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Preliminary study of self-perceived communication competence amongst adults who do and do not stutter

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ABSTRACT

Purpose: Adults who stutter report a significant impact of stuttering on their quality of life, including negative thoughts and attitudes toward communication. In addition to this impact, adolescents who stutter also report lower levels of self-perceived communication competence (SPCC) compared to fluent peers. The purpose of this study was to extend the investigation of SPCC to adults who do and do not stutter. Additional aims investigated included if 1) SPCC predicted overall impact of stuttering, and, 2) stuttering frequency predicted SPCC among adults who stutter.

Methods: Twenty-four adults who stutter and twenty-seven adults who do not stutter matched for age, gender, and education completed the *Self-Perceived Communication Competence Scale* (Richmond & McCroskey, 1997). All participants who stutter completed the *Overall Assessment of the Speaker's Experience of Stuttering* (*OASES* [ages 18+]; Yaruss & Quesal, 2006) and speaking samples to measure stuttering frequency.

Results: Adults who stutter reported significantly lower *SPCC* scale total scores than adults who do not stutter. For adults who stutter, lower *SPCC* scale scores significantly predicted more severe overall impact of stuttering as measured by the *OASES*. Stuttering frequency did not predict *SPCC* scale scores.

Discussion: This is the first study to report differences in self-perceived communication competence between adults who do and do not stutter. Results suggest adults who stutter report lower self-perceived communication competence compared to adults who do not stutter. Adults who perceive themselves to have greater communication competence reported less severe overall impact of stuttering, and stuttering frequency did not influence SPCC. Clinical implications for intervention are discussed.

1. Introduction

Stuttering is a multifactorial disorder that, in addition to overt disruptions to the forward flow of speech, results in a wide range of cognitive and affective consequences (e.g., Blood & Blood, 2016; Boyle & Blood, 2015; Iverach et al., 2009; Tran, Blumgart, & Craig, 2011). Across the lifespan, people who stutter have been documented to exhibit negative attitudes towards their speech and communication, which have a negative impact on their overall quality of life to varying degrees. These include, but are not limited to, higher levels of communication apprehension and/or social anxiety, resulting in increased isolation; lower levels of self-esteem and

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self-efficacy negatively impacting overall quality of life; as well as reduced engagement and attainment in academic and vocational environments (e.g., Boyle, 2015; Hayhow, Cray, & Enderby, 2002; James, Brumfitt, & Cudd, 1999; Kelso, 1997; Klein & Hood, 2004; Klompas & Ross, 2004; Yaruss & Quesal, 2006). Additionally, people who stutter have been documented to reject social networks and reduce or avoid social activity, thereby creating a barrier to protective mechanisms that improve quality of life, such as peer and familial support (Boyle, 2015; Plexico, Manning, & Levitt, 2009). While there have been several investigations exploring how stuttering influences a variety of cognitive, psychological, and communicative differences, less is known about the relationship between the impact of stuttering and an individual's perceived communication competence. The three aims of the present study are to 1) investigate whether adults who stutter report differences in self-perceived communication competence compared to adults who do not stutter, 2) investigate whether self-perceived communication competence predicts overall impact of stuttering, and, 3) investigate whether stuttering frequency predicts self-perceived communication competence.

1.1. Communication competence and perceived communication competence

Effective oral communication skills are crucial for vocational success (e.g., Nielsen, 1998; Darling & Dannels, 2003; Mikkelson, York, & Arritola, 2015; Payne, 2005; Scudder & Guinan, 1989). As such, the development of communication competence has been viewed as a central component to academic success (Morreale, Osborn, & Pearson, 2000). In higher education, the majority of courses targeting foundational oral communication are structured to focus specifically on improving public speaking skills (Morreale, Myers, Backlund, & Simonds, 2016). The National Communication Association has standardized the measurement of overt behaviors associated with communication competence (e.g., eye contact, use of visual aides, use of gestures, content organization) for higher education classrooms (*The Competent Speaker Speech Evaluation Form;* Morreale, Moore, Surges-Tatum, & Webster, 2007). Of particular relevance to the present study, excessive disfluencies are considered 'unsatisfactory' whereas exceptional fluency is considered 'excellent' on Competency Seven of *The Competent Speaker Speech Evaluation Form* (Morreale, Moore, Taylor, Surges-Tatum, & Hulbert-Johnson, 2007, p. 15).

Many communication behaviors, such as increased reticence to communicate, are the result of one's own lower perception of their ability to communicate (Phillips, 1984), not necessarily their overt skills in communicating (Kelly, 1982). Therefore, in assessing functional communicative outcomes, such as volunteering information in class, asking questions, and reaching out to a coworker or supervisor, it is also critical to consider one's self-perception of communication competence. It is not surprising then, that self-reported measures of communication competence, such as the *Self-Perceived Communication Competence Scale (SPCC* scale; McCroskey & McCroskey, 1988), are significantly correlated with other attitudes and personality traits related to oral communication, namely communication apprehension and shyness (Teven, Richmond, McCroskey, & McCroskey, 2010). That is, individuals who report high levels of communication apprehension and shyness also perceive themselves to have low levels of communication competence, or to be poorer communicators, according their scores on the *SPCC* scale.

