and the protective factors that PWS need in order to obtain resilience (i.e., self-efficacy, social support, and healthy social functioning). Other articles detailed in this review include a line of research that shows positive effects to these protective factors that correlate with resilience and quality of life. Carter et al., (2019) revealed the positive correlation between quality of life, self-efficacy, and resilience which provides support for a more holistic approach on stuttering therapy. Plexico et al., (2019) viewed findings of an increase in self-acceptance, resilience, and quality of life as result of the successful

protective factors. Freud & Amir, (2020) addressed overt and covert stuttering behaviors in relation to covert behaviors decreasing when resilience increases. These articles provide data that support why a resilience-based strategy may be an effective implementation into stuttering therapy. Select articles also provided outlines or means to instill these protective factors within resilience training strategies for CWS. Caughter & Crofts (2018) utilized two general resilience-based programs, “Reaching In Reaching Out” and “Penn Resiliency Program”, for the parents of CWS. This study highlighted the positive results of implementing resilience training strategies with a means to do so, but the programs administered were Canadian-based and applicable to only children up to eight years old, which limits the access to a wide variety of CWS. Druker et al., (2019) implemented a self-made resilience-based training for parents of CWS ages three to six years old. These results provided evidence towards the positive effects of resilience training along with an outline to follow, but the age range is limited with administration occurring early enough for recovery. Both studies set outlines of application for resilience training, but not a wide age range or scope to practice. Future research focusing on a wide age range of CWS may be beneficial to provide an inclusive resilience-based training strategy applicable in any stage of adolescence. The programs practiced within Caughter & Crofts (2018) and Druker et al., (2019) were limited to a specific radius and populations, so a streamlined program available for a broad population can help CWS.

5.0 LIMITATIONS AND FUTURE RESEARCH

PubMed's advanced Boolean search had advantages with the use of the advanced search option to include and exclude certain keywords helping better refine results, but this also limited the results relative to the specific keywords administered. Consequently, search results ultimately reflected uniform keyword adoption between the authors of research articles, PubMed, and PubMed users. Interestingly, PubMed's keyword dependence still yielded irrelevant articles that do not meet any of the criteria relative to the keywords used, thereby suggesting that PubMed may have its own search algorithm as well. To avoid any bias, we tried to maximize the PubMed search by utilizing the Boolean search finding key words from each key concepts.

The results from Google Scholar yielded key articles that were not available upon using the search keywords with PubMed. Specifically, 4 such examples met all 3 of the inclusion criteria. This provides evidence that the use of multiple databases is required to achieve a thorough search.

Google Scholar appears to limit the control the user has over search results by functionally ignoring Boolean search strategies. Instead, Google Scholar offers additional search strategies, such as "related articles" and a "cited by" feature, which displays related articles citing the original article in question. Based on this systematic review, Google Scholar's search results were maximized by manually reviewing articles of lower ranking. Accordingly, the researcher stopped reviewing articles when 20

consecutive articles were found to be unrelated to the search terms. A disadvantage of Google Scholar is the frequently updated proprietary search algorithm, which is not shared with the public, resulting in ever changing search results over time. As a result, the use of Google Scholar reduces a systematic review's replicability.

This study employed the two most prominent medical databases and, while unlikely, other databases may have produced articles missed by both PubMed and Google Scholar. Therefore, future research may consider the use of additional databases.

6.0 CONCLUSION

Relative to the two databases used in this review, both search engines included relevant articles towards this study. However, Google Scholar resulted in more articles that met all three inclusion criteria for this review, while PubMed provided more articles meeting only one or two of the criteria.

