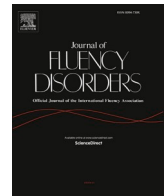




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College professors' perceptions of students who stutter and the impact on comfort approaching professors

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ABSTRACT

Purpose: Previous literature has documented that college professors view hypothetical students who stutter more negatively than their fluent peers. The purpose of the present study was to investigate whether individuals who stutter report they experience more negative perceptions in the college classroom, and the impact of those perceptions on their comfort approaching professors.

Methods: Two hundred forty-six adults who do and do not stutter, matched for age, participated in this study. Participants were presented with 16 positive and negative personality traits and asked to rate how strongly they believed their professor viewed them along each trait. All participants were asked whether they felt comfortable approaching their professors to discuss their performance. Adults who stutter were asked additional questions to investigate their college experience more comprehensively.

Results: Adults who stutter reported they experienced significantly more negative perceptions from their professors than adults who do not stutter, and were significantly less likely to feel comfortable approaching their professors. These reported negative perceptions, specifically being perceived as less self-assured, predicted comfort approaching professors to receive performance feedback for adults who stutter. Finally, amongst adults who stutter, perception of how they were evaluated compared to their peers was significantly related to comfort approaching professors.

Conclusions: Results support that the negative perceptions towards hypothetical students who stutter reported in previous literature are experienced by individuals who stutter, and that these perceptions drive comfort approaching professors for performative feedback. Results suggest professors may increase students' comfort by clearly outlining equality in evaluation procedures.

1. Introduction

Stuttering is a multifactorial disorder that is characterized by atypical disruptions in the forward flow of speech (Guitar, 2013; Smith & Kelly, 1997). Contributors to the manifestation and persistence of stuttering include a genetic predisposition (e.g. Frigerio-Domingues et al., 2019; (Drayna & Kang, 2011); Dworzynski, Remington, Rijdsdijk, Howell, & Plomin, 2007), neuroanatomical and physiological differences (e.g. Alm, 2004; Civier, Bullock, Max, & Guenther, 2013; Neef, Paulus, Neef, von Gudenberg, & Sommer, 2011; Watkins, Smith, Davis, & Howell, 2008), variability in speech motor control (Alm, 2004; Max, Caruso, & Gracco, 2003; McClean, Tasko, & Runyan, 2004; Namasivayam & Van Lieshout, 2011; Smith & Kleinow, 2000), differences in emotional reactivity and

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regulation (e.g. Arnold, Conture, Key, & Walden, 2011; Jones, Choi, Conture, & Walden, 2014; Karrass et al., 2006; Ntourou, Conture, & Walden, 2013), as well as differences in cognitive and linguistic processing (e.g. Anderson & Wagovich, 2010; Byrd, McGill, & Usler, 2015; Byrd, Vallely, Anderson, & Sussman, 2012; Coalson & Byrd, 2015; Sasisekaran, Smyth, & Johnson, 2006). Although higher levels of trait anxiety (Alm, 2014) are not considered to be contributors to stuttering, the persisting stereotype of people who stutter, as will be discussed in the next section, is that they are inherently more nervous, less intelligent and less confident than people who do not stutter.

1.1. Stereotype threat and stuttering

The perception that people who stutter are more nervous/anxious, less confident, and less intelligent than people who do not stutter has been widely documented across age groups and professions. Parents, college students, as well as both children who do and children who do not stutter have been documented as having these negative perceptions of people who stutter (e.g. Crowe & Cooper, 1977; Dorsey & Guenther, 2000; Franck, Jackson, Pimentel, & Greenwood, 2003; Lass, Ruscello, Pannbacker, Schmitt, & Everly-Myers, 1989). Furthermore, primary and secondary school teachers, vocational rehabilitation counselors, professors, and even speech-language pathologists view people who stutter along the negative characteristics associated with the stuttering stereotype (Hurst & Cooper, 1983; Lass et al., 1989, 1994; Silverman & Paynter, 1990).

The stuttering stereotype yields detrimental effects on the person who stutters' quality of life. For example, people who stutter are more likely to experience bullying and isolation, have difficulty forming relationships, and experience role entrapment in their career aspirations (e.g. Blood & Blood, 2007; Bricker-Katz, Lincoln, & McCabe, 2009; Davis, Howell, & Cooke, 2002; Erickson & Block, 2013; Opp, Hayden, & Cottrell, 1997; Rice & Kroll, 1997). Moreover, being aware of these negative perceptions and navigating them on a daily basis contributes to increased anxiety and depression amongst adults who stutter (Boyle, 2015).

1.2. Stereotype threat in academia

When individuals consistently navigate negative misperceptions, they are at risk for self-confirming that perception. This phenomenon is known as stereotype threat (Steele & Aronson, 1995). Stereotype threat has been documented as influencing the academic, occupational, and even health differences experienced by other stigmatized groups (e.g., Aronson, Fried, & Good, 2002; Blascovich, Spencer, Quinn, & Steele, 2001; Steele & Aronson, 1995; Von Hippel, Issa, Ma, & Stokes, 2011). With respect to stereotype threat that exists within the academic setting for people who stutter, primary, secondary, and higher education instructors have all been documented as viewing people who stutter more negatively (Dorsey & Guenther, 2000; Lass et al., 1994). Research has also demonstrated that teachers view people who stutter as less suitable for jobs requiring oral communication responsibilities, and those that elicit high levels of stress (Irani, Gabel, Hughes, Swartz, & Palasik, 2009). These negative perceptions have also been replicated in the fluent peers of college students who stutter (Gabel, Blood, Tellis, & Althouse, 2004).

