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The Effects of Disclosure on Perceptions of Different Overt Stuttering Severity Levels

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THE EFFECTS OF DISCLOSURE ON PERCEPTIONS OF DIFFERENT OVERT STUTTERING SEVERITY LEVELS

by
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ABSTRACT

This study measured perceptions of a 17-year-old adolescent male who stutters, relative to select speech skills and personality characteristics, as a function of self-disclosure at various overt severity levels. 983 participants were assigned one of the four conditions, including (1) a no-disclosure control group, (2) mild stuttering severity self-disclosure, (3) moderate stuttering severity self-disclosure, and (4) severe stuttering severity self-disclosure. Participants assigned to the control condition viewed only a primary video stimulus of a 17-year-old adolescent who stutters. Participants assigned to one of the three experimental conditions (mild, moderate, or severe severity disclosure) watched a brief self-disclosure statement, followed by the same primary video stimulus viewed by the control group. After viewing the video, participants were instructed to complete the brief survey afterwards. These data suggest that all self-disclosure statements increased the positive perceptions of speech skills and personality characteristics of an adolescent who stutters, despite different overt stuttering severity levels. The findings of this study correlate with previous studies that researched the use of disclosures and perceptions on a person who stutters (PWS). Furthermore, while data revealed all self-disclosure methods outperformed no disclosure, mild and severe severity level disclosures yielded more favorable than moderate severity level disclosures. Results suggest that the use of disclosure before verbal communication improves the listener's perception of an adolescent who stutters, despite different overt stuttering severity levels. Clinical application, strengths and limitations, and future research are discussed.

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INTRODUCTION

The Science, Incidence, and Prevalence of Stuttering

Stuttering is typically defined as a speech disorder related to disfluencies in speech production (Bloodstein & Ratner, 2008), and can be classified as either an overt or covert behavior (Bloodstein & Ratner, 2008). Overt stuttering disfluencies generate disruptive patterns in speech, and often consist of repetitions, prolongations, or inaudible postural fixations (Bloodstein & Ratner, 2008; Collins & Blood, 1990). On the other hand, covert stuttering behaviors consist of the use of social engineering to implement stuttering avoidance techniques, such as circumlocutions, incomplete phrases, pauses, or revisions, as an attempt to avoid detection of a disfluency event (Bloodstein & Ratner, 2008; Douglass et al., 2018).

Stuttering is typically more prominent in males as opposed to females with about a 4 or 5:1 ratio (Bloodstein & Ratner, 2008; Yairi & Ambrose, 1999), with the typical onset of disfluent speech ranging between ages 2 to 4 (Bloodstein & Ratner, 2008; Reilly et al., 2009). While the majority of people who stutter (PWS) spontaneously recover from this fluency disorder early on, some individuals continue stuttering into adulthood (Yairi & Ambrose, 1999), which equivalates to about 1% of the total adult population (Bloodstein & Ratner, 2008). Persistent stuttering can be attributed to factors such as the age of onset, family history, or gender (Yairi et al., 1996; Yairi & Ambrose, 1999).

Impact on Quality of Life

While stuttering is defined as a speech disorder (Bloodstein & Ratner, 2008), stuttering also affects aspects of life other than speech production (Yaruss, 2010). For example, stuttering has a

significant impact on the social-emotional wellbeing of a PWS, resulting in an effect on essential functions of communication that frame the foundation of building and maintaining social interactions (Craig et al., 2009; Nang et al., 2018). Furthermore, stuttering has been documented as negatively affecting the reported quality of life for a PWS (Bramlett et al., 2006; Craig et al., 2009; Koedoot et al., 2011; Prasse & Kikano, 2008).

Notably, potential causes for reduced quality of life result from a PWS being subject to experiencing negative prejudices and stereotypes from daily societal interactions (Craig et al., 2003; MacKinnon et al., 2007). It is typical for a PWS to be categorized with unfavorable personality traits and qualities such as being nervous, anxious, or reserved (MacKinnon et al., 2007), followed by other stigmatized characteristics such as lower self-esteem, depression, isolation, and poorer academic performance (Blood et al., 2003). Therefore, as a consequence, it is not uncommon for a PWS to experience feelings of anxiety, guilt, shame, or dysphoria (Daniels & Gabel, 2004; Yaruss, 2010). This emerges as a result of entrapment and stereotype threat where a PWS conforms to stereotypes engineered by others (Gabel et al., 2004; Roberson & Kulik, 2007; Spencer et al., 2016).

Additionally, PWS acknowledge experiencing a sense of limitations in life opportunities, specific to employment, as a result of their own self-perceptions (Spencer et al., 2016). A PWS is less likely to believe in the opportunity of being hired or promoted in the workplace (Blumgart et al., 2010). This idea correlates with stuttering creating interferences in job performance tasks relative to verbal communication (Blumgart et al., 2010; Klein & Hood, 2004). Moreover, a small percentage of PWS believe they were terminated due to their stutter (Blumgart et al., 2010). In addition to self-perceptions of limitations in the workplace, PWS have more expenses

related to treatments and self-help (Blumgart et al., 2010). Therefore, additional negative self-perceptions due to circumstantial stresses can emerge.

Furthermore, PWS report having higher levels of emotional tension during social situations and encounters, which moreover leads to avoidances pertaining to such social interactions (Kraaimaat et al., 2002). Increased emotional tension can easily provoke feelings of anxiousness, which can cause shyness, social fears, and avoidance behaviors (Craig et al., 2003). This tension experienced during social situations can also have an effect on intimate relationships due to difficulties establishing a romantic relationship (Nang et al., 2018). Subsequently, the feeling of social isolation due to lower social functioning can significantly impact emotional stability and mental health (Craig et al., 2009). This overall avoidance of social situations can lead to social isolation (Yaruss & Quesal, 2004).

The Effects of Stuttering Severity on Quality of Life

The severity level of a PWS can influence quality of life (Bramlett et al., 2006; Craig et al., 2009; Gabel, 2006; Koedoot et al., 2011; Prasse & Kikano, 2008). While not all PWS will report reduced levels of quality of life, stuttering appears to have a greater effect on quality of life as the stuttering severity level increases (Craig et al., 2009; Koedoot et al., 2011). PWS with more severe stuttering levels are more likely to experience negative stereotypes and prejudices compared to other PWS with lower severity levels (Turnbaugh et al., 1979). Specifically, it has been reported that a PWS with higher severity had more reported negative self-perceptions of social acceptance, academic competence, experiencing a close friendship, and global self-esteem (Adriaensens et al., 2015). Additionally, a PWS with severe severity is more likely to be perceived in a more derogatory context, as opposed to mild severity (Gabel, 2006). Thus,

research findings suggest severity plays a role on both self-perception and external perceptions of a PWS (Adriaensens et al., 2015; Gabel, 2006).