1.2. Perceived communication competence and stuttering

Little is known about the relationship between perceived communication competence and stuttering in adult speakers; however, there is a significant body of literature that suggests some adults who stutter report negative communication attitudes and consequences to communication and overall quality of life (e.g, Boyle, 2013; Boyle, 2015; Bricker-Katz, Lincoln, & Cumming, 2013; Bricker-Katz, Lincoln, & McCabe, 2009).These studies have investigated communication attitudes and consequences through a variety of measures, including but not limited to the *Self-Stigma of Stuttering Scale* (Boyle, 2013, 2015), the *Overall Assessment of the Speaker's Experience of Stuttering* (*OASES*) (Bricker-Katz et al., 2009), and qualitative interview questions (Bricker-Katz et al., 2013). Though these measures do not assess perceived communication competence directly, some individual items measure perceived communication difficulty across a variety of speaking tasks (e.g., giving a presentation, ordering food in a restaurant, talking with family members; *OASES,* Yaruss & Quesal, 2006). Adults not only report negative attitudes and a negative impact of stuttering, but also report more severe overall impact of stuttering with increased negative thinking about one's self, abilities, and experiences (Tichenor & Yaruss, 2020). Despite these findings suggesting some adults who stutter perceive communication to be difficult and engage in negative thinking about their abilities, there have been no published studies which directly investigate self-perceived communication competence of adults who stutter. The role of self-perceived communication competence may be especially relevant for adults who stutter, particularly for those who report negative communication attitudes and consequences of their stuttering.

Previous literature has demonstrated that when individuals believe they are less competent at communicating, their overt communicative behaviors may change in a self-confirming manner. Low perceived communication competence has been linked to a variety of communicative behaviors that also convey low communication competence to listeners, including reduced verbal output, and increased reticence to communicate (McCroskey & Richmond, 1979; Phillips, 1984). Furthermore, McCroskey and McCroskey (1988) assert that individuals make communicative choices based upon their self-perception of their ability to communicate, regardless of their objective communicative ability. In addition to reporting negative communication attitudes and difficulty communicating (as described previously), some adults who stutter also engage in behaviors indicative of low communication competence in typically fluent speakers. Adults who stutter may be more likely to be avoid eye contact or look away, pretend to not know the answer to a question, engage less in groups or with new listeners, reduce the amount of time they are speaking, and avoid occupations that require increased verbal communication (e.g., Bricker-Katz et al., 2013; Plexico et al., 2009; Vanryckeghem, Brutten, Uddin, & Van Borsel, 2004).

Previous conference proceedings indicate that adults who stutter may fall along a continuum of self-perceived communication

competence compared to adults who do not stutter (Kelso, 1997). However, currently there are no current published data investigating whether adults who stutter report lower self-perceived communication competence than adults who do not stutter. The available evidence on the communication attitudes and behaviors of adults who stutter suggest low self-perceptions of communication competence may be present. Thus, an investigation into the self-perceived communication competence of adults who stutter is warranted given their unique relationship with communication and its impact on daily life, both in the cognitive and affective consequences as well as choices in communicative behaviors.

To date, research comparing self-perceived communication competence between individuals who do and do not stutter has been limited to adolescents. Findings suggest that adolescents who stutter demonstrate lower self-perceived communication competence compared to their fluent peers (Blood & Blood, 2004; Blood, Blood, Tellis, & Gabel, 2001). Specifically, adolescents reported significantly lower self-perceived communication competence for public, group, and dyad exchanges in addition to lower perceived competence when communicating with a stranger. Adolescents who stutter have also been observed with increased communication apprehension (Blood et al., 2001; Erickson & Block, 2013), lower self-esteem, and increased vulnerability to bullying (Blood & Blood, 2004; Erickson & Block, 2013). Nevertheless, the relationship between stuttering and these negative psychological-social correlates is not well understood. Specific to the present study, there is both evidence for (Blood et al., 2001) and against (Erickson & Block, 2013) a relationship between stuttering severity and self-perceived communication competence as measured by the *SPCC* scale (McCroskey & McCroskey, 1988). Both of these investigations focused on the overt behaviors of stuttering to classify stuttering severity: the *Stuttering Severity Instrument* 3rd edition (SSI-3) (Riley, 1994; Blood et al., 2001) and percentage of syllables stuttered (Erickson & Block, 2013). Given that participants in both studies self-reported low perceived communication competence and high levels of communication apprehension, it is possible that the relationship between self-perceived communication competence and stuttering may best be captured by a measure that addresses an individual's attitudes toward their stuttering, such as the *OASES* (Yaruss & Quesal, 2006).

1.3. OASES, communication competence, and stuttering

The *OASES* is a widely used assessment protocol designed to measure the impact stuttering has on one's overall quality of life (Yaruss & Quesal, 2006). It consists of questions in which respondents self-report the following information: a) knowledge and perceptions about stuttering, b) reactions to stuttering including one's thoughts, feelings, and behavioral reactions, c) difficulties with communication in daily environments as a result of stuttering, and, d) the impact of stuttering on the individual's overall quality of life. There is notable overlap as well as distinction between the *OASES* and *SPCC* scale. Some items, particularly those within Section III: Communication in Daily Situations in addition to other sections, directly overlap with ratings of self-perceived communication competence present on the *SPCC* scale (i.e., *OASES*: "How difficult is it for you to communicate talking in front of a large group of people?" Section III.A.54; *SPCC*: "Please rate how competent you are to communicate in each situation: Talk in a large meeting of friends/acquaintance/strangers"). Other items in the *OASES* seek to gain specific insight into the speaker's reactions to and relationship with their stuttering (i.e., "When you think about your stuttering how often do you feel… helpless, angry, ashamed, lonely, anxious…" Section II.A). Given that the *OASES* measures concepts both distinct from as well as related to those addressed on the *SPCC* scale, it is unclear how perceived communication competence may be related to the impact of stuttering on quality of life.