To date, research has yet to explore whether or not college students who stutter report that they experience these negative perceptions in the academic environment. However, there are studies that show that stuttering negatively interacts with their education. Self-reported stuttering severity has been shown to be inversely related to educational attainment (O'Brian, Jones, Packman, Menzies, & Onslow, 2011). Additionally, amongst adults who do and do not stutter, 'asking a teacher a question' has been identified as a speaking context to be significantly more challenging for individuals who stutter compared to those who do not (Vanryckeghem, Matthews, & Xu, 2017). Furthermore, people who stutter report that even though their stuttering may not restrict them from receiving required higher education training (Meredith & Packman, 2015), it does significantly reduce their social interaction and classroom engagement, leading to negative relationships with teachers and classmates, and poorer performance (Hayhow, Cray, & Enderby, 2002; Klompas & Ross, 2004). Taken together, the results across these studies indicate that how college students who stutter feel about their own stuttering and how others perceive their stuttering profoundly impacts the quality of undergraduate college experiences of students who stutter. Gerlach, Totty, Subramanian, and Zebrowski (2018) found differences in education to account for a large proportion of the disparity in vocational earnings between individuals who do and do not stutter. Gerlach et al. posit that discrimination within education could contribute to educational and thus long-term vocational disadvantages for people who stutter. Therefore, investigating the college experiences of students who stutter may be particularly crucial for supporting long-term vocational success.

1.3. Oral communication in academia and stuttering

Perceptions of speakers and appropriate communication are not consistent across communicative environments. Research shows that as communicative contexts become more formal, the norms applied to the acceptable forms of communication become stricter (Labov, 1972; Trudgill, 1974). Additionally, competence in oral communication often serves as a prerequisite to academic and professional success (Morreale & Pearson, 2008). It is reasonable to suggest, then, that individuals who stutter may be at a disadvantage in more formal settings, such as public presentations, and job interviews when analysis of communicative competence is both more closely evaluated and often associated with higher risk and/or gain.

In higher education, courses designed to foster competence in oral communication are a foundational course that the majority of college students are either required to take or take voluntarily. An estimated 1.3 million undergraduate students in the United States complete foundational oral communication courses each year (Beebe, 2013). The majority of these courses are structured to focus on improving skills in public speaking, in particular (Morreale, Myers, Backlund, & Simonds, 2016). Fears related to public speaking have

been documented as a unique subset of social anxiety (Blöte, Kint, Miers, & Westenberg, 2009). For students, the most frequent and salient fears related to public speaking are audience responses, inability to self-regulate, and being disfluent during delivery, respectively (LeFebvre, LeFebvre, & Allen, 2018).

Reports of fear of disfluency collected by LeFebvre and colleagues describe this fear as an anxiety related to audience judgment of disfluent moments, a colloquial understanding that disfluency arises out of anxiety, and fear of professor evaluation (LeFebvre et al., 2018). One student who stutters reported their professor's feedback was to negatively point out the high frequency with which they had disfluent moments throughout their speech. Although it is currently unknown how heavily professors weigh disfluency in their evaluations of performance, these data highlight that misperceptions related to stuttering, combined with negative perceptions of individuals who stutter, may result in real academic disparity for college students who stutter, especially within the context of an introductory course to oral communication or courses that require and evaluate public speaking. To the authors' present knowledge, no empirical investigation has been conducted with respect to how people who stutter feel they are perceived and evaluated in such contexts.

1.4. Student engagement and academic success

Student engagement is characterized by the effort students devote to activities that promote academic persistence and success in post-graduate careers (Carini, Kuh, & Klein, 2006). These activities include, but are not limited to, developing oral and written communication skills and interacting with peers and faculty members both in and out of the classroom (Reason, 2009). Behaviors such as raising one's hand in class, visiting office hours, reaching out for help, forming study groups, and forming relationships with peers and educators may all be categorized as efforts of student engagement. Research has shown that student engagement significantly impacts a student's persistence to graduation, and quality of learning (Reason, 2009; Tinto, 1993). Specifically, having individual, meaningful interactions and/or relationships with professors and faculty have been cited as a significant influence in the educational success and career aspirations of undergraduate students (e.g., Hearn, 1987; Mazerolle, Gavin, Pitney, Casa, & Burton, 2012; Pascarella, Brier, Smart, & Herzog, 1987; Watts, Marley, & Worley, 1998). In fact, 'quality of interactions', which encompasses interactions with faculty, had the strongest relationship with student persistence/retention to the subsequent semester amongst all the components of student engagement investigated in 2019 by the National Survey on Student Engagement (National Survey of Student Engagement, 2020). Given college students who stutter report specific challenges with respect to forming relationships with peers and professors, as well as with engaging in social interactions and active participation in the classroom, it is critical to explore whether students who stutter report differences in their student engagement. Specifically, this study seeks to explore one important aspect of student engagement of students who do and do not stutter by exploring the comfort of students in approaching professors to discuss their performance in the classroom. Comfort level approaching one's professor for feedback encompasses two critical components of student engagement: seeking performance feedback for academic success in the classroom and engaging in an individual interaction with a professor that is meaningful and may foster a stronger student-teacher relationship.