Limitations of Stuttering Treatment

Traditional treatment techniques, including stuttering modification and fluency shaping, are used to target overt stuttering behaviors (Blomgren, 2010; Bloodstein & Ratner, 2008; Prasse & Kikano, 2008). However, listeners reported perceiving unnatural sounding speech when hearing a PWS who had undergone these types of treatments (Dayalu & Kalinowski, 2002). Therefore, treatment should assess other aspects for the PWS than just primarily focusing on the fluency of the speech (Yaruss, 2010), which moreover demonstrates why one select stuttering treatment cannot adequately address stuttering (Blomgren, 2010). Therefore, treatment approaches should include other aspects that help self-regulation (i.e., attention, inhibitory control, and perceptual sensitivity), which are especially more important to develop in younger PWS (Kraft et al., 2014). In addition to traditional treatment techniques yielding inadequate results, such treatments are more susceptible to relapse, including causation factors of pretreatment severity, speech attitudes, or self-help factors (Craig, 1998). Consequently, for a PWS with a greater stuttering severity level, there is an increased likelihood for relapse to occur after treatment (Craig, 1998), placing a greater importance for exploring supplemental treatments for different overt stuttering severity levels.

The Effects of Self-disclosure

Self-disclosure is a supplemental treatment, that can be used at the beginning of social conversations, to help improve perceptions on a PWS (Healey et al., 2007; McGill et al., 2018; Snyder et al., 2020). The technique of self-disclosure allows a PWS to share information about the fluency disorder before verbal communication, such that a PWS can advocate against

negative stereotypes and prejudices (McGill et al., 2018). This technique is beneficial for reducing negative stereotypes and perceptions on a PWS (Byrd, McGill, et al., 2017). Moreover, self-disclosure can also be especially beneficial for more severe stuttering by acknowledging the fluency disorder instead of using covert stuttering behaviors (Collins & Blood, 1990). In addition to self-disclosure, education and advocacy are other important contributing factors that aid stuttering management (Nang et al., 2018).

Further research is necessary for the self-disclosure paradigm relating to how different severity levels impact perceived effectiveness of a self-disclosure when used by a PWS. Therefore, the purpose of this study was to measure the differential effects of severity during disclosure on perceptions of an adolescent male who stutters. The alternative hypothesis was perceptual differences due to disclosure as a function of severity. The null hypothesis was that there are no perceptual differences or any differences due to chance.

METHOD

Overview of Study Design

This research design remodeled previous studies, in which a between-group stuttering disclosure was utilized to measure the effects of disclosure on perceptions of different overt stuttering severity levels (Snyder et al., 2020). Participants viewed a video of a 17-year-old adolescent, followed by completing a brief survey afterwards. Data collection consisted of participants viewing one of four conditions, including the (1) control video, (2) mild stuttering disclosure, (3) moderate stuttering disclosure, and (4) severe stuttering disclosure. A script of the disclosures can be found under Appendix A. Data collection was scheduled to be distributed in a live classroom from large general education classes. Due to the Coivd-19 pandemic, data collection procedures were adjusted for safety of the participants and researchers and were conducted through the online survey software Qualtrics (Qualtrics, Oxford, MS).

Primary Video Stimulus

Each of the four conditions consisted of a 2 minute and thirty-four-second core video segment, highlighting a 17-year-old Caucasian male who stutters reading a script from an American historic passage. The primary video stimulus was filmed in a well-lit room, with adequate volume levels for participants to listen. The male was positioned in the center of the camera in front of an undecorated, neutral colored wall. Video footage was only recorded from the waist up, with visuals of a wooden table where his hands were rested. This verbal script consisted of a stuttered syllable frequency of 5.64%, with the three longest moments of stuttering

averaging 3.2 seconds in length. Observable secondary stuttering behaviors included fast rate of speech, noisy breathing, clenched fists, and poor eye contact.

Control and Video Disclosure Conditions

The study paradigm used factual stuttering disclosure statements that were duplicated from notable applications found in previous studies (Snyder et al., 2020) (Appendix B). The control video contained no factual disclosure statement. Moreover, it did not inform the participants beforehand of his stutter. The video disclosures entailed mild, moderate, and severe stuttering. The 17-year-old male increased the number of disfluency events during his disclosure statement in order to alter his stutter severity levels. The mild, moderate, and severe severity disclosures were 16 seconds, 20 seconds, and 25 seconds in length, with each slightly increasing in time due to the added stuttered syllables. Two trained research assistants calculated the number of stuttered syllable instances in each disclosure as 8 for mild, 10 for moderate, and 12 for severe. All disclosure statements were filmed in front of the same undecorated, neutral colored wall as the primary video. The male was centered in the middle of the camera, with only viewing him from the waist up.

Severity Ratings

The two trained research assistants partnered to complete the SSI-4 on all three stuttering disclosure experimental conditions, as well as the 2:35 core video, such that there was 100% consensus. The stuttering frequency for the core video was 5.64%, with 39 stuttered syllables and 692 total syllables, with the 3 longest moments of stuttering averaging 3.2 seconds in length. There were slightly noticeable distracting sounds, like noisy breathing. In addition, there were distracting movements of the extremities and head, as well as poor eye contact. His overall severity equated to mild severity based on his ratings in each of the three categories. The severity

rating for all 4 conditions was determined by using the statistics for a school-age child. The stuttering frequency for experimental condition #1 (mild severity) was 13.6%, with 8 stuttered syllables and 59 total syllables, with the 3 longest moments of stuttering averaging 1.3 seconds in length. There was slight noisy breathing and mildly poor eye contact. His overall severity equated to mild severity based on ratings in each of the three categories. The stuttering frequency for experimental condition #2 (moderate severity) was 16.9%, with 10 stuttered syllables and 59 total syllables, with the 3 longest moments of stuttering averaging 2 seconds in length. There were slight distractions from noisy breathing, as well as poor eye contact. There was also torso movement, however, these were not noticeable unless the observer was specifically looking for it. His overall severity equated to moderate severity based on ratings in each of the three categories. The stuttering frequency for experimental condition #3 (severe severity) was 20.3%, with 12 stuttered syllables and 59 total syllables, with the 3 longest moments of stuttering averaging 3.67 seconds in length. There were distracting sounds, as well as poor eye contact. There were also head and body movements. His overall assessment equated to severe severity based on his ratings in each of the three categories. Based on the statistical ratings, each of the 3 experimental condition statements were within the limits of the defined severity levels, making data analysis more credible.

Survey

A multipurpose survey was replicated from previous studies and administered for new findings (Snyder et al., 2020). This survey received IRB approval prior to distribution and data collection. The first set of questions examined the participants' perception of the speaker's speech skills. The speech skills category analyzed perceptions of the speakers' speech intelligibility, speech fluency, speech rate, speech volume, ease of listening, degree of handicap,

likelihood of professional success, and success related to fluency. These questions were presented as a Likert scale, with lower numbers displaying more desirable perceptions and higher numbers displaying less-desirable perceptions. The next set of questions evaluated the participants' perception of the speaker's personality characteristics. This series of questions had participants rate the speaker on a personality trait continuum. They were asked to identify if they viewed the speaker as calm/nervous, reliable/unreliable, relaxed/tense, unafraid/fearful, intelligent/unintelligent, confident/insecure, friendly/unfriendly, outgoing/shy, competent/incompetent, and approachable/unapproachable. These questions were presented on the same Likert scale, with lower numbers displaying more desirable perceptions and higher numbers displaying less-desirable perceptions.