The results of this review reveal that there is limited research relative to the implementation of resilience-based training in stuttering therapy. Many articles included in this review discuss the need of a multidimensional therapy emphasizing personal resilience as a means of fostering self-esteem, social communication, self-acceptance, tolerance, and self-help. However, no such program appears to exist, relative to mentoring CWS cope with adversity and negative aspects of stuttering. As a result, future pediatric clinical stuttering research on specific treatment programs and strategies improving personal resilience, as a means of improving factors predicting quality of life, is warranted. Rather than solely focusing on the suppression of overt stuttering behaviors, research advises that pediatric stuttering therapy approach treatment from a holistic perspective, addressing issues of personal resilience and other quality of life indicators in addition to the overt stuttering behaviors. Therefore, this review may aid in future research on the reasoning for resilience training in stuttering therapy

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APPENDIX

Table A-1. Number of Inclusion Criteria

Inclusion Criteria Met:	**Number of Articles:**
one inclusion criteria	1 out of 11 articles
two inclusion criteria	7 out of 11 articles
three inclusion criteria	3 out of 11 articles

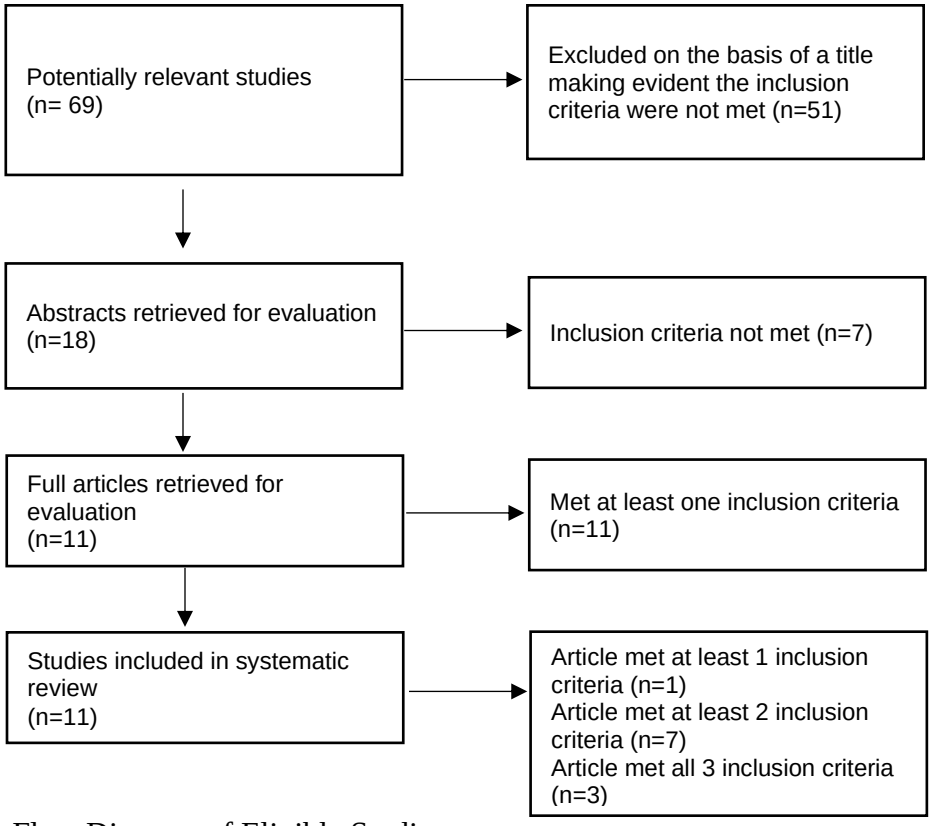

Figure 1. Flow Diagram of Eligible Studies

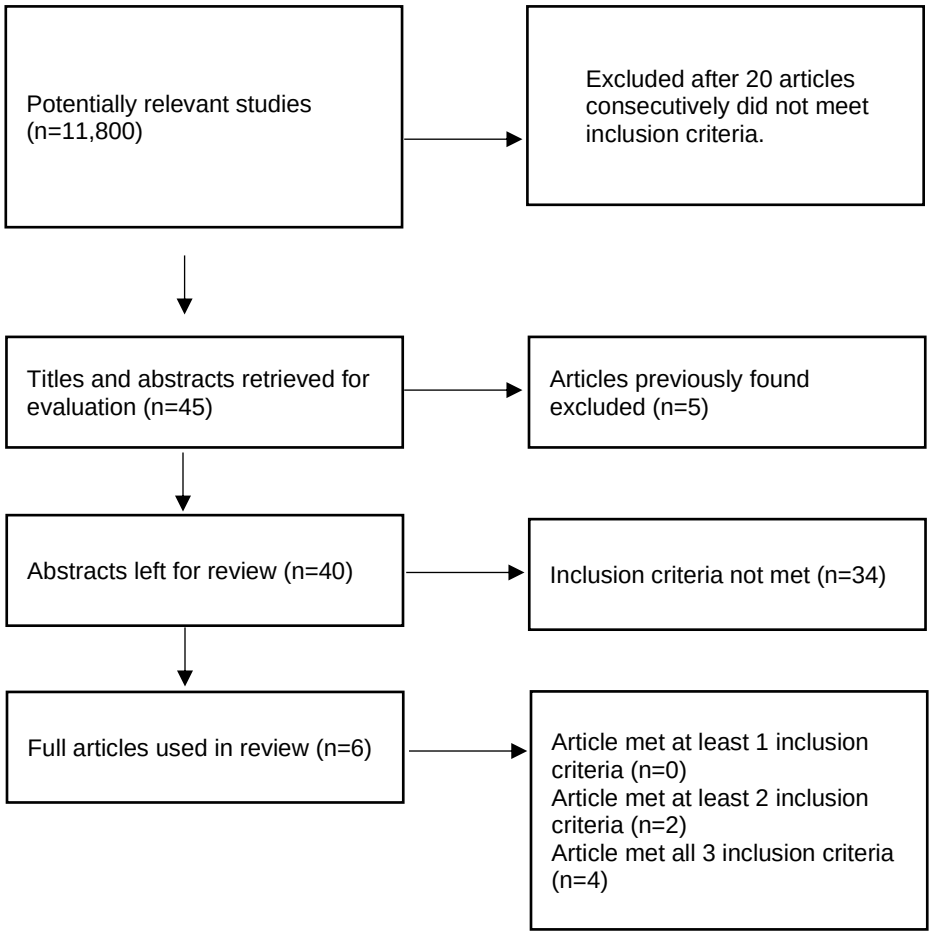

Figure 2. Flow Diagram of Eligible Studies

Table A-2. Articles Meeting All 3 Criteria (PubMed)

Article:	**Key Findings:**	**Key Concepts Included:**