1.5. Purpose of the present study

To review, persons who stutter are at risk for negative perceptions that may reinforce stereotype and academic disparity across the educational lifespan, including in higher education. Additionally, students who stutter may be uniquely vulnerable to reduced student engagement, a skill critical for academic and vocational success, as evidenced by self-reported challenges in forming relationships and asking questions in the classroom (Hayhow et al., 2002; Klompas & Ross, 2004; Vanryckeghem et al., 2017). This study is specifically interested in investigating one aspect of student engagement, comfort approaching professors, based upon the available literature describing the critical nature of seeking help in the classroom and having meaningful interactions with professors (e.g., Hearn, 1987; Mazerolle et al., 2012; Pascarella et al., 1987; Watts et al., 1998). It is currently unknown whether students who stutter experience the negative perceptions that have been documented in professors, or if students perceive they are being evaluated differently from their peers. Furthermore, the influence of those perceptions on comfort approaching professors for performative feedback, is unknown. To the authors' knowledge, no study to date has systematically investigated how students who stutter report their professors to perceive them, and the impact those student-reported perceptions have on comfort approaching professors. Therefore, the present study seeks to answer the following research questions:

- 1) *Do people who stutter, compared to people who do not stutter, report they experienced more negative perceptions from professors who required oral presentations during college?* Given previous research has documented that college professors perceive students who stutter more negatively than students who do not stutter (Dorsey & Guenther, 2000), we predict that people who stutter will report they experienced more negative perceptions from their professors during college.
- 2) *Do people who stutter, compared to people who do not stutter, report differences comfort approaching professors for performative feedback?* Students who stutter have previously reported difficulty forming relationships and asking questions in the classroom (Hayhow et al., 2002; Klompas & Ross, 2004; Vanryckeghem et al., 2017), therefore, we predict differences in comfort approaching professors for performative feedback between people who do and do not stutter. We predict this will be characterized by more people who do not stutter reporting they feel comfortable approaching their professors than people who stutter.
- 3) *Are student-reported perceptions from professors related to comfort approaching professors for people who stutter?* We predict that if differences exist in the student-reported perceptions from professors between people who do and do not stutter, that those

Table 1

Distribution of ages of all participants. All participants were matched for age within two years.

Age Group	Number of Participants
18–22	42
23–27	86
28–32	40
33–37	16
38–42	20
43–47	13
48–52	5
53–57	10
58–62	4
63–67	6
68–72	4

perceptions will be related to comfort approaching professors for people who stutter. Specifically, we predict that the more negative a student reports they are perceived, the less likely they will be to report they are comfortable approaching their professor.

2. Methods

Participant recruitment and experimental protocol were approved by the Institutional Review Board of the authors' university. Additionally, national participant recruitment was completed in collaboration with and with the approval of the National Stuttering Association Research Committee. An electronic survey via the Qualtrics platform was utilized for all participants, with participants who self-identified as individuals who stutter being displayed additional questions, described below. This survey was not piloted prior to distribution. This was because the majority of questions posed were a modified replication of the paper and pencil questions posed by [Dorsey and Guenther \(2000\)](#) (described below).

2.1. Participants

Participants for this study included 123 adults who stutter, and 123 adults who do not stutter. These participants were matched for age within two years (mean age = 31.6 years, range = 18–71 years). Age distribution of participants is presented in [Table 1](#). All adults who stutter (AWS) were recruited in collaboration with the National Stuttering Association as well as [blinded for peer review] to garner a national sample. Recruitment included electronic invitations to participate via national listservs, email, and stuttering-specific social media platforms. Recruitment posts on social media were shared from the single post made by the National Stuttering Association to stuttering-specific platforms one to two times (dependent on time of access) over the course of the six-month recruitment window. Email recruitment, similarly, consisted of two email requests to participate to local and national private and university clinics that publicly advertise speech-language services for adults who stutter. Adults who do not stutter (AWNS) were recruited via targeted mailing lists to appropriately match for age. Primary mailing lists included the daily electronic list at the authors' institution for each of the following demographics: students, staff, faculty, general public. All subscribers to the lists received an email containing the recruitment request daily for a total of two weeks. Finally, convenience sampling was conducted at the end of the recruitment window by student research assistants to assist in recruitment of adults who do not stutter of specific ages to complete age matching. Age matching was completed due to the reflective nature of the experimental protocol. Participants were not matched for gender, resulting in some differences in gender distribution between groups (AWS: 69 males, 53 females; AWNS: 44 males, 77 females). Exclusionary criteria for participants of this study included 1) Under 18 years of age, 2) Completion of undergraduate studies outside of the United States, and 3) No completion of oral presentations and/or public speaking during undergraduate studies.

2.2. Procedure

All participants engaged in a survey hosted in the Qualtrics platform. Participants were presented with questions related to the number of courses they took during their undergraduate career that required oral presentations, their major, number of years working post college, and a matrix of personality traits. The matrix of personality traits included 16 visual analogue scales, 100 mm in length, one for each of the positive and negative traits utilized by [Dorsey and Guenther \(2000\)](#). Participants were asked to manipulate each scale from a level of 0–100 to represent how much they believed their professor viewed them along each trait (Appendix A). Participants received visual feedback of the specific number they were choosing during the selection process. Visual analogue scales were chosen to replicate the multi-category response type posed by the 7-point Likert scales used in the previous investigation, while extending to allow for more sensitive statistical analyses.

Following the personality trait rating, all participants were asked whether they felt comfortable approaching their professor to discuss their performance on oral presentations in a binary Yes/No response (Appendix B). A binary response was chosen by taking into consideration response stability, participant fatigue, response equivalence, and personal threshold. Binary questions, compared to multi-category are more stable ([Dolnicar & Grün, 2013](#)), and also reduce participant tendency to conflate direction (e.g., yes/no) with

intensity (Albaum, Roster, Yu, & Rogers, 2007). Additionally, binary responses have been demonstrated to result in equivalent conclusions to multi-category responses along both behavioral intention and health survey questions and are suggested to be used when developers wish to minimize participant fatigue/disinterest (Dolnicar & Grün, 2007; Dolnicar, Grün, & Leisch, 2011; Grassi et al., 2007). Given our primary decision of replicating the 16 personality trait multi-category ratings, we considered a binary response to be the most efficient addition for this novel question. Finally, binary response types without magnitude, such as the question posed in this study, require a participant to respond based upon their personal threshold for an attribute (Dolnicar, 2013; (Rossiter, Dolnicar, & Grün, 2015); (Rossiter, 2011)), a characteristic we believed to better represent whether participants would actually approach their professors to discuss their performance. Following the binary response, all participants were also asked to respond in an essay textbox what informed their level of comfort.