Participants

A total of 983 participants were surveyed for data analysis, helping reduce Type 1 Error. The participants' identities were kept anonymous to ensure accuracy of the data and encourage quality engagement with the survey. In order to participate in the survey, all participants were required to be at least 18 years of age. Variation of age, gender, race, and career interests were obtained to achieve greater accuracy. As a means to eliminate preconceived opinions and biases, individuals affiliated with the discipline of Communication Sciences and Disorders were excluded from data analysis. In addition, participants who responded to knowing one or more immediate family members who stutter were also excluded. This changed the analyzed number of participants to 777 as a result of the exclusions made within the data pool. Specific details of demographics are located in Table 1.

Table 1: Demographics

	Mean	Median	Standard Deviation
Age	26.79	21.00	12.543
Gender	Male: 36.3%	Female: 63.7%	
Race	African American	8.2%	
	Asian	4.0%	
	Latin X	2.3%	
	Native American (North America)	0.4%	
	White	82.2%	
	Other	2.8%	
Major	Liberal Arts (Sciences)	7.2%	
	Liberal Arts (Others)	11.8%	
	Accountancy/ Finance	23.0%	
	Applied Sciences	12.2%	
	Business/ Marketing	22.3%	
	Education	5.4%	
	Engineering/ Computer Science/ Math	9.2%	
	Journalism/ New Media	1.2%	
	Pharmacy	0.8%	
	Medical Health	4.9%	
	General Education	2.0%	
Year	Freshman	17.4%	
	Sophomore	7.1%	
	Junior	15.4%	
	Senior	31.5%	
	Graduate Student	8.8%	
	Other	19.8%	

Pre Covid-19 Procedures

Pre Covid-19 procedures were conducted in a college classroom setting for large general education classes at the University of Mississippi. The original intent was to obtain results from college age students only. The research team contacted professors from the University of Mississippi, seeking permission to administer this survey to their students during a small portion of class time. After permission was granted, the research team traveled to various classrooms asking students to participate in the survey. The research team had an ongoing self-monitoring of the demographics, and would assign one of the four conditions to the classroom based on balances in the data pool. There was an estimated time of 7 to 10 minutes for total completion. After finishing, the research team collected the finalized responses from the participants. All of the responses were imputed into a spreadsheet by the research team. Each survey was numbered in order to identify the exact placement of the recorded response on the spreadsheet. It was mandated that each imputed response was verified as correct by at least two research assistants. All recorded responses were securely kept in The Laboratory for Stuttering: Science, Therapy, and Advocacy Research to ensure confidentiality.

Post Covid-19 Procedures

Post Covid-19 procedures were carried out through Qualtrics, an anonymous online survey software. Each disclosure video was uploaded to Qualtrics, creating 4 different links that were administered to participants. Each of the four conditions were likewise assigned to participants based on balances in the data pool to collect diverse responses for each condition. The ongoing self-monitoring of the demographics by the research team influenced which condition was administered, and was used throughout the entire data collection process. Professors were utilized again to distribute the survey to students through email contact

information. Identity of responses were still kept anonymous. The research team also reached out to other members of the community through various social media platforms. This overall altered the target age group to a broader than expected population of participants given this expansion of the research contributors. Before viewing the video and completing the survey, participants were asked for consent and to authenticate being at least 18 years old. The research team advised participants to avoid interference and distracting factors while completing the survey, such as viewing in a quiet and distraction-free room. After watching the video, participants were asked to confirm completion of the video before proceeding forward. If participants responded "No" to either of the conditional questions, their survey was automatically terminated. Participants then completed the survey that immediately followed.

Study Design and Analysis

Univariate analysis was performed using IMB SPSS Statistics (Version 27) predictive analytics software. The survey responses were utilized as a fixed independent factor and gender as a covariate, to determine the presence of between-group differences among the experimental conditions. As a means of reducing a Type I error, the alpha level was adjusted. The p-value of 0.05 was divided by the number of questions per survey, resulting in p=.008 for Speech Characteristics and p=.005 for Personal Characteristics. Bonferroni post hoc analyses were conducted to identify significant main effects.

RESULTS

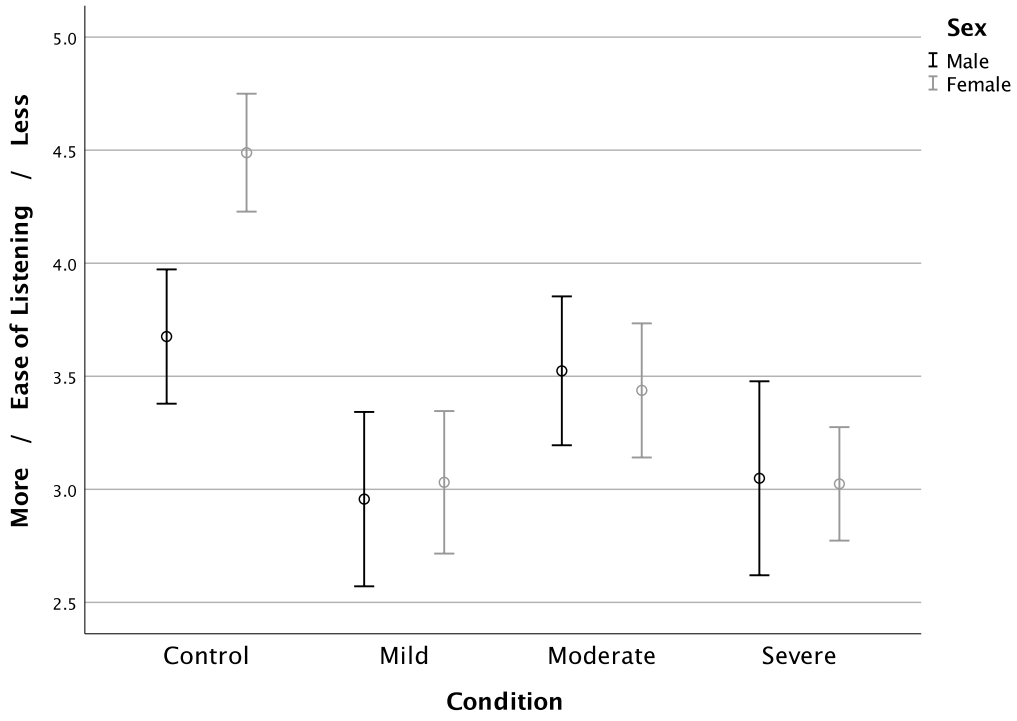
One-way univariate tests and tests of between-subject effects were interpreted to measure the effects of disclosure on perceptions of different overt stuttering severity levels on perceived speech skills and personality characteristics of the adolescent male highlighted in the study.