Although the relationship between the *OASES* and the *SPCC* scale has yet to be determined, the relationship between overt behaviors of stuttering and the *OASES* has been investigated in adults. Manning and Beck (2013) found psychological correlates, not percent syllables stuttered (%SS) or *SSI-3* severity scores, to be significantly correlated with stuttering severity as measured by the *OASES*. Similarly, Constantino, Leslie, Quesal, and Yaruss (2016) found that while no daily %SS was directly correlated with *OASES* scores, their overall variability was significantly correlated. The authors concluded that those who experience increased variability in their stuttering frequency may be more impacted by stuttering in their overall quality of life. Constantino, Eichorn, Buder, Beck, and Manning (2020) also investigated the concepts of speech spontaneity and speech fluency as they relate to scores on the *OASES*. Results showed that speech spontaneity and speech fluency, though correlated, were distinct concepts. Increased speech spontaneity, characterized by speech that requires little effort, premeditation, and is enjoyable, predicted lower *OASES* scores, whereas speech fluency did not. Taken together, these data suggest that measures of overt stuttering behaviors (e.g., %SS, *SSI-3* scores) may not be linearly related to the overall impact of stuttering.

As previously described, the *OASES* and *SPCC* scale contain both overlapping as well as distinct questions. Thus, an investigation into the relationship between overt stuttering behaviors and the *SPCC* scale is also warranted. Given that the *SPCC* scale is exclusively focused on oral communication, compared to the comprehensive perspective of the *OASES*, scores on the *SPCC* scale may be more linearly influenced by overt stuttering behaviors than the *OASES*. This hypothesis is supported by findings reported by Constantino and colleagues (2020) from their investigation of speech spontaneity, speech fluency, and *OASES*. In this study, reportedly "challenging" speaking situations (as rated on a 9-point Likert scale) predicted both decreased speaking spontaneity and speech fluency amongst adults who stutter. Some individual speaking situations that overlap with individual items on the *SPCC* scale, such as giving presentations, also predicted decreased speech spontaneity. Additionally, some situations that are distinct from the *SPCC* scale, such as speaking on the phone, predicted decreased speech fluency. These results indicate that there may be overlap in self-perceptions of communication challenges and frequency. It is important to note that measurement of 'challenge' referred to the *activity* and not the *speaking*. This is different from the *SPCC* scale's measurement of a speaker's perceived competence in their *speaking* in specific situations. Therefore, the present study follows a logical next step in better understanding self-perceived communication skills, communication challenges, and stuttering frequency by directly investigating self-perceived communication competence in specific speaking contexts and its relationship to stuttering frequency.

1.4. Purpose of the present study

Adults who stutter have been documented to report negative attitudes toward communication and difficulty speaking (e.g., Boyle, 2013; Boyle, 2015; Bricker-Katz et al., 2013; Bricker-Katz et al., 2009). Recent research suggests a relationship between perceived communication difficulty, skill, and speech fluency in adults who stutter (Constantino, Eichorn, Buder, Beck, & Manning, 2020). However, it is currently unknown whether adults who stutter exhibit lower levels of self-perceived communication competence compared to their non-stuttering peers, similar to what is reported in the adolescent population (Blood & Blood, 2004; Blood et al., 2001). Additionally, the relationship between self-perceived communication competence and the impact of stuttering has not previously been investigated. Due to the overlap in assessment tools in these areas (*SPCC* scale and *OASES*), it unclear whether self-perceived communication competence predicts the impact of stuttering on overall quality of life, or whether these are two distinct constructs. Finally, previous investigations into the relationship between overt stuttering behaviors, such as stuttering frequency, and *SPCC* scores have thus far been inconclusive, yet may be particularly important to understand given the inclusion of fluency in standardized evaluation criteria for communication competence (Morreale et al., 2016). Therefore, the present study seeks to investigate the following research questions:

1.) Do adults who stutter, compared to adults who do not stutter, report different levels of self-perceived communication competence?
2.) For adults who stutter, does self-perceived communication competence, as measured by the *SPCC* scale predict self-reported impact of stuttering on one's daily life as measured by the *OASES?*
3.) Does stuttering frequency predict self-perceived communication competence amongst adults who stutter?

2. Materials and methods

2.1. Participants

Approval for the completion of the present study was obtained through the authors' university Institutional Review Board. Written, informed consent was obtained for each participant. Twenty-four adult participants who stutter and twenty-seven adult participants who do not stutter were recruited. These two groups are described below. Table 1 reports additional descriptive and demographic information for participants who do and do not stutter.

2.1.1. Participants who stutter

Twenty-four treatment-seeking adults who stutter (16 men, 8 women) were recruited from [blinded for peer review]. Participants reported a mean age of 29.7 years (range 18–49 years). Participants represented a variety of educational backgrounds: six participants reported earning a Master's degree (25 %); eight participants reported earning a Bachelor's degree, Associate's degree, or advanced professional certification (33 %); eight participants reported earning a High School Diploma (33.3 %), and two participants were

Table 1
Participant Characteristics ($N = 50$). Mean (standard deviation) for demographic characteristics for adults who stutter (PWS) and adults who do not stutter (PWNS).

Characteristic	PWS ($n = 24$)	PWNS ($n = 26$)
Gender (male/female)	16/8	16/10
Age (years)	29.7 (9.62)	28.7 (9.24)
Race (*n*/%)		
White	12/50	24/92
Asian	4/17	1/4
Black or African American	2/8	1/4
American Indian/Alaska Native	1/4	0/0
Did not report	5/21	0/0
Ethnicity (*n*/%)		
Not Hispanic/Latino	11/46	21/81
Hispanic/Latino	8/33	5/19
Did not report	5/21	0/0
Highest degree obtained (*n*/%)		
Currently in high school	2/8.3	3/11
High school diploma	8/33.3	6/25
Associates	1/4	1/4
Bachelor's	6/25	7/26
Master's	6/25	9/34
Advanced professional	1/4	0/0

current high school students (8.3 %). Eleven (45.8 %) participants reported previously participating in speech-language treatment for stuttering in the past; however, participants did not expand upon type of intervention (e.g., fluency shaping or stuttering modification).