Participants who stutter were then asked a series of additional questions in order to more comprehensively understand their experiences in college. Specifically, participants were asked whether they felt comfortable approaching their professor to discuss their stuttering in a binary Yes/No response. Additionally, participants were asked how they perceived they were evaluated compared to their fluent peers. This question was presented as a forced choice response with the following three options: a) fairly, or equally, to their peers b) less harshly than their peers or c) more harshly than their peers.

2.3. Analyses

2.3.1. Quantitative analyses

To assess the first research question, whether people who stutter report experiencing more negative perceptions during their college experience than their peers, independent samples tests were utilized for each personality trait in R Studio. Because multiple independent tests were employed, we utilized a Bonferroni-Holm correction for these 16 comparisons (Holm, 1979). Additionally, for the 16 individual tests we employed the non-parametric alternative to t-tests (Wilcoxon Signed-Rank test) due to the non-normal distribution of the majority of the data. For all analyses, an alpha level of .05 was utilized. Effect sizes for all Wilcoxon tests were calculated. Signage for the Wilcoxon Signed-Rank effect size is denoted at r . This is distinct from a Pearson correlation and refers specifically to the effect size for the non-parametric group comparison (Fritz, Morris, & Richler, 2012). To assess the second research question, whether people who stutter report differences in their comfort approaching professors, a logistic regression model was utilized to investigate which speaker characteristics predicted comfort approaching professors to discuss performance. Speaker group (person who stutters vs. person who does not stutter), age, and gender were included as covariates in the model.

To assess the third research question, whether student-reported perceptions were related to comfort approaching professors, two separate analyses were utilized. A logistic regression model was utilized to investigate whether reported personality-trait perceptions predicted whether participants who stutter were comfortable approaching their professor. Specifically, personality traits that were significantly different between speaker groups, as discovered in the analysis for research question one, were included as covariates in the model. This was to assess whether the perceptions that were unique to those reported by individuals who stutter predicted their comfort approaching professors for performative feedback. Additionally, chi square analysis was utilized to determine whether perceptions of evaluation were related to comfort approaching professors to discuss performance on presentations. Finally, two post hoc analyses were completed to more closely examine the relationship between comfort approaching professors to discuss performance and to discuss stuttering for students who stutter. The first was a chi square analysis to determine whether comfort discussing performance was related to comfort discussing stuttering for students who stutter. The second was a qualitative analysis of text responses for students who stutter described below.

2.3.2. Qualitative analysis

A qualitative post hoc analysis of essay responses was completed to further investigate the reasonings for comfort approaching professors amongst students who stutter. A thematic analysis of the responses from adults who stutter was conducted by the first author and a research assistant. Coding focused on responses to the question, "Please describe why you did or did not feel comfortable discussing your performance with your professor". Responses were analyzed for their overall valence with respect to stuttering. For example, if a response did not include stuttering in its rationale, it was coded as 'stuttering neutral' (e.g., "Discussion performance is useful for both the student and professor. It is a time in which the student can be told what to improve as well as the professor", AWS 15; "I wanted to know what I could do to get a better grade the next time around on a presentation" AWS 103). If a response cited the participant's relationship to stuttering and/or their professors perception of stuttering as a primary reason for feeling discomfort, it was coded as 'stuttering negative' (e.g. "I was always worried that one of them would mention my stuttering during our conversation. It never happened, but this was, and still is, a fear of mine", AWS 113; "I am shy about discussing my stutter and did not want to draw further attention to it" AWS 119). If a response cited a positive relationship with stuttering and/or stuttering being a motivating factor for comfort seeking out performance feedback, the response was coded 'stuttering positive' (e.g., "The professor knew I was a person who stutters prior to the presentation, which made the situation more comfortable", AWS 50; "I felt comfortable discussing it because it's important to know and let them know my speech impediment doesn't define me", AWS 125). Following the establishment and coding of themes for each response, a research assistant was trained on the themes and coding, and independently coded all responses. Inter-rater agreement of coding responses was calculated following the initial analysis. Disagreements in coding were discussed by the first author and research assistant until coding for each response was agreed upon.

Table 2

Mean reported perceptions, group comparisons of adults who do (AWS) and do not stutter (AWNS), and Wilcoxon Signed-Rank effect sizes. Bonferroni-Holm correction was applied to each independent test to account for multiple measurements. Traits containing an asterisk (*) were significantly different between groups at $p < 0.05$.