Sources of Covariance Within the Data Set

Gender

Previous studies have revealed that gender may serve as a potential source of covariance within stuttering disclosure studies (Snyder et al., 2020). Therefore, a gender covariance analysis was performed, and revealed significant differences on the "ease of listening" (speech skill) as a function of gender ($p=.010$) (Figure 1).

Figure 1: Ease of Listening Gender Covariate



Procedure Setting

Data analysis indicates that the setting in which the survey was administered (face-to-face vs. online format) served as a source of covariance within this dataset. Specifically, data reveals that the setting significantly influenced a covariance on the following: perceived speech volume [$F(1,777) = 18.883$, $p<.000$], perceived degree of handicap [$F(1,776) = 22.865$, $p<.000$], and outgoing/shy trait pair [$F(1,777) = 9.832$, $p=.002$]. This source of covariance will be further addressed in the discussion. Data analysis does not suggest any other notable sources of covariance within the data set.

Speech Skills

Survey results of perceived speech skills on different overt stuttering severity level disclosures can be located in Table 2. Main effects of different overt stuttering severity level disclosures were identified in perceptions of intelligibility, speech fluency, speech rate, speech volume, ease of listening, and degree of handicap.

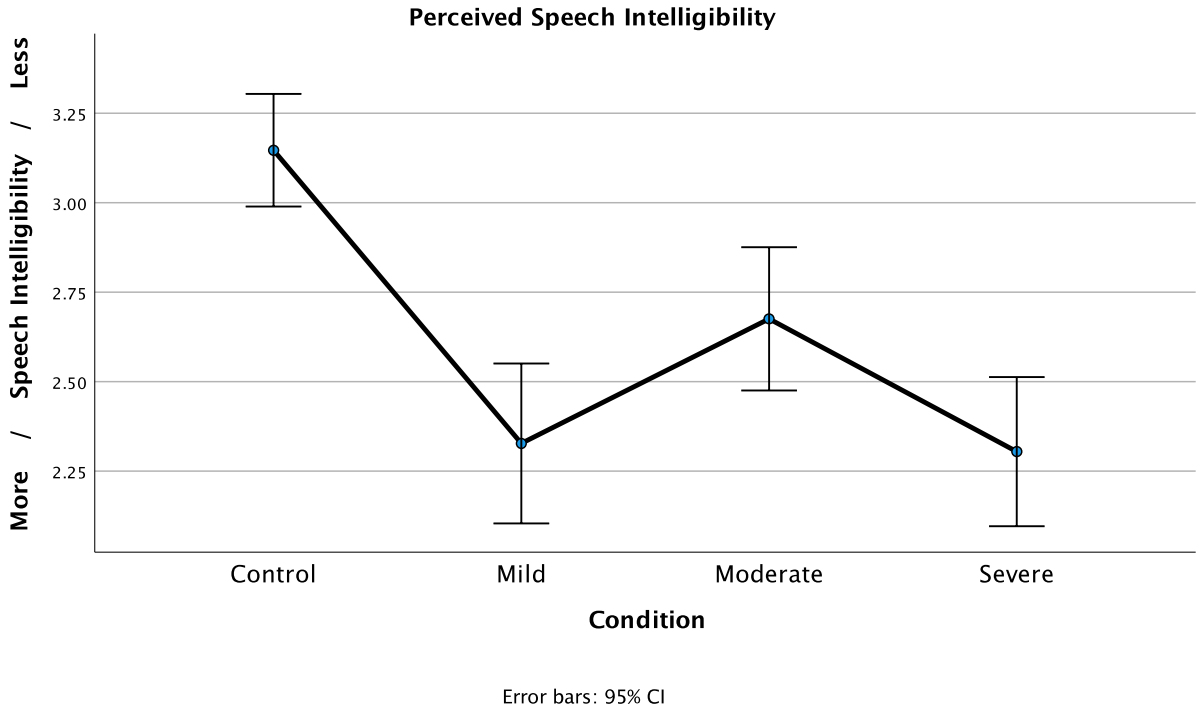
Table 2: Speech Skills

Speech Skills	F Statistic	P Value	Select Bonferroni Post-Hoc Comparisons
Speech Intelligibility	19.164	<.000	Mild, Moderate, and Severe disclosure outperforms no disclosure (p<.000, p=.001, p<.000, respectively) Severe disclosure outperforms moderate disclosure (p=.051)
Speech Fluency	22.089	<.000	Mild, Moderate, and Severe disclosure outperform no disclosure (p<.000, p<.000, p<.000, respectively)
Speech Rate	9.459	<.000	Mild, Moderate, and Severe disclosure outperform no disclosure (p<.000, p=.005, p<.000, respectively)
Speech Volume	4.372	.005	Severe disclosure outperforms no disclosure (p=.004)
Ease of Listening	29.316	<.000	Mild, Moderate, and Severe disclosure outperform no disclosure (p<.000, p<.000, p<.000, respectively) Mild and Severe disclosure outperforms moderate disclosure (p=.026, p=.010, respectively)
Degree of Handicap	24.872	<.000	Mild, Moderate, and Severe disclosure outperform no disclosure (p<.000, p<.000, p<.000, respectively) Mild and Severe disclosure outperforms moderate disclosure (p=.042, p=.054, respectively)
Success Related to Speech Fluency	2.593	.052	Severe disclosure outperforms no disclosure (p=.057)

Speech Intelligibility

Data uncovered a significant main effect on perception of speech intelligibility, as detailed in Figure 2, [$F(3,777) = 19.164$, $p<.000$]. Bonferroni post hoc comparisons reveal the mild, moderate, and severe experimental disclosure conditions yielded favorable between group differences relative to control ($p<.000$, $p=.001$, $p<.000$, respectively). Likewise, severe experimental disclosure significantly outperformed moderate experimental disclosure ($p=.051$).