At the time of enrollment in the present study, a certified speech-language pathologist confirmed a diagnosis of stuttering for all participants who stutter on the basis of stuttering frequency (i.e., greater than 3% observed stuttering-like disfluencies per total syllables spoken; Ambrose & Yairi, 1999), self-report as a person who stutters, and/or reported impact of stuttering on communication through standardized scales or non-standardized interviews. Participants did not present with concomitant speech, language, hearing, or learning deficits.

2.1.2. Participants who do not stutter

Twenty-seven age-, gender-, and education-matched adult participants who do not stutter were recruited via convenience and snowball sampling (Coleman, 1958). The nature of snowball sampling resulted in three additional participants completing the present study who met the matching criteria ($n = 27$ rather than $n = 24$). One participant was later excluded as an outlier and the remaining twenty-six participants were retained in the analytic sample. The control group was age-matched within one year and education-matched based on highest degree obtained. Participants did not have a reported history of stuttering, nor did they present with any speech, language, hearing, or learning deficits. Control participants were unfamiliar with the research questions of the present study and the research programs of the authors. Participant groups did not differ in age ($W = 312.5, p = .84$) or education ($W = 373, p = .36$).

2.2. Measures

All participants completed the *Self-Perceived Communication Competence Scale* (*SPCC* scale; McCroskey & McCroskey, 1988). The *SPCC* scale is a 12-item questionnaire that measures self-perceived competence across a variety of speaking situations. Speaking situations include a variety of contexts (public speaking, meetings, groups, and dyads) and communication partners (strangers, acquaintances, and friends). Respondents read each speaking situation (e.g., "Present a talk to a group of strangers" or "Talk with an acquaintance") and write an estimate of their competence from 0 (completely incompetent) to 100 (competent). Individual items with either a shared context or communication partner are averaged to compute subscores (e.g., all items with a friend are averaged to calculate a "Friend" subscore). A total score is derived by taking the average of the Stranger, Acquaintance, and Friend subscores. Total scores above 87 are indicative of high self-perceived communication competence and scores below 59 are indicative of low self-perceived communication competence. The original study, based on a sample of college students in the United States, reported an excellent reliability (.92) for the total score and adequate to good reliability for all of the subscores except for the Dyad subscore. The *SPCC* scale was the only measure utilized to investigate self-perceived communication competence. While self-perceived communication competence has been investigated along with other communication attributes in previous literature (e.g., Christophel, 1996; Rosenfeld, Grant III, & McCroskey, 1995; Rubin, Rubin, & Jordan, 1997; Teven, et al., 2010), there is precedence for single-measurement investigations, especially with the *SPCC* scale. Single-measurement investigations utilizing the *SPCC* scale have included adolescents who stutter (Blood & Blood, 2004), adults learning foreign languages (e.g., Lockley, 2013; Rasekh, Zabihi, & Rezazedeh, 2012), and with adults in multiple countries for cross-cultural comparisons of the scale (e.g., Dilbeck, McCroskey, Richmond, & McCroskey, 2009; Zarrinabadi, 2012).

All participants who stutter completed the *Overall Assessment of the Speaker's Experience of Stuttering* (*OASES* [ages 18+]; Yaruss & Quesal, 2006). The *OASES* is a self-report measure of the overall impact of stuttering on a person's life, and includes four sections: General Information, Reactions to Stuttering, Communication in Daily Situations, and Quality of Life. Respondents rate individual items within each section on a 5-point Likert scale. To calculate an Impact Rating for each section, the sum of all Likert responses is divided by the total number of items completed. A Total Impact Rating is calculated by summing all Likert responses in the measure and dividing by the total number of items completed. Impact Rating scores range from Mild (1.00–1.49), Mild/Moderate (1.50–2.24), Moderate (2.25–2.99), Moderate/Severe (3.00–3.74), to Severe (3.75–5.00). Impact ratings are based on a sample of 173 adults who stutter. The *OASES* has shown strong reliability and validity (Lankman, Yaruss, & Franken, 2015; Sakai, Chu, Mori, & Yaruss, 2017; Yaruss & Quesal, 2006).

In addition to this self-report measure, all participants who stutter completed a conversation speech sample of at least 300 words to determine an estimate of stuttering frequency on the date of the administration of the *SPCC* scale and *OASES*.

All participants completed written questionnaires to collect demographic information. Specifically, all participants were asked to report their age, gender, level of education, race, ethnicity, family history of stuttering, and language use. Additionally, all participants were asked if they had a history of stuttering or any other speech, language, hearing, or learning deficit. Participants who stutter were asked additional questions about their current and previous experience in stuttering treatment.

2.3. Procedures

2.3.1. Participants who stutter

All measures were collected by a certified speech-language pathologist or student trained and directly supervised by a certified speech-language pathologist. Demographic information was collected first through a written case history form prior the date of data collection for the primary measures of interest. Elicitation of a conversational speech sample and administration of the *SPCC* scale and *OASES* occurred within a larger protocol of speech, language, and cognitive measures, such that these three measures were not administered consecutively. These measures were video recorded.