Trait	AWS	AWNS	Group Comparison	Effect Size
Nervous*	65.37	43.96	$W = 4268.5, p < 0.05$	$r = 0.35$
Shy*	54.71	33.67	$W = 4300.5, p < 0.05$	$r = 0.31$
Open*	54.19	67.5	$W = 9187, p < .005$	$r = 0.24$
Self-conscious*	55.64	34.67	$W = 4303, p < 0.05$	$r = 0.32$
Passive	37.94	31.87	$W = 6124, p = 0.59$	$r = 0.08$
Intelligent	72.59	71.50	$W = 6412.5, p = 0.58$	$r = 0.10$
Aggressive	17.00	15.94	$W = 6344.5, p = 0.87$	$r = 0.01$
Bold	33.83	38.50	$W = 7227, p = 0.39$	$r = 0.12$
Calm	42.52	52.44	$W = 8335.5, p = 0.10$	$r = 0.16$
Dull	24.13	16.59	$W = 5037.5, p = 0.21$	$r = 0.14$
Mediocre	26.36	21.49	$W = 5467.5, p = 0.71$	$r = 0.09$
Self-assured*	36.86	54.79	$W = 9136.5, p < 0.05$	$r = 0.29$
Competent	64.50	75.10	$W = 8475, p = 0.08$	$r = 0.17$
Reticent	33.39	21.91	$W = 4682, p = 0.08$	$r = 0.18$
Incompetent*	20.21	9.66	$W = 4216.5, p < 0.05$	$r = 0.23$
Bright	67.52	68.85	$W = 6967, p = 1.66$	$r = 0.01$

Table 3

Results of the logistic regression model, including odds ratios (OR), which includes the six personality traits significantly different between groups as covariates for predicting comfort approaching professors to discuss performance amongst participants who stutter. The overall model predicted 30.5 % of the variance in this group (Pseudo $R^2 = 0.305, p < 0.05$). Traits containing an asterisk (*) indicate the trait was a significant predictor of comfort approaching professors at $p < 0.05$.

	Estimate	SE	OR	Pr
Nervous	-0.01	0.01	0.98	$p = 0.28$
Shy	0.00	0.00	1.00	$p = 0.77$
Self – conscious	-0.01	0.01	0.98	$p = 0.18$
Open	0.00	0.01	0.99	$p = 0.78$
Incompetent	0.00	0.00	0.99	$p = 0.70$
Self – assured*	0.02	0.01	1.02	$p < 0.05$

3. Results

3.1. RQ 1: reported professor perceptions

Wilcoxon sign-ranked tests were utilized for group comparison on each of the 16 positive and negative personality traits. Mean ratings, results of the analyses, and effect sizes are reported in Table 2. Overall, participants who stutter reported they were perceived significantly differently from their non-stuttering peers along 6 of the 16 personality traits (i.e., more nervous, shy, self-conscious, and incompetent as well as significantly less open, and self-assured). Effect sizes were calculated for each of the 16 comparisons utilizing Wilcoxon Signed-Rank effect sizes (Small: $r = 0.1 - 0.3$, Medium/Moderate: $r = 0.3 - 0.5$, Large: $r = \text{Greater than } 0.5$; Fritz et al., 2012). Three traits demonstrated medium effect sizes (nervous, shy, and self-conscious) and three traits demonstrated small effect sizes (open, self-assured, and incompetent) (Table 2).

3.2. Comfort approaching professors

3.2.1. RQ2: Group differences in comfort approaching professors

A logistic regression model was utilized to determine if speaker-group (i.e., AWS or AWNS) predicted whether participants reported they felt comfortable approaching their professor to discuss their performance on oral presentations. Due to the nature of the study, in which participants reflected back upon their undergraduate experience, age was included as a covariate in the model to control for the potential effects of time since graduating, as well as potential interpersonal and cultural changes in approaching professors in the classroom over time. Additionally, gender was included as a covariate due to previous literature indicating that women who stutter may be at risk for dual discrimination (Byrd, Croft, Gkalitsiou, & Hampton, 2017; Byrd, McGill, Gkalitsiou, & Cappellini, 2017). Odds ratios (OR) are reported for all coefficients (Hosmer & Lemeshow, 2000). Results revealed that each of the variables, speaker-group, age, and gender, were significant predictors of comfort (Group: $\beta = -1.26, p < 0.01$; Age: $\beta = -0.03, p < 0.05$; Gender: $\beta = -0.63, p < 0.05$), with no interactions present between speaker-group, age, and/or gender. Adults who stutter, older individuals, and individuals identifying as female were all significantly less likely to report they felt comfortable approaching their professors to discuss performance. The predicted probability of adults who stutter reporting they felt comfortable approaching their professors was 55 %, and 78.5 % for adults who do not stutter. The predicted probability of females, regardless of speaker-group, to report they felt comfortable

approaching professors was 62 %, and 75.7 % for males.

3.2.2. RQ 3: Influence of reported professor perceptions on comfort approaching professors

A logistic regression model was utilized to determine if the six personality traits that were significantly different for participants who stutter predicted whether participants who stutter reported they were comfortable approaching their professor to discuss their performance. Each of the six personality traits (nervous, shy, open, self-conscious, self-assured, and incompetent) were included as covariates. With respect to predicting comfort discussing performance, results revealed the overall model to be significant explaining 30 % of the variance for individuals who stutter (Pseudo $R^2 = 0.305$, $p < 0.05$). The personality trait of 'self-assured' was the only single personality trait that significantly predicted comfort ($\beta = 0.02$, OR = 1.02, $p < 0.05$) (Table 3). Visual inspection of the data revealed the higher the reported perception of being self-assured, the more likely participants were to report they felt comfortable approaching their professor to discuss performance. Specifically, the odds ratio for 'self-assured' indicates that for each whole unit increase in the rating of 'self-assured', the odds of a positive outcome (comfort approaching professor) increases by 1.02 times. Tests of multicollinearity were conducted to determine the degree of inter-relatedness of all eight of the personality trait predictor variables. Variance inflation factor (VIF) values approaching five or greater suggest problematic degrees of multicollinearity (Cohen, Cohen, West, & Aiken, 2013). VIF values for each of the six predictor traits was below three (Nervous: 2.25, Shy: 1.77, Self-conscious: 2.11, Open: 1.45; Self-assured: 1.41; Incompetent: 1.07).