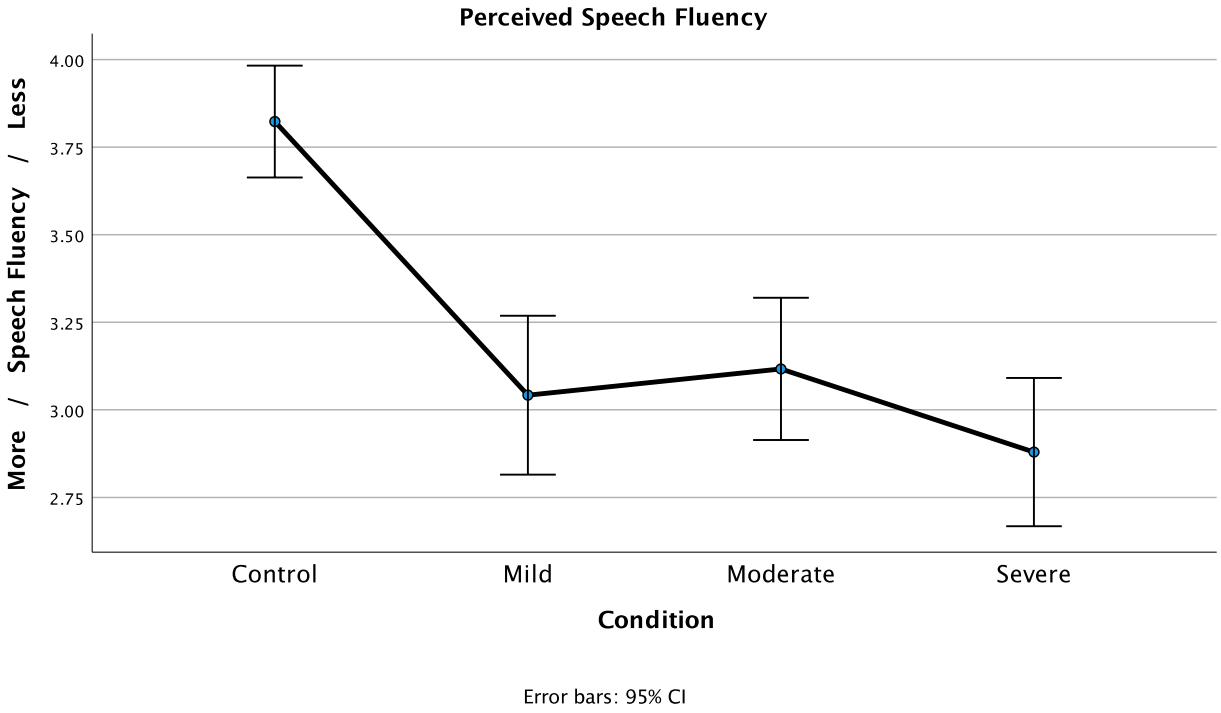
Figure 2: Speech Intelligibility



Speech Fluency

Data uncovered a significant main effect on perception of speech fluency, as detailed in Figure 3, [$F(3,777) = 22.089$, $p<.000$]. Bonferroni post hoc comparisons reveal the mild, moderate, and severe experimental disclosure conditions yielded favorable between group differences relative to control ($p<.000$, $p<.000$, $p<.000$, respectively)

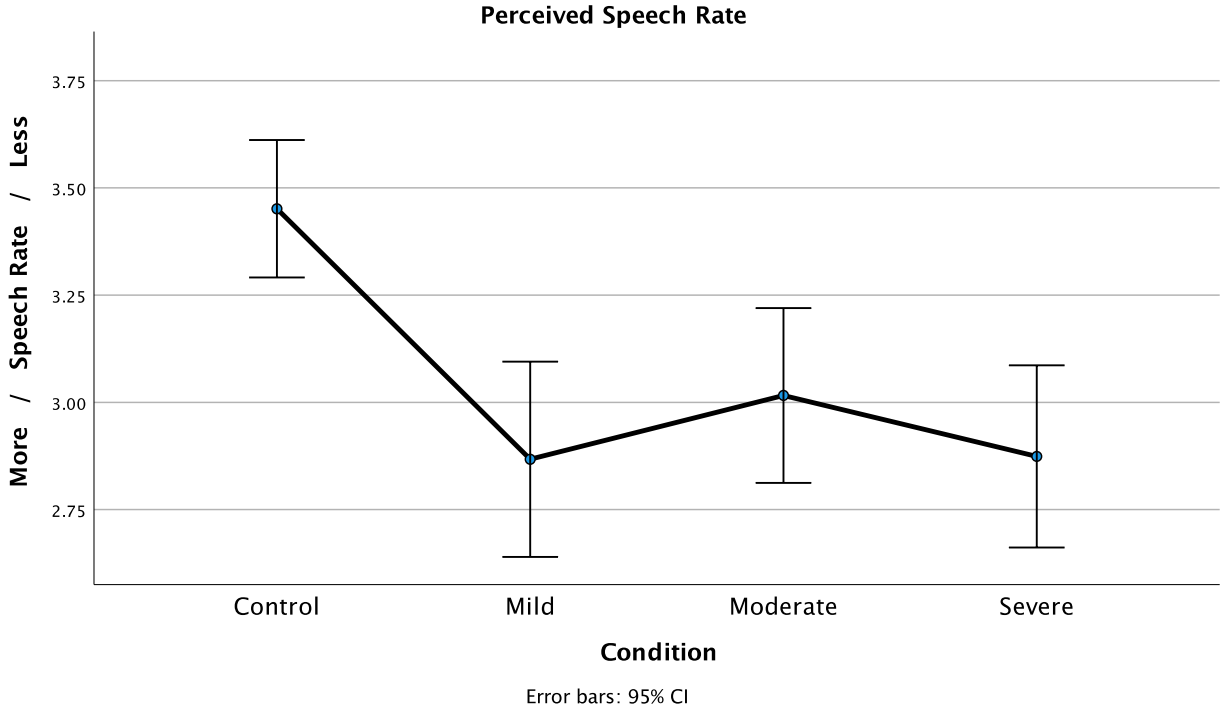
Figure 3: Speech Fluency



Speech Rate

Data uncovered a significant main effect on perception of speech rate, as detailed in Figure 4, [$F(3,777) = 9.459$, $p<0.000$]. Bonferroni post hoc comparisons reveal the mild, moderate, and severe experimental disclosure conditions yielded favorable between group differences relative to control ($p<.000$, $p=.005$, $p<.000$, respectively).