After data collection, a trained undergraduate research assistant scored the *SPCC* scale and *OASES* and entered these data into a Microsoft Excel spreadsheet. A second trained undergraduate research assistant verified measurement scoring and accurate data entry. A third trained undergraduate research assistant with one year of experience calculating stuttering frequency analyzed the conversational speech sample video for the total number of stuttering-like disfluencies per total number of words. The initial training for this analysis included a one-hour structured lecture, one guided analysis, and a minimum of two practice analyses to establish an interrater reliability of at least 80 % with a certified speech-language pathologist with specialization in the area of stuttering. A certified speech-language pathologist specializing in stuttering analyzed 20 % of the conversation samples for the present study. Interrater reliability for the present study was calculated using an intraclass correlation coefficient and determined to be excellent, ICC = .99, 95 % CI [.98, 1].

2.3.2. Participants who do not stutter

All measures were collected electronically via Qualtrics, an online survey software. Participants completed the *SPCC* scale prior to answering any demographic or descriptive questions. Written instructions matched the verbal and written instructions provided to participants who stutter. Although participants who do not stutter did not respond in the same mode as participants who do stutter (online versus paper-and-pencil), mixed-mode designs are a cost-effective means of improving coverage of responses (Dillman, Smyth, & Christian, 2014). To the authors' knowledge, direct comparison of online and paper-pencil administration of *SPCC* has not been published. However, in an investigation of the efficacy of face-to-face compared to online education, use of the *SPCC* scale for participants engaging in a fully online course demonstrated high and comparable levels of reliability to participants engaging in face-to-face instruction (Westwick, Hunter, & Haleta, 2016). Comparable reliability was also found in online administration by Broeckelman-Post and Pyle (2017). Additionally, other self-report measures (psychiatric and education- related surveys) have been documented to show inter-format reliability (e.g., Alfonsson, Maathz, & Hursti, 2014) unless these scales are significantly altered from one format to the other (e.g., Raley, Shogren, Rifenbark, Anderson, & Shaw, 2020). Results were exported from Qualtrics as a Microsoft Excel spreadsheet.

2.4. Data analysis

All participant responses were imported into RStudio for statistical analysis (Rstudio Team, 2015). Data were visually inspected, and Cook's distance was utilized to determine any possible outliers prior to analysis. One adult participant who does not stutter was removed from analysis after their *SPCC* scale was determined to be an outlier. Therefore, the analytic sample included 24 adults who stutter and 26 adults who do not stutter. Primary analyses explored 1) the possible difference in reported *SPCC* scale responses between adults who do and do not stutter, 2) the influence of *SPCC* scale scores on the overall impact of stuttering, and, 3) the influence of stuttering frequency on *SPCC* scale scores. Specifically, Welch's t-tests were used to evaluate the possible difference in *SPCC* scale scores between adults who do and do not stutter. Wilcoxon rank sum tests provided a non-parametric alternative to the *t*-test given the small sample size of each group and skewed data. Linear regression models were used to investigate if *SPCC* scale scores predicted overall impact of stuttering (i.e., *OASES* total score) and if stuttering frequency predicted *SPCC* scale scores. All assumptions for linear regression were met prior to running each model, including normality of residuals, homoscedasticity, linearity of the model itself, and assessing outliers and clusters via Cook's distance.

3. Results

3.1. Do adults who stutter, compared to adults who do not stutter, report different levels of self-perceived communication competence?

Adults who stutter reported an average *SPCC* scale total score of 79.49 (SD = 11.37; median = 81.63; range 49.50–99.17). Adults who do not stutter reported an average *SPCC* scale total score of 86.02 (SD = 11.04; median = 88.92; range 57.5–100.00). Table 2 reports descriptive statistics for *SPCC* scale subscores for adults who do and do not stutter. It is important to note the *SPCC* scale

Table 2
***SPCC* Scores (*N* = 50)**. Mean (standard deviation) individual subscores and total scores for adults who stutter (PWS) and adults who do not stutter (PWNS).

SPCC Score	Group PWS (n = 24)	PWNS (n = 26)	t-value	W
Public	76.37 (16.19)	86.51 (10.98)	2.57*	438*
Meeting	75.75 (14.53)	83.67 (13.92)	1.96	418.5*
Group	81.48 (10.21)	86.33 (12.14)	1.53	410.5
Dyad	83.47 (11.58)	87.55 (11.61)	1.24	391
Stranger	72.89 (16.48)	77.06 (18.16)	0.84	372.5
Acquaintance	79.59 (12.28)	88.16 (12.61)	2.43*	456*
Friend	87.02 (10.56)	92.82 (8.02)	2.17*	426.5*
SPCC Total	79.49 (11.37)	86.02 (11.04)	2.055*	415.50*

Note: Total scores above 87 are considered high self-perceived communication competence and scores below 59 are considered low self-perceived communication competence *$p < .05$.

considers scores of 87 and above as indicative of high self-perceived communication competence and scores of 59 and below as indicative of low self-perceived communication competence. As a group, adults who stutter reported high communication competence only when communicating with a friend, whereas adults who do not stutter reported high communication competence in a dyad, with a friend or acquaintance, and in their overall communication. Both groups rated communication with a stranger as their area of lowest communication competence.

A Welch's *t*-test comparing mean *SPCC* scale total scores between adults who do and do not stutter suggested significant differences between groups, $t(47.42) = 2.06$, $p < .05$, $d = .59$ (medium effect). This finding was confirmed with a Wilcoxon rank sum test, $W = 415.5$, $p < .05$. As a group, adults who stutter reported lower *SPCC* scale scores than adults who do not stutter, suggesting lower self-perceived communication competence across a variety of speaking situations.