3.2.2.1. Post hoc analysis of comfort approaching professors for participants who stutter. Qualitative analysis of essay responses from adults who stutter revealed the majority of participants specifically referenced stuttering as rationale for comfort or discomfort approaching professors to discuss performance. Of the 113 participants who provided rationales for their comfort or discomfort, 82 (70.5 %) cited their relationship with stuttering and/or their perception of how the professor would react to their stuttering as a primary factor driving comfort. More participants cited stuttering as a reason for discomfort ($n = 48$, 58.5 %) than comfort ($n = 34$, 41.4 %) in approaching their professors to discuss their performance. A 2×2 chi-square analysis revealed a significant relationship between the concepts of comfort discussing stuttering and comfort discussing performance ($X^2 = 39.59$, $p < 0.01$). These results are congruent with qualitative responses that indicated comfort with stuttering largely motivated comfort discussing performance.

3.3. RQ3: perception of professor's evaluation

Participants who stutter were asked to report whether they perceived that were evaluated a) fairly, or equally, compared to their peers, b) less harshly than their peers, or c) more harshly than their peers. Of the 117 who responded, 59.8 % reported they believed they were evaluated fairly, 18.8 % less harshly, and 21.4 % more harshly than their peers. A 2×3 chi-square analysis was utilized to explore whether perception of evaluation was related to comfort approaching professors to discuss performance. Results were significant ($X^2 = 9.81$, $p < 0.01$). Descriptively, this analysis revealed that of the students who felt comfortable approaching their professors to discuss performance, the majority (71.4 %) felt they were evaluated fairly, followed by less harshly (17.5 %), and finally more harshly (11.1 %). Of the students who did *not* feel comfortable approaching their professors to discuss performance, the majority felt they were evaluated fairly (47.2 %), followed by more harshly (34.0 %), and finally less harshly (18.9 %).

4. Discussion

The purpose of the present study was to investigate the experiences of college students who stutter. Specifically, this study sought to explore whether college students who stutter, compared to their peers, reported they experienced the negative perceptions from their professors that have been documented in previous literature (Dorsey & Guenther, 2000). Additionally, we investigated college student comfort approaching professors to discuss their performance and what factors (i.e., professor perceptions, perception of evaluation) were related to comfort approaching professors to receive performative feedback.

4.1. Reported professor perceptions

Results of this study supported our hypothesis that students who stutter would report they experienced more negative perceptions from their professors compared to their fluent peers. Importantly, the directionality of questions this study posed highlight how students experience perceptions the classroom, regardless of how they perceive themselves. These perceptions (more nervous, shy, self-conscious, and incompetent and less open, and self-assured) align with the stuttering stereotype, and are consistent with the negative perceptions professors have been previously documented to exhibit towards hypothetical students who stutter (Dorsey & Guenther, 2000). These results highlight that college students perceive that their professors view them more negatively, and the experience that students endure as result of these negative perceptions influences important aspects of classroom behavior.

Awareness of negative, stereotypical perceptions in the college classroom has significant implications for the academic performance of students who stutter. Stigma consciousness, or awareness and attunement to one's stigmatized status, has been documented to result in poorer academic performance across multiple stigmatized groups (e.g., Brown, Pinel, Rentfrow, & Lee, 2002; Brown & Pinel, 2003; Pinel, Warner, & Chua, 2005). Furthermore, Pinel et al. (2005) found that for racially stigmatized males, increased stigma consciousness predicted both poorer academic performance as well as psychological disengagement from school. Psychological disengagement refers to a larger process in which individuals, including those who are the subject of negative stereotypes, devalue

their performance over time in a specific domain (i.e. academia) and reduce that domain's source of importance in their lives (Major & Schmader, 1998; Major, Spencer, Schmader, Wolfe, & Crocker, 1998). Perhaps, psychological disengagement due to negative perceptions from professors contributes to the underperformance and reduced educational attainment documented in college students who stutter (Hayhow et al., 2002; Klompas & Ross, 2004; O'Brian et al., 2011).

4.2. Comfort approaching professors

Results of this study provide insight into the consequences of the negative perceptions that students perceive exist with respect to comfort approaching professors to discuss performance. Our initial hypothesis, that more negative perceptions from professors reported by students would predict comfort approaching professors, was partially supported. While the full model including all six personality traits was overall significant, only one single personality trait predicted comfort approaching professors. The degree to which students who stutter believed their professor viewed them as being self-assured significantly predicted comfort discussing performance in the classroom. More specifically, when students reported they thought their professor viewed them as more self-assured, they were more likely report feeling comfortable approaching them to discuss their performance in the classroom. Comfort approaching professors to discuss performance is an aspect of student engagement that may be critical in terms of academic and long-term vocational success (e.g., Hearn, 1987; Mazerolle et al., 2012; Pascarella et al., 1987; Watts et al., 1998).

Although the present study demonstrated perception of self-assuredness plays a role, more research is needed to determine what factor(s) influence college students perceiving that their professors view them as being more self-assured. Student confidence has been cited as a motivating factor for classroom participation and engagement in a number of studies (Armstrong & Boud, 1983; Fassinger, 1995; Wade, 1994; Weaver & Qi, 2005). Additionally, results of both a chi-square analysis as well as the thematic analysis of free-text responses revealed that comfort discussing stuttering was significantly related to comfort discussing performance. In other words, the comfort students had discussing their stuttering largely motivated their comfort discussing their performance in the classroom. Thus, those students who reported increased comfort with their stuttering and comfort discussing it with professors may have been more likely to interact in ways that would project higher levels of confidence and self-assuredness.

