

Exploring the development of stuttering's adverse impact through parent, child, and SLP perspectives

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1. Introduction

Research into the development of the stuttering condition in children often focuses narrowly on observable behaviors, primarily speech disfluencies. The experience of stuttering, however, comprises complex thoughts, perceptions, emotions, and limitations that result from living with the condition. The term *adverse impact* captures these aspects and refers to the negative personal reactions and broader speech-or communication-related limitations that a person who stutters experiences in daily life (Tichenor & Yaruss, 2019; Yaruss, 1998; Yaruss & Quesal, 2004). The stuttering experience and its adverse impact have been well-documented for adults who stutter, and to a lesser extent, for older children who stutter. Yet we lack a firm understanding how and when adverse impact emerges in children whose stuttering persists.

The overarching goal of this research is to better understand the development of adverse impact related to stuttering through a multi-informant approach that considers the perspectives of parents, speech-language pathologists (SLPs), and most importantly, children who stutter. Goals for initial studies from the larger project focus on identifying significant risk factors associated with greater adverse impact along with protective factors that mitigate this risk in children who stutter. This research has implications for improving understanding of how adverse impact develops in children and for advancing therapeutic approaches to better treat adverse impact in children and for cultivating protective factors that may prevent its development.

Study 1 explores the relationship between resilience and adverse impact in children who stutter across the developmental spectrum from early childhood through adolescence. Resilience is a dynamic and complex construct that captures how one uses internal and external resources to cope and adapt in the face of difficult experiences (e.g., Connor, 2006; Ungar, 2008). Fostering greater resilience in children to help them overcome difficult communication situations is promising as a therapeutic approach (Caughter & Dunsmuir, 2016), yet there is little data examining the relationship between resilience and stuttering's adverse impact to offer empirical support for this approach.

Study 2 explores the relationship between emotional regulation (ER) and adverse impact to determine (a) how ER skills and specific ER strategies are used differently across the developmental spectrum, (b) how these skills and strategies relate to adverse impact related to stuttering, and (c) how goals when speaking (fluency or open stuttering) relates to these constructs (see, Tichenor et al., 2022, for the recently published paper using these data). The decision and habit of electing to engage in one ER strategy over another is highly individualized and is a factor of a person's prior experiences and goals. For this study, we compared two ER strategies, cognitive reappraisal (CR) and expressive suppression (ES) (see Gross & John, 2003, for discussion of CR and ES). We hypothesized that CR, an often-beneficial ER strategy compared to ES, would be associated with lower amounts of adverse impact related to stuttering. Given the importance of experiential factors to ER strategy selection, we also evaluated a person's goal when speaking to determine its influence on ER strategy use.

Study 3 explores stuttering severity ratings from the perspectives of the child who stutters, their parent, and their SLP, and how these ratings relate to adverse impact. Stuttering severity ratings have long been utilized to quantify stuttering behaviors; however, research has focused on ratings from SLPs, parents of preschool children who stutter, or adults who stutter (e.g., O'Brian et al., 2004).

2. Method

We developed a series of Qualtrics-based surveys to be taken annually by children who stutter, their parent, and if applicable, their speech-language pathologist (Qualtrics, 2020). All participant year one data was used in the studies described below. Each survey assesses theoretically and empirically motivated constructs and factors capturing the risk for, or prevention of adverse impact related to stuttering. Recruitment for the studies was conducted through a combination of purposive, convenience, and snowball sampling methods. We contacted SLPs employed in schools, outpatient clinics, university clinics, and specialty stuttering clinics to disseminate information about the study to prospective families.

Study 1 participants were 148 children who stutter and their parent/caregiver. Children were divided into three age groups: preschoolers ($n = 20$; 5-6 years), school-aged ($n = 69$; 7-12 years), and adolescents ($n = 28$; 13-18 years). Children (or the parent for preschoolers) completed the age-appropriate version of the Overall Assessment of the Speaker's Experience of Stuttering (OASES): Early Childhood Parent (Yaruss & Yaruss, 2021), Student, or Teen (Yaruss & Quesal, 2016). The OASES assesses the impact of stuttering on a person's life following the World Health Organization's International Classification of Functioning, Disability, and Health (WHO, 2001). Children completed the age-appropriate version of the Child and Youth Resilience Measure Revised (CYRM-R; Jeffries et al., 2018). The CYRM-R assesses a child's feelings about themselves along with the degree of perceived support from their family and community.