Subsequent *t*-tests and Wilcoxon rank sum tests were conducted to compare *SPCC* subscale scores of adults who do and do not stutter (see Table 2). Adults who stutter reported significantly lower self-perceived communication competence for public contexts, $t(40) = 2.57$, $p < .05$, $d = .92$ (large effect). This finding was confirmed with a Wilcoxon rank sum test, $W = 438$, $p < .05$. Adults who stutter also reported significantly lower self-perceived communication competence when communicating with an acquaintance, $t(47.85) = 2.43$, $p < .05$, $d = .68$ (medium effect), and with a friend, $t(42.83) = 2.17$, $p < .05$, $d = .72$ (medium effect). Again, these findings were confirmed with Wilcoxon rank sum tests for the acquaintance subscore, $W = 456$, $p < .05$, and the friend subscore, $W = 426.5$, $p < .05$. Though adults who do and do not stutter reported significantly different mean friend subscores, both groups were considered in the high self-perceived communication competence range. No other subscores yielded significant differences between groups.

3.2. For adults who stutter, does self-perceived communication competence, as measured by the SPCC scale, predict self-reported impact of stuttering on one's daily life as measured by the OASES?

A linear regression model was used to assess how well self-perceived communication competence (i.e., *SPCC* scale total score) predicts self-reported impact of stuttering on one's daily life (i.e., *OASES* total impact score). *SPCC* scale scores are summarized in Table 2 and *OASES* scores are summarized in Table 3. Adults who stutter reported *OASES* total impact scores ranging from 1.5 (mild/moderate) to 3.91 (severe), with an average overall impact rating of 2.52 (moderate). Results of the linear regression model suggest self-perceived communication competence is a significant negative predictor of the overall impact of stuttering on daily life [$B = -0.037$, $\beta = -0.632$, $t(22) = -3.828$, $p < .01$]. The results indicate that for two adults who stutter who differ by one point *SPCC* scale total score, the adult who has one point higher in self-perceived communication competence earns 0.037 points lower on their *OASES* total impact score.

3.3. Does stuttering frequency predict self-perceived communication competence amongst adults who stutter?

A linear regression model was used to assess how well stuttering frequency (i.e., percentage of stuttering moments per total words in conversation) predicts self-perceived communication competence (i.e., *SPCC* scale total score). Descriptive information regarding stuttering frequency is summarized in Table 3. Adults exhibited between 1–29 % stuttered words (mean = 8.54 %). Results of the linear regression model suggest stuttering frequency is not a significant predictor of self-perceived communication competence [$B = 0.082$, $\beta = 0.005$, $t(22) = 0.003$, $p = 0.99$].

4. Discussion

Functional communication behaviors, such as presenting information to a group of colleagues or talking with an acquaintance or a friend, are influenced by both one's perception of their communication ability and their overt communication skills (Kelly, 1982;

Table 3
***OASES* scores and stuttering frequency ($N = 24$).** Mean (standard deviation) of individual subscores and total scores for adults who stutter (PWS) for the *OASES* and stuttering frequency.

Measurement	PWS ($n = 24$)
OASES	
General Information	2.57 (0.62)
Reactions to Stuttering	2.67 (0.68)
Communication in Daily Situations	2.61 (0.74)
Quality of Life	2.24 (0.93)
Total Impact	2.52 (0.66)
Stuttering frequency (%SW)	
Average (SD)	8.54 (8.36)
Range	1 – 29

Note: %SW represented percentage of stuttering moments per total words in a conversation sample of at least 300 words; SD = standard deviation.

Phillips, 1984). Adults who stutter not only report negative communication attitudes, negative thoughts about their abilities, and a significant overall impact of stuttering on their daily communication but also engage in behaviors indicative of low communication competence (e.g., Bricker-Katz et al., 2013; Plexico et al., 2009; Vanryckeghem et al., 2004; Tichenor & Yaruss, 2020; Boyle, 2013, 2015). Due to the evidence that self-perceived communication competence plays a role in effective communication and data suggesting adolescents who stutter report lower self-perceived communication competence than their typically fluent peers (Blood & Blood, 2004; Blood et al., 2001), the present study sought to complete a preliminary investigation into three aspects of self-perceived communication competence among adults who stutter. First, do adults who stutter, compared to adults who do not, exhibit differences in self-perceived communication competence? Second, does self-perceived communication competence predict the impact of stuttering, as measured by the *OASES*? Finally, does stuttering frequency predict self-perceived communication competence? Results of this preliminary study demonstrate that adults who stutter report lower self-perceived communication competence than adults who do not stutter. Greater self-perceived communication competence predicted less severe overall impact of stuttering on communication and quality of life. Greater stuttering frequency did not predict lower self-perceived communication competence. In other words, adults with higher stuttering frequency were no more likely to report low self-perceived communication competence than adults with low stuttering frequency.

4.1. Self-perceived communication competence in adults who do and do not stutter

The present study is the first to report differences in self-perceived communication competence among adults who do and do not stutter using the *SPCC* scale. Across a variety of communication contexts, adults who stutter perceive their communication competence to be significantly lower (*SPCC* Total score M = 79.49) than adults who do not stutter (*SPCC* Total score M = 86.02). More specifically, adults who stutter from the present sample reported significantly lower self-perceived communication competence compared to adults who do not stutter when speaking in public, with an acquaintance, and with a friend (See Table 2).

Findings of the present study are similar to those of investigations of perceived communication competence of adolescents who do and do not stutter (Blood & Blood, 2004; Blood et al., 2001; Erickson & Block, 2013). Descriptively, for participants of all ages, self-perceived communication competence was highest when speaking with friends and lowest when speaking with strangers. Group means for *SPCC* scale total score and for subtest scores appeared higher for adult speakers compared to adolescent speakers. Across samples of adults and adolescents, persons who do not stutter report higher levels of self-perceived communication competence compared to persons who stutter. The present study and a previous investigation of adolescents who do and do not stutter suggest significant group differences for public speaking contexts (Blood & Blood, 2004). Interestingly, no other *SPCC* subscale score yielded significant differences for both adult and adolescent cohorts. Adolescents who stutter reported significantly lower self-perceived communication competence compared to typically fluent peers when communicating with a stranger, but adults who stutter reported significantly lower self-perceived communication competence when communication with a friend or acquaintance. Taken together, these findings suggest self-perceived communication competence is variable across speaking contexts and different age cohorts.