Nurturing a Resilient Mindset in School-Aged Children Who Stutter (Caughter & Crofts, 2018)	- Focused on the methods, rationale, and potential benefits of nurturing resilience in school-aged children who stutter.	- Stuttering, Resilience training, and Quality of Life
Self-efficacy beliefs: Experiences of adults who stutter (Carter et al., 2019)	- Focused on a qualitative study to explore the nature of self-efficacy beliefs expressed by AWS to have successful interventions.	- Stuttering, Resilience, and Quality of Life
Resilience and Stuttering: Factors That Protect People From the Adversity of Chronic Stuttering (Craig et al., 2011)	- Focused on the factors that could potentially help and protect people through the negative aspects of chronic stuttering.	- Stuttering, Resilience, and Quality of Life

Table A-3. Excluded Articles From PubMed

Author/ publication year	*Country/ time period*	*Reason(s) for exclusion*
Beita-Ell and Boyle, 2020	USA, 2020	The perceptions of speech pathologists do not apply to this review nor meet inclusion criteria.
Boyle et al., 2021	USA, 2021	Self-perceptions of a child's self-efficacy is not needed in this review nor meets criteria.
Hertsberg and Zebrowski, 2016	USA, 2015-2016	The ability for a child to self-perceive themselves with a stutter is not necessary for this review according to the criteria.
Hughes et al., 2010	USA, 2009-2010	Article only focuses on the negative perceptions of stuttering which is already included in many articles like: (Bray et al., 2003), (Boyle, 2015)
Klein and Hood, 2004	USA, 2003-2004	Does not apply because it is too specific in regard to the effects of quality of life on employment status.
Werle et al., 2021	USA, 2020-2021	Communication competence self-perception does not apply to this review because it does not apply to criteria.
Winters and Byrd, 2021	USA, 2020-2021	The prediction of the attitudes of children does not support the criteria.