In Study 2, emotional regulation was evaluated in 60 preschoolers and 95 school-age children who stutter and compared to a sample of adults who stutter (180 adults who stutter). We evaluated emotional regulation processes (parent reported ER skills or self-reported ER strategy use) with the Emotional Regulation Checklist (ERC; Shields & Cicchetti, 1997), the Emotional Regulation Questionnaire (ERQ; J. J. Gross & John, 2003), and an adapted child-version of the ERQ (ERQ-CA; Gullone & Taffe, 2012). These ER measures were used as predictors in multiple linear regression equations predicting OASES Total Scores. Ordinal logistic regression was used to investigate ER strategy use as predicted by individual differences in a person's goal when speaking (see Tichenor et al., 2022, for discussion).

Study 3 involved a preliminary sample of 42 triads, each including a child who stutters (ages 9-17 years), their parent/caregiver, and their SLP. Each participant provided an overall rating of the child's stuttering severity and ratings of severity across eight communication situations (e.g., talking with an adult, talking with a family member) on an 8-point scale. CWS also completed the OASES-S or -T depending on their age.

3. Results

Results from Study 1 revealed that the CYRM, our measure of overall resilience, significantly predicted adverse impact or OASES Total Score for school-aged children who stutter and adolescents who stutter, accounting for 26% of the variance in OASES-S scores for school-aged children $R^2 = .26$, $F(1, 68) = 23.06$, $p < .001$, and 34% of the variance in OASES-T scores for adolescents $R^2 = .34$, $F(1, 27) = 13.36$, $p = .001$. We did not find a significant relationship between resilience and adverse impact in preschoolers who stutter although it is possible that this study was underpowered with only 20 participants $R^2 = .15$, $F(1, 19) = 3.18$, $p = .09$.

Study 2 results indicate that (a) young children and school-age children who stutter demonstrate similar patterns to adult ER regulation where poorer ER was significantly associated with higher OASES Total Scores, but that (b) the significance effect sizes of the relationships between adverse impact and ER skills/strategies differ across ages. Also, (c) adolescents who stutter and adults who stutter who less effectively regulate their emotions are much more likely to have the goal of fluency when speaking (see Tichenor et al., 2022, for discussion).

Study 3 examined stuttering severity ratings from the perspective of the child who stutters, their parent, and their SLP. OASES score correlated with overall severity ratings from the parent ($r = .308$, $p = .047$) and child ($r = .624$, $p < .001$), but not the SLP ($r = .242$, $p = .122$). Adverse impact also correlated with the range of the child's severity ratings across communication situations (maximum – minimum rating) ($r = .486$, $p < .001$). This finding is consistent with adult research showing that greater adverse impact correlated with greater variability in stutter-like disfluencies measured within and across days (Constantino et al., 2016).

4. Discussion

Taken together, findings from our studies reveal key risk and protective factors of adverse impact in children who stutter across the developmental spectrum extending findings from prior studies with adults who stutter. Determining how and when adverse impact develops is critical to understanding the individual experience of stuttering and to informing treatment practices that mitigate the development of stuttering's adverse impact. Study 1 results revealed that greater resilience was associated with less adverse impact of stuttering which provides support for preliminary studies targeting resilience in therapy. Clinicians can also foster external resilience by helping children who stutter and their families navigate to resources that they need. Study 2 found that individual differences in ER can specify how a person experiences stuttering, which has notable implications for identifying individuals for treatment (see, Tichenor et al., 2022, for discussion). The preliminary findings in Study 3 suggest that parent and child ratings provide valuable clues about a child's adverse impact. SLPs may consider soliciting parent and child severity ratings and asking follow-up questions to understand any discrepancies with their own ratings as it may inform the SLP about a child's lived experience with stuttering.

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