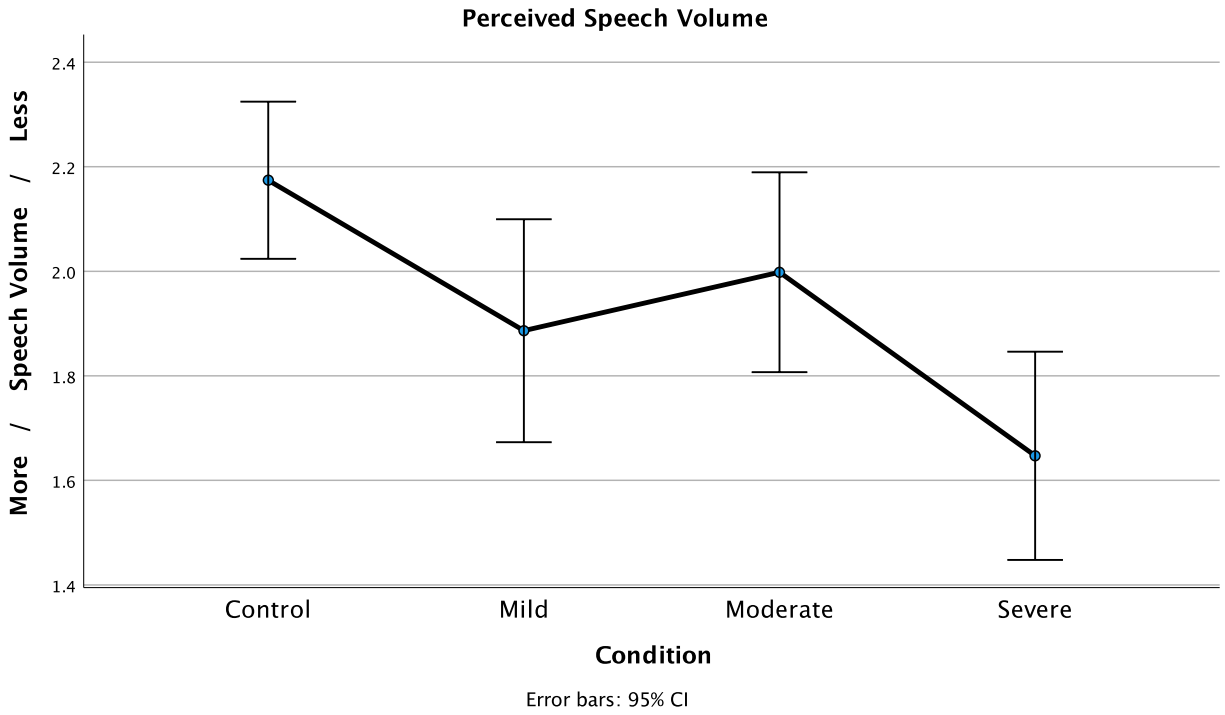
Figure 4: Speech Rate



Speech Volume

Data uncovered a significant main effect on perception of speech volume, as detailed in Figure 5, [$F(3,777) = 4.372$, $p=0.005$]. Bonferroni post hoc comparisons reveal the severe experimental disclosure conditions yielded favorable between group differences relative to control ($p=.004$, respectively), while the mild, and moderate experimental disclosure condition had no significant effect ($p=.182$, $p=1.000$).

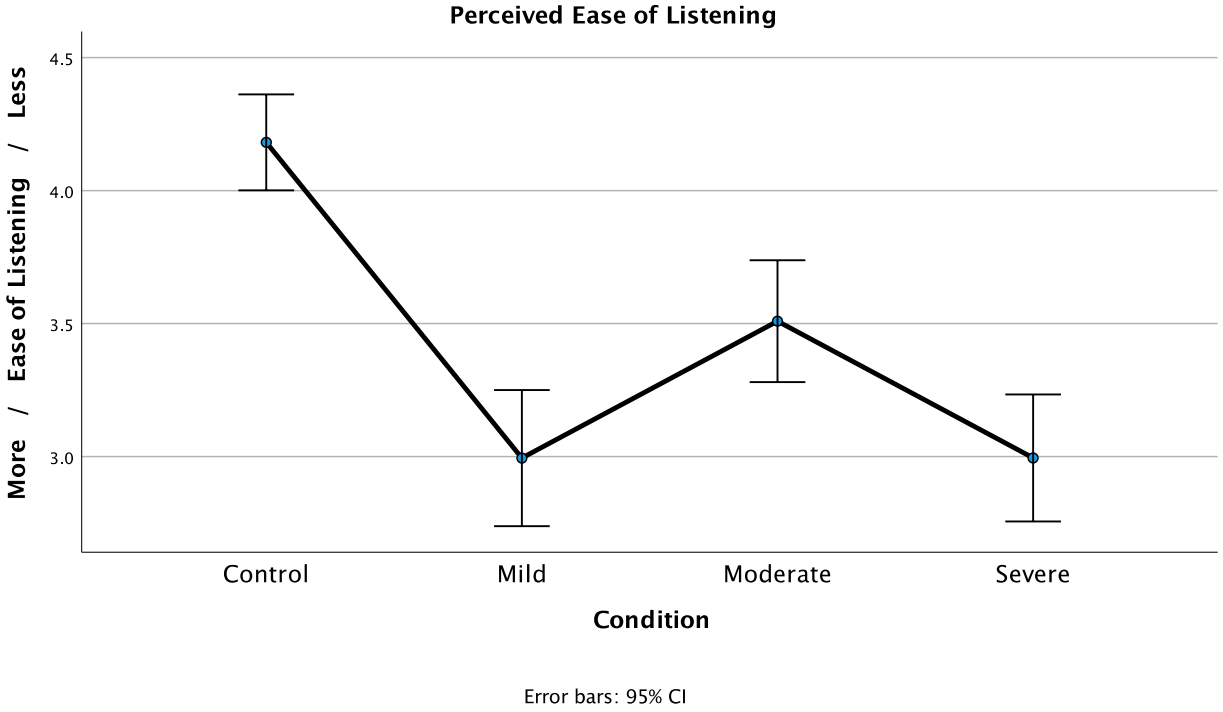
Figure 5: Speech Volume



Ease of Listening

Data uncovered a significant main effect on perception of ease of listening, as detailed in Figure 6, [$F(3,776) = 29.316$, $p<.000$]. Bonferroni post hoc comparisons reveal the mild, moderate, and severe experimental disclosure conditions yielded favorable between group differences relative to control ($p<.000$, $p<.000$, $p<.000$, respectively). Likewise, mild and severe experimental disclosures significantly outperformed moderate experimental disclosure ($p=.026$, $p=.010$).