Table A-4. “Cited By” and “Related Articles”

Article Title	Citation	Google Scholar Ranking	Cited By	Related Articles
Resilience and Stuttering: Factors That Protect People From the Adversity of Chronic Stuttering	Craig et al., 2011	Page 1 Number 1	**Iverach & Rapee, 2014*** **Boyle, 2015*** **Carter et al., 2019*** **Blood & Blood, 2016*** **Plexico et al., 2019*** **Caughter & Crofts, 2018*** **Freud & Amir, 2020*** **Croft & Byrd, 2020*** **Blumgart et al., 2014*** Craft & Gregg, 2019 Douglass et al., 2018	**Boyle, 2015*** **Plexico et al., 2019*** **Caughter & Crofts, 2018*** **Klompas & Ross, 2004*** **Blumgart et al., 2014*** **Koedoot et al., 2011*** **Plexico et al., 2009*** Beilby et al., 2012 **Craig et al., 2009*** **Constantino et al., 2017*** **Yaruss, 2010** Murphy et al., 2007
Self-efficacy beliefs: Experiences of adults who stutter	Carter et al., 2019	Page 2 Number 11	**Croft & Byrd, 2020***	**Croft & Byrd, 2020*** **Boyle, 2015*** **Plexico et al., 2019*** Lucey et al., 2019

Relationships Between Psychosocial Factors and Quality of Life for Adults Who Stutter	Boyle, 2015	Page 2 Number 12	**De Nardo et al., 2016*** **Blood & Blood, 2016*** **Carter et al., 2019*** **Croft & Byrd, 2020*** Beita-Ell & Boyle, 2020	**Craig et al., 2011*** **Carter et al., 2019*** **Iverach & Rapee, 2014*** **De Nardo et al., 2016*** **Plexico et al., 2019*** **Plexico et al., 2009*** **Constantino et al., 2017*** **Klompas & Ross, 2004*** **Yaruss, 2010***
Nurturing a Resilient Mindset in School-Aged Children Who Stutter	Caughter & Crofts, 2018	Page 2 Number 17	**Freud & Amir, 2020***	**Craig et al., 2011*** **Freud & Amir, 2020*** **Caughter & Dunsmuir, 2017**
Social anxiety disorder and stuttering: Current status and future directions	Iverach & Rapee, 2014	Page 5 Number 45	**Caughter & Crofts, 2018*** **Carter et al., 2019*** **Freud & Amir, 2020*** **Caughter & Dunsmuir, 2017** **Sander & Osborne, 2019**	**Klompas & Ross, 2004*** **Koedoot et al., 2011*** **Craig et al., 2011*** **Blood & Blood, 2016*** **Craig et al., 2009*** **Plexico et al., 2009***

***duplicate articles**

Table A-5. Articles Meeting All 3 Criteria (Google Scholar)

Article:	**Key Findings:**	**Key Concepts Included**:
Resilience in people who stutter: Association with covert and overt characteristics of stuttering (Freud & Amir, 2020)	- Focused on the correlation between resilience and the characteristics of stuttering.	- Stuttering, Resilience, and Quality of Life
Self-acceptance, resilience, coping and satisfaction of life in people who stutter (Plexico et al., 2019)	- Evaluated self-acceptance and satisfaction of life for PWS with also the influence of coping skills and resilience.	- Stuttering, Resilience, and Quality of Life
An evaluation of an integrated fluency and resilience program for early developmental stuttering disorders (Druker et al., 2019)	- Examined self-regulation with child fluency along with parent and child psychosocial results.	- Stuttering, Resilience, and Quality of Life
Bouncing back: The role of resilience in therapy for school-aged children who stutter (Craft & Gregg, 2019)	- Evaluated the effects of a specialized therapy that promoted resilience in CWS, and it also viewed the correlation between resilience and overarching impact from stuttering.	- Stuttering, Resilience training, and Quality of Life