Given that this study exclusively examined the *student* perception of how their professors viewed them, it could be that behaviors on behalf of the professor led students to believe they were being perceived as more self-assured. Recall that 31 participants reported reasons *other* than stuttering influencing their comfort approaching professors, such as AWS 61 who wrote, “*She [professor] was wonderfully open and supportive*”. Behaviors implemented by professors, such as expressing support or initiating conversations with the student, may have created an environment in which the student felt they were perceived more positively, and, thus, more likely to feel comfortable engaging.

In addition to negative perceptions of personality traits, student perception of how they were evaluated was also related to comfort discussing performance. Our initial hypothesis of *negative* perceptions being related to comfort approaching professors was only partially supported. Students who stutter were more likely to feel comfortable discussing performance with their professor if they felt they were evaluated *equally* to their peers, compared to more or less harshly. This result highlights a potential avenue for professors to improve engagement in the classroom. There is evidence that instructor behaviors, such as how they communicate with students and whether they appear overly critical are key in influencing increased or decreased classroom engagement (Fritschner, 2000; Wade, 1994).

It is logical that if professors who require oral presentations explicitly state to their students who stutter that they will evaluate them equally to their peers, that the effort to inoculate the stereotype of people who stutter being less capable at oral communication could result in increased academic engagement and/or success for people who stutter. Previous research has documented that when researchers take steps to explicitly combat a stereotype perception (i.e. describe that the stereotype will not apply to these individuals), individuals improve performance (Brown & Pinel, 2003; Steele, 1997; Steele & Aronson, 1995). Importantly, Brown and Pinel found in their 2003 study that even in the presence of high stigma consciousness, academic performance improves when instructors explicitly address bias is removed from the evaluation process. These results have important implications as they suggest that proactive behaviors on the part of the instructor – specifically indicating to students that evaluations will be free of stereotype bias, or indicating students who stutter may be effective in oral presentations regardless of their stuttering – may result in improved performance whether or not students feel comfortable approaching the professor.

4.3. Clinical implications

The results of the present study have important clinical implications for individuals who are stakeholders in the success of students who stutter, such as speech-language pathologists and professors. For speech-language pathologists, information on how students who stutter are perceived and how they experience perceptions in the college classroom might serve as an important starting point for discussions regarding strategies to mitigate negative perceptions as well as self-stigma. Clinicians should educate students who stutter on the origin of the stuttering stereotype, and what behaviors they engage in may confirm that stereotype (e.g., Boyle, 2015). Importantly, clinicians may wish to discuss with students who stutter that self-perceived negative perceptions, whether or not it is the actual perception of the professor, may influence their comfort engaging in, and potentially success in, the college classroom.

With respect to the negative perceptions from others, clinicians may support students who stutter by targeting strategies for improving positive listener perceptions. One such tool is self-disclosure, which has been documented to be effective in improving positive perceptions of children and adults who stutter (e.g., Byrd, Croft, et al., 2017; Byrd, Croft, et al., 2017; (Byrd, Gkalitsiou, McGill, Reed, & Kelly, 2016); Collins & Blood, 1990). In fact, self-disclosure is a tool that has been promoted within the National

Communication Association specifically in the context of foundational oral communication courses (Whaley & Langlois, 1996). However, to the authors' knowledge, there has been no empirical investigation into the effectiveness of self-disclosure in such classes. Snyder, Williams, Adams, and Blanchet (2020) found disclosure of stuttering by either the child who stutters or their teacher to yield positive perceptual results in an *audience* of college students, however no such investigation has been implemented for college students who stutter.

For professors, results suggest that, whether intentional or not, students who stutter report they are perceived by them more negatively and are less likely to feel comfortable approaching them to discuss performance. Despite the fact that comfort discussing their stuttering largely motivated comfort discussing performance with their professor, professors cannot rely upon a student's comfort with their stuttering to bridge the gap on their engagement in the classroom. It is worth noting that even without having explicit conversations related to their stuttering, professors may identify that the student stutters through a variety of classroom behaviors, such as general discussion or answering questions in class. To support students regardless of whether they feel comfortable discussing their stuttering openly, professors must first be educated on the stuttering stereotype, the prevalence of negative perceptions among professors, and the potential negative consequences of such perceptions. Education on the consequences of negative perceptions may lead to mitigation of negative biases towards students who stutter, or correcting behaviors that unintentionally indicate negative perceptions. Organizations that support professors of foundational oral communication courses, such as the National Communication Association and its Basic Course Division, would benefit from collaboration with the American Speech-Language Hearing Association and/or stuttering specific organizations like the Stuttering Foundation or National Stuttering Association to educate its members on how best to support students who stutter in their classroom.

4.4. Limitations and future research

The present study provides important insight into the experiences of college students who stutter, however, it does not address factors that may influence the negative perceptions students who stutter experience. It is unclear whether behaviors on behalf of the student and/or professor uniquely influenced the experienced negativity, and what those behaviors might be. Future research would benefit from an experimental design exploring which tools and behaviors might most improve the perception of, and experienced perception of, students who stutter. Strategies like use of self-disclosure in the college classroom and/or educating professors on misperceptions related to the stuttering stereotype warrant future investigation. Furthermore, nonverbal behaviors on behalf of both the students and professors would benefit from investigation. As described previously, it may be that students who are overall more comfortable with their stuttering engage in behaviors that make them appear more self-assured; or that professor behaviors might be influencing how those students felt they were perceived. Additionally, we focused exclusively on courses that required oral presentations, and results might represent an inflated negative experience of college students who stutter. This focus was to investigate a course taken by most undergraduate students in the United States (Beebe, 2013), however, future research should compare student experiences across a variety of environments, such as courses that do not require such high levels of public speaking.