It is important to note, however, that the results of this study are preliminary in nature due to both the study's sample size and our ability to comprehensively investigate characteristics other than stuttering that may be influencing perceptions of communication competence. While all participants were matched for age, self-reported gender, and highest level of education, one of these factors may still moderate differences in *SPCC* scale scores for both adults who do and do not stutter. For example, there is evidence to suggest that in some cultures, gender differences exist with respect to willingness to communicate and self-perceived communication competence (e.g., Christophel, 1996); it is currently unknown whether gender plays a role in communication competence in adults who stutter and should be investigated in future research.

Educational experience may also influence self-perception of communication competence in a larger sample of adults who do and do not stutter. Though participants were matched for highest degree obtained, it is possible level of education, or more specifically, academic experience, may moderate group differences in *SPCC* scale scores. Research supports that specific educational instruction surrounding oral communication significantly improves *SPCC* scale scores (Rubin et al., 1997). In our sample, 50 % of our participants reported achieving a bachelor's degree or higher. Though participants did not report if these educational experiences included direct instruction or assessment of oral communication skills, it is especially likely participants who received a college education engaged in these courses considering roughly 1.3 million undergraduate students in the United States complete oral communication courses each year (Beebe, 2013). Additionally, given disfluencies have been identified as unsatisfactory behaviors in standardized evaluation criteria for communication competence (Morreale et al., 2016), it is plausible that adults who stutter, throughout the course of their education, have received feedback from instructors related to stuttering negatively influencing their abilities to effectively communicate. Previous research has identified that college students who stutter report more negative perceptions from their professors of oral communication (Werle & Byrd, 2020).

In addition to education, there may be attitudinal constructs that influence low self-perceived communication competence for both adults who do and do not stutter, such as greater communication apprehension and communication anxiety (Diehl, Robb, Lewis, & Ormond, 2019). Similar patterns have been documented with respect to psycho-social constructs in the stuttering literature. For example, Brundage, Winters, and Beilby (2017) found high fear of negative evaluation, rather than presence or absence of stuttering, to contribute to greater trait anxiety and perceived social threat among individuals who do and do not stutter. As such, individual attitudinal constructs (e.g., fear of negative evaluation, self-perceived communication competence) should be evaluated more closely in order to more comprehensively understand the nuanced relationship between stuttering, self-perceived communication competence, and communication apprehension. Given the abundance of research documenting the relationship between communication

apprehension and communication competence within speaker groups, it is plausible that communication competence is in fact moderated by communication apprehension. An important future investigation will be to examine whether communication apprehension uniquely moderates perceived communication competence for individuals who stutter compared to their non-stuttering peers. Individuals who stutter may be more likely to report lower levels of communication competence due to their unique relationship with communication apprehension. In sum, while the results from the present study are in line with previous literature concerning communication competence and attitudes for individuals who do and do not stutter, future research would benefit from larger sample sizes to more comprehensively investigate potentially moderating factors of communication competence and/or apprehension.

4.2. Stuttering and self-perceived communication competence

The second aim of this study was to investigate whether self-perceived communication competence predicted the overall impact of stuttering, as measured by the *OASES,* in adults who stutter. Results revealed that *SPCC* scale scores significantly predicted *OASES total impact scores*. Specifically, higher levels of self-perceived communication competence (higher *SPCC* scale scores) predicted less severe overall impact of stuttering (lower *OASES total impact* scores). It is important to note that this relationship was significant for a sample that represented a wide range of *OASES* scores (1.5 (mild/moderate impact) to 3.91 (severe impact)). These results highlight the integral nature of self-perception of success in communication situations to the *OASES* assessment items. In fact, according to a network analysis by Siew and colleagues (2017), stuttering's interference with daily communication is one of four tenets of the *OASES* measured by the largest number of individual items (40) throughout the assessment. While the data from the present study provide preliminary evidence to the overlapping nature of the *SPCC* scale and *OASES*, future research should investigate more comprehensively the distinction between these two constructs (self-perceived communication competence and the impact of stuttering on one's overall quality of life).

Another area to explore in future research would be the relationship between speech spontaneity and the *SPCC* scale. Increased speech spontaneity, or the effortless, enjoyable, and meaningful production of speech, has also significantly predicted lower *OASES* scores (Constantino et al., 2020). Both speech spontaneity as well as the *SPCC* scale are measurements of an individual's relationship with speaking that are separate/distinct from stuttering, compared to the *OASES* which directly investigates how stuttering influences daily communication and quality of life. There may be overlapping features of self-perceived communication competence and speech spontaneity that significantly influence the impact of stuttering for adults who stutter. Though speculative, it is possible that individuals who experience their speech to be more spontaneous and effortless may also view themselves to be more competent across speaking situations, and, thus do not view their stuttering to be impacting their communication/daily lives.

The third aim of our study was to investigate whether stuttering frequency predicted *SPCC* scores for adults who stutter. Our sample of adults who stutter represented a wide range of stuttering frequency in conversational speech (range 1–29 %SW), and our preliminary analysis suggested stuttering frequency did not predict self-perceived communication competence. In other words, participants with *high* stuttering frequency in conversation reported greater competence than some participants with *low* stuttering frequency. One possible explanation of this result is that overt behavior of stuttering is not linearly related to communication competence, just as it is not linearly related to *OASES* scores (Constantino, Leslie, Quesal, & Yaruss, 2016; Manning & Beck, 2013). It may be that measures related to speaker experience, such as *OASES* and speech spontaneity, are more appropriate measures when assessing complex attitudes towards speech and communication.