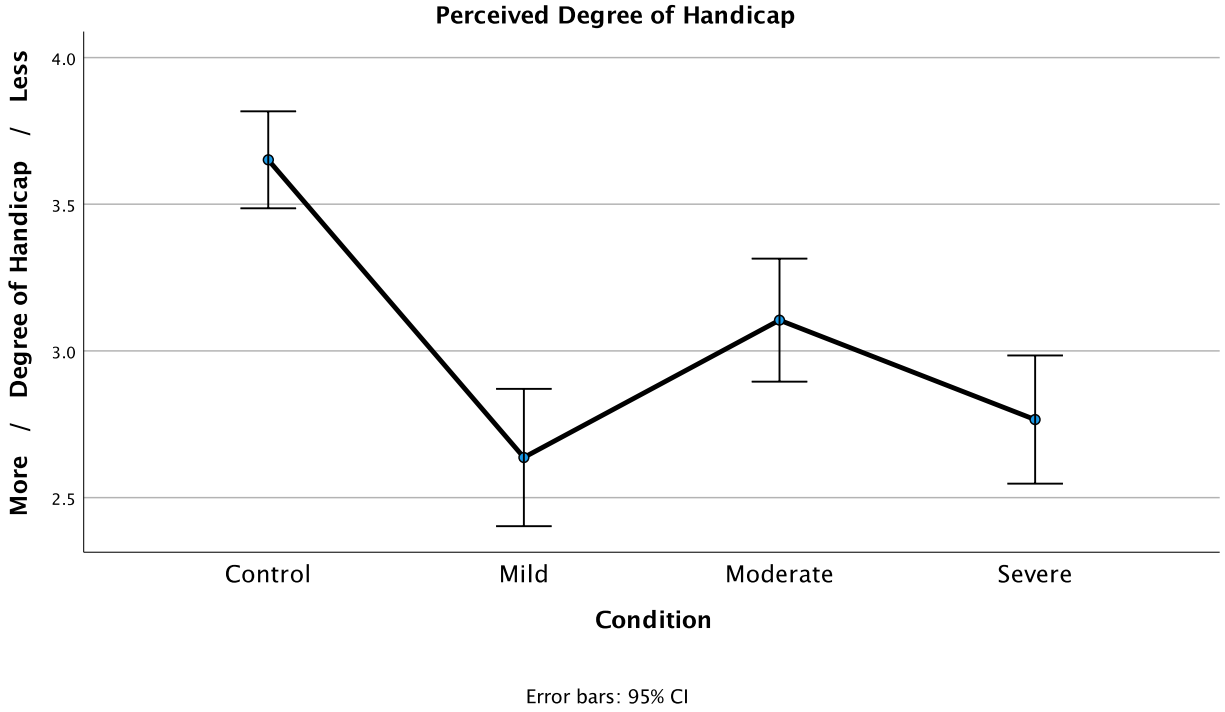
Figure 6: Ease of Listening



Degree of Handicap

Data uncovered a significant main effect on perceived degree of handicap, as detailed in Figure 7, [$F(3,776) = 24.872$, $p<.000$]. Bonferroni post hoc comparisons reveal the mild, moderate, and severe experimental disclosure conditions yielded favorable between group differences relative to control ($p<.000$, $p<.000$, $p<.000$, respectively). Likewise, mild and severe experimental disclosures significantly outperformed moderate experimental disclosure ($p=.042$, $p=.054$).

Figure 7: Degree of Handicap



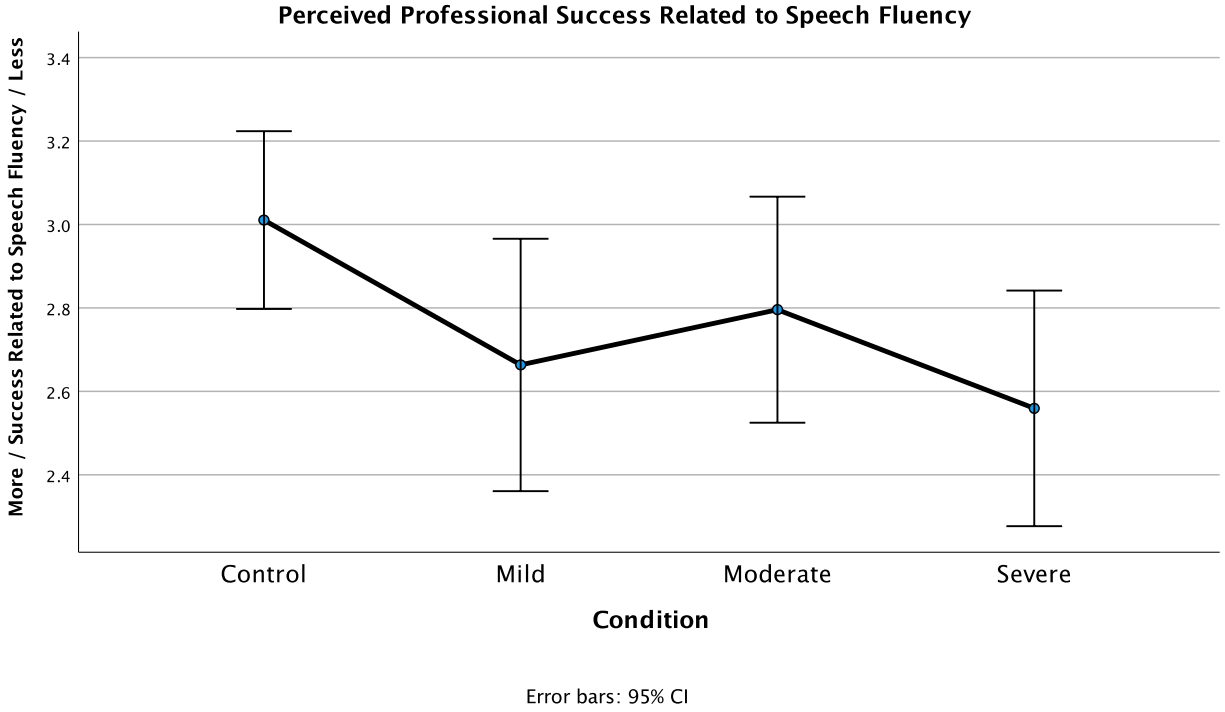
Professional Success

Data uncovered when asked if the adolescent male was likely to succeed in a professional occupation, 91.4% reported in support of success, and 8.6% reported in opposition of success.

Success Related to Speech Fluency

Data uncovered a trend towards significance on perceived success related to speech fluency, as detailed in Figure 8, [$F(3,777) = 2.593$, $p=.052$]. Bonferroni post hoc comparisons reveal severe experimental disclosure conditions yielded favorable between group differences relative to control ($p=.057$), while mild and moderate experimental disclosure conditions had no significant effect. ($p=.393$, $p=1.000$).

Figure 8: Success Related to Speech Fluency



Personality Characteristics

Survey results of perceived personality characteristics on different overt stuttering severity level disclosures can be located in Table 3. Main effects of different overt stuttering severity level disclosures were present in all of the trait pairs: calm/nervous, reliable/unreliable, relaxed/tense, unafraid/fearful, intelligent/unintelligent, confident/insecure, friendly/unfriendly, outgoing/shy, competent/incompetent, and approachable/unapproachable.