Another limitation is our ability to fully analyze what other factors may have influenced comfort approaching professors. While results documented that experienced negative perceptions predicted comfort for students who stutter, results also documented that for these participants comfort approaching professors to discuss performance was significantly related to comfort approaching professors to discuss stuttering. It may be that these two concepts are significantly related, however, it is also possible that our data represent a skewed sample of individuals who interpreted the question posed to be specifically related to their stuttering. Future research would benefit from exploring the relationship between comfort discussing stuttering openly and aspects student engagement in the classroom. This might be especially relevant in the case of students who stutter with relatively low frequency of disfluencies. Boyle and Gabel (2020) found in their qualitative investigation that, for some people who stutter, disclosing or discussing their stuttering particularly during times of increased fluency can result in more negative or less helpful reactions, and thus may be viewed as more risky or unhelpful. It may not be the actual comfort with their own stuttering that drives comfort approaching professors in the classroom, rather whether the environment is a safe and/or supportive one.

A final limitation and consideration for future research is the use of a binary response option for comfort approaching professors to discuss performance. As highlighted previously, this decision was made in an effort to replicate and extend the methodology of Dorsey and Guenther (2000) while also considering participant fatigue and/or disinterest following the rating of 16 individual traits (Dolnicar et al., 2011), while maintaining comparable measurement to visual analogue scales (Dolnicar & Grün, 2007; Grassi et al., 2007). It is possible still, however, that the binary question of whether or not the participant felt comfortable approaching their professor to discuss their performance did not accurately capture the true range and variability of comfort approaching professors. Future research would benefit from more sensitive and potentially in-situ investigations into levels of comfort and their relationship with the actual behavior of engaging with professors for performative feedback.

4.5. Conclusions

To summarize, students who stutter, compared to their non-stuttering peers, report they experience more negative perceptions from their professors. Specifically, they report they are perceived more negatively along the traits uniquely associated with the stuttering stereotype. These perceptions predicted an important aspect of student engagement in the classroom: comfort approaching professors to discuss performance. In specific, the more self-assured a student reported their professor to perceive them, the more likely they were to feel comfortable approaching them. Additionally, participants who felt they were evaluated equally to their peers were also more likely to feel comfortable approaching professors to discuss performance. Results have important implications for the

Considering classes in which you were required to complete oral presentations, please rate what you believe to be your professor's perception of you across the following traits.

Please manipulate each scale by clicking and dragging even if you wish to rate 0

0 = Your professor did not hold this perception of you
 50 = Your professor somewhat held this perception of you
 100 = Your professor strongly held this perception of you

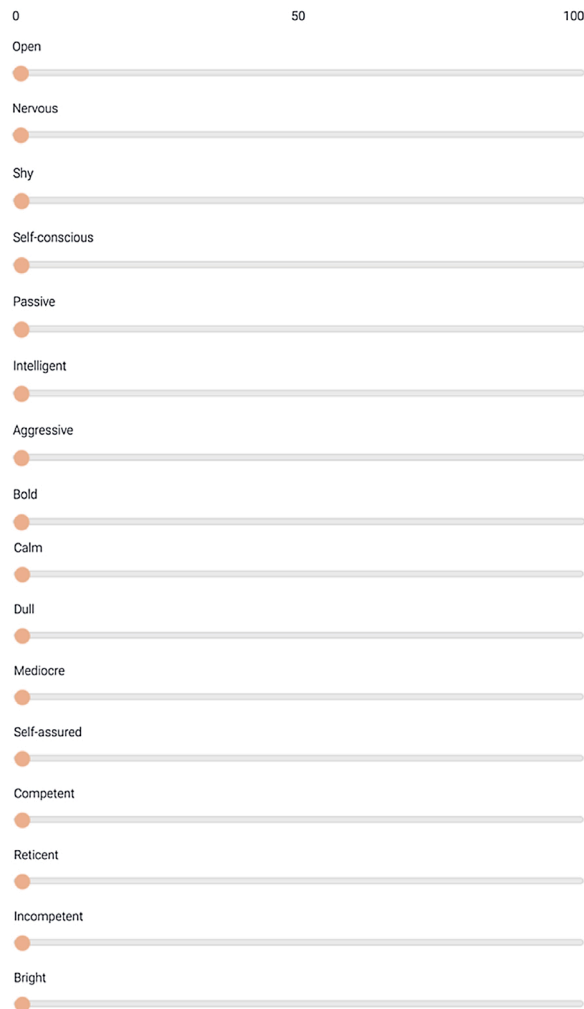


Fig. A1. Figure of the visual analogue scale matrix containing 16 personality traits presented to participants.

stakeholders in the success of students who stutter. Increased awareness surrounding the negative perceptions of students who stutter, whether accurate or misperceived, and their consequences in the classroom would facilitate professor support for college students who stutter. Finally, results, though preliminary, suggest that college students who stutter may benefit from intentional acts by professors to create an environment in which students feel they are perceived more positively, and evaluated fairly.

Declaration of Competing Interest

The authors report no declarations of competing interest.

Did you feel comfortable discussing your performance on oral presentations with your professor?

Yes

No

Please describe why you did or did not feel comfortable discussing your performance with your professor.

Fig. B1. Figure of the binary response option targeting comfort approaching professors to discuss performance.

Appendix A

See Fig. A1.

Appendix B

See Fig. B1.

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