Alternatively, the administration of our measurements may not have adequately captured a potential relationship between stuttering frequency and perceived communication competence. Stuttering frequency is variable across communication contexts and time (e.g., Constantino et al., 2016), and the experience of stuttering is inclusive of not only overt behaviors observed by a listener but also covert behaviors described by the speaker (e.g., Tichenor & Yaruss, 2019). Our one-time measure of stuttering frequency and one-time reflection of communication competence may not account for variation in either variable. Furthermore, though the *SPCC* scale administration requires only a one-time reflection across several speaking tasks, participants report different levels of self-perceived communication competence when asked to reflect for a paper-and-pencil task compared to reflecting on a natural communication exchange. Therefore, future investigations would benefit from both expanded measures of stuttering frequency and in-situ ratings of self-perceived communication competence.

4.3. Applications to clinical practice

Results from the present study support that self-perception of communication competence is an important component of clinical practice for speech-language pathologists working with adults who stutter. Higher scores on the *SPCC* scale predicted lower scores on the *OASES* for adults who stutter, indicating that the adults who stutter who perceived themselves to be more competent at communicating across a variety of speaking contexts also reported stuttering to have a lesser overall impact on their daily lives. While there is evidence of speech therapy resulting in an improvement in *SPCC* scores, less is known about what aspects of speech therapy are most beneficial in this regard.

Neiman and Rubin (1991) found improvements in self-perceived communication competence and reductions in communication apprehension among adults who stutter following traditional speech modification therapy. Though specific attention was not paid to improving communication competence or confidence, post-treatment participants reported significant improvements in their ability to interact in different speaking situations (Neiman & Rubin, 1991). Furthermore, while Neiman and Rubin (1991) also saw a reduction in stuttering frequency following treatment, the results of the present study suggest that a focus on stuttering reduction may not be necessary for improvement in *SPCC* scores. Additionally, intervention research has demonstrated an improvement in communication

competence without directly targeting stuttering behaviors (i.e., reducing stuttering frequency) (Byrd et al., 2021). Future research should investigate whether specific therapeutic targets (i.e., communication competence, stuttering modification) and/or cognitive/affective aspects of the stuttering intervention most significantly influence improvements in self-perceived communication competence.

A limitation of the present study is the fact that all adults were actively seeking treatment at time of participation in the study. The results of our study may underestimate the self-perceived communication competence of adults who stutter. It could be that adults who stutter who are not receiving services may have significantly higher self-perceived communication competence compared to adults who stutter who are actively seeking treatment. Additionally, the *SPCC* scale is sensitive only to the listener context (e.g., dyad, group, stranger, friend), but not to other aspects, such as topic or mode of communication. There's evidence to suggest that these aspects may be particularly relevant, as people who stutter have reported significantly more anxiety surrounding talking on the telephone, asking a teacher or supervisor a question, and while being rushed in communication (e.g., Vanryckeghem, Matthews, & Xu, 2017).

Furthermore, the clinical utility of the *SPCC* scale warrants further investigations. While participants who stutter in our study reported lower scores than their non-stuttering peers, scores were overall relatively high compared to adolescents who do and do not stutter. It's possible that these differences are a function of age and experience. Speaking contexts assessed in the *SPCC* scale (i.e., giving a presentation to a large group of strangers) may be experienced with greater frequency in adulthood yielding greater comfort and perceived competence. Related, participants in our sample also had relatively high scores compared to the national normative sample (McCroskey & McCroskey, 1988). Participants in the normative sample included freshmen on their first day of a foundational oral communication course and graduate students on their first day of an instructional communication course. It is possible that the immediate environment of participants, being in a new class that evaluates communication, negatively influenced their self-assessment. In our sample, it is unclear whether participants specifically reflected upon their stuttering or status as a person who stutters when evaluating their communication competence. Ultimately, it is unclear how *SPCC* scale scores translate into real-world communication situations. Future research would benefit from investigating the relationship between self-perceived communication competence and functional communication behaviors, abilities, and engagement.

Nonetheless, given the group differences in the present sample, the *SPCC* scale may be a useful addition to evaluation protocols of speech-language pathologists when working with adults who stutter. Previous research suggests that individuals who stutter present with anxiety and challenges related to specific speaking situations, even in the presence of overlapping profiles or responses (Vanryckeghem et al., 2017). Clinicians may benefit from including the *SPCC* scale as responses may provide specific, functional treatment activities and functional outcomes for participants, such as improving their abilities to speak to strangers, familiar listeners in a group, and other communication situations included in the assessment that are distinct from contexts included in other popular clinical assessment tools, such as the *OASES*.

5. Conclusions

The present study provides preliminary evidence regarding the unique relationship to self-perceived communication competence for adults who stutter. Adults who stutter, compared to adults who do not stutter, report lower levels of self-perceived communication competence. Levels of self-perceived communication competence significantly predict greater overall impact of stuttering. Finally, stuttering frequency (percentage of words stuttered) did not predicted self-perceived communication competence. These findings support the idea that stuttering treatment should include goals related to communication competence in daily speaking situations, as improved perceived communication competence may result in stuttering negatively impacting quality of life to a lesser degree. Future research, including larger samples sizes, should investigate other factors that may contribute to self-perceived communication competence and/or the impact of stuttering, such as communication apprehension, speech spontaneity, or educational experience.

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