Table 3: Personality Characteristics

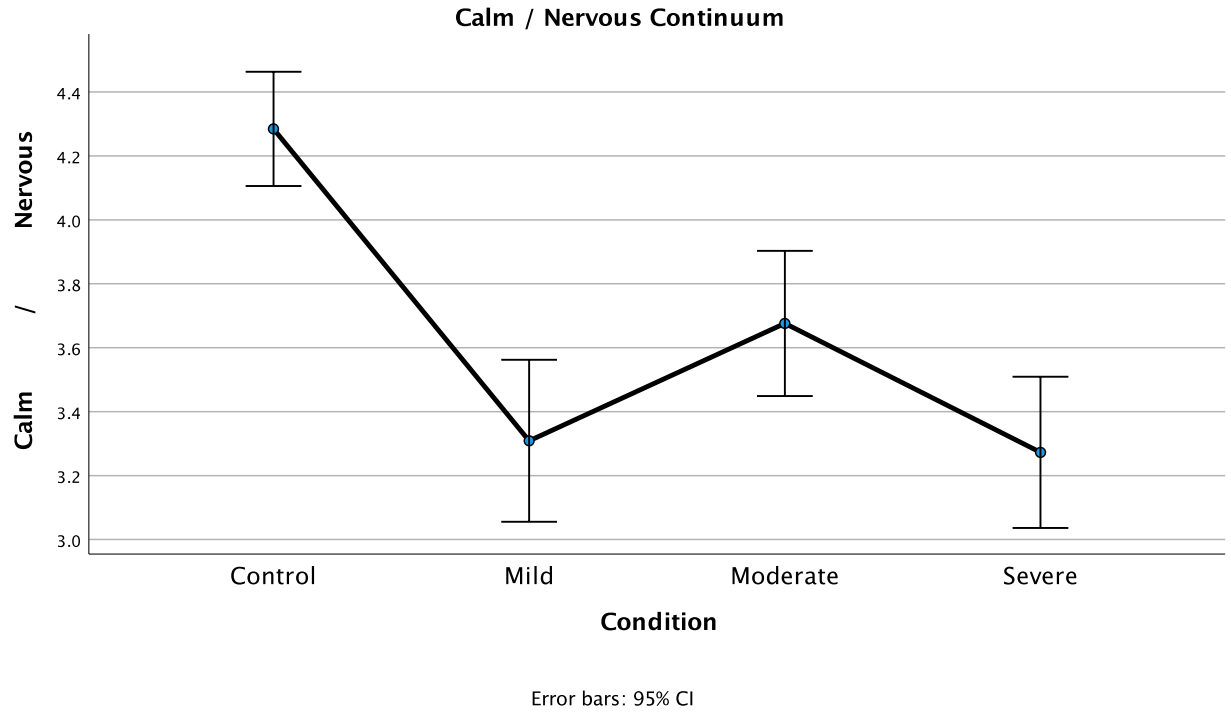
Personality Characteristics	F Statistic	P Value	Select Bonferroni Post-Hoc Comparisons
Calm/Nervous	20.986	<.000	Mild, Moderate, and Severe disclosure outperform no disclosure (p<.000, p<.000, p<.000, respectively)
Reliable/Unreliable	21.019	<.000	Mild, Moderate, and Severe disclosure outperform no disclosure (p<.000, p=.003, p<.000, respectively) Severe disclosure outperforms moderate disclosure (p=.007)
Relaxed/Tense	32.236	<.000	Mild, Moderate, and Severe disclosure outperform no disclosure (p<.000, p<.000, p<.000, respectively) Mild and Severe disclosure outperforms moderate disclosure (p=.012, p=.007, respectively)
Unafraid/Fearful	30.717	<.000	Mild, Moderate, and Severe disclosure outperform no disclosure (p<.000, p<.000, p<.000, respectively) Mild and Severe disclosure outperforms moderate disclosure (p=.009, p=.006, respectively)
Intelligent/Unintelligent	19.650	<.000	Mild, Moderate, and Severe disclosure outperform no disclosure (p<.000, p=.032, p<.000, respectively) Mild and Severe disclosure outperforms moderate disclosure (p=.011, p=.003, respectively)

Confident/Insecure	32.825	<.000	Mild, Moderate, and Severe disclosure outperform no disclosure (p<.000, p<.000, p<.000, respectively) Mild and Severe disclosure outperforms moderate disclosure (p=.006, p=.005, respectively)
Friendly/Unfriendly	8.528	<.000	Mild, Moderate, and Severe disclosure outperform no disclosure (p<.000, p=.039, p=.001, respectively)
Outgoing/Shy	36.005	<.000	Mild, Moderate, and Severe disclosure outperform no disclosure (p<.000, p<.000, p<.000, respectively)
Competent/Incompetent	15.707	<.000	Mild, Moderate, and Severe disclosure outperform no disclosure (p<.000, p<.000, p<.000, respectively)
Approachable/Unapproachable	13.063	<.000	Mild, Moderate, and Severe disclosure outperform no disclosure (p<.000, p=.008, p<.000, respectively)

Calm/Nervous

Data uncovered a significant difference in the calm/nervous trait pair, as detailed in Figure 9, [$F(3,777) = 20.986$, $p<.000$]. Bonferroni post hoc comparisons reveal the mild, moderate, and severe experimental disclosure conditions yielded favorable between group differences relative to control ($p<.000$, $p<.000$, $p<.000$, respectively).

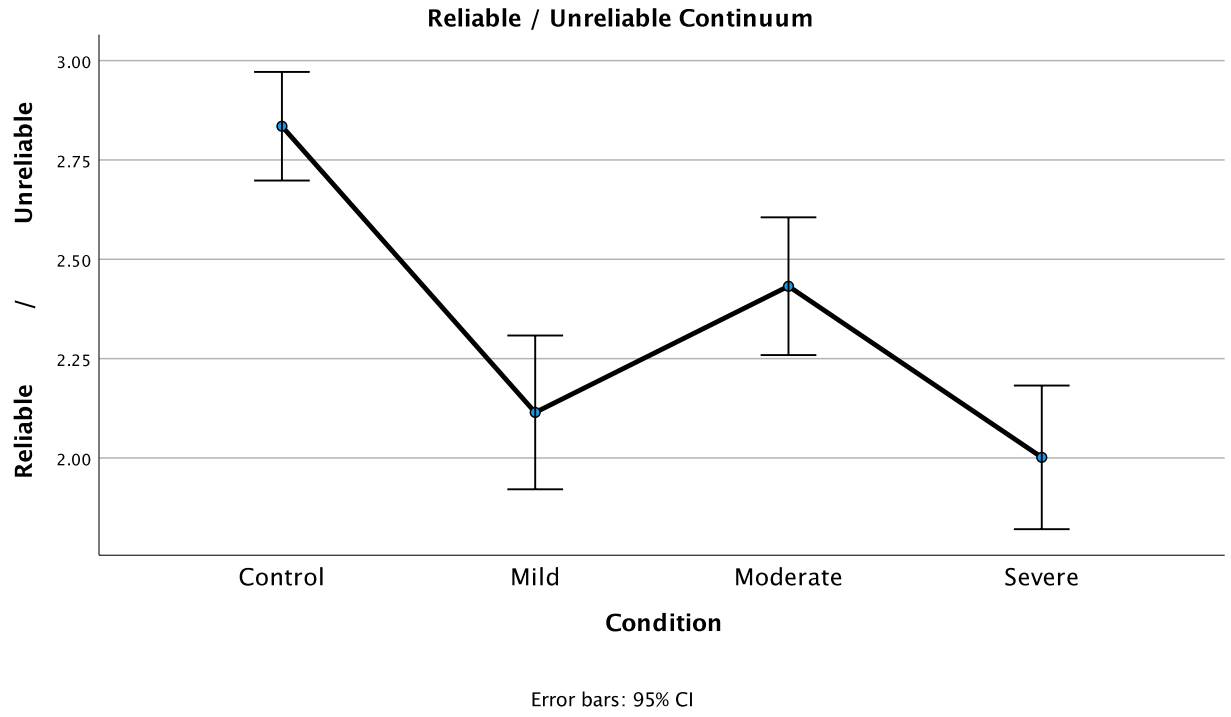
Figure 9: Calm/Nervous



Reliable/Unreliable

Data uncovered a significant difference in the reliable/unreliable trait pair, as detailed in Figure 10, [$F(3,776) = 21.019$, $p<.000$]. Bonferroni post hoc comparisons reveal the mild, moderate, and severe experimental disclosure conditions yielded favorable between group differences relative to control ($p<.000$, $p=.003$, $p<.000$, respectively). Likewise, severe experimental disclosure significantly outperformed moderate experimental disclosure ($p=.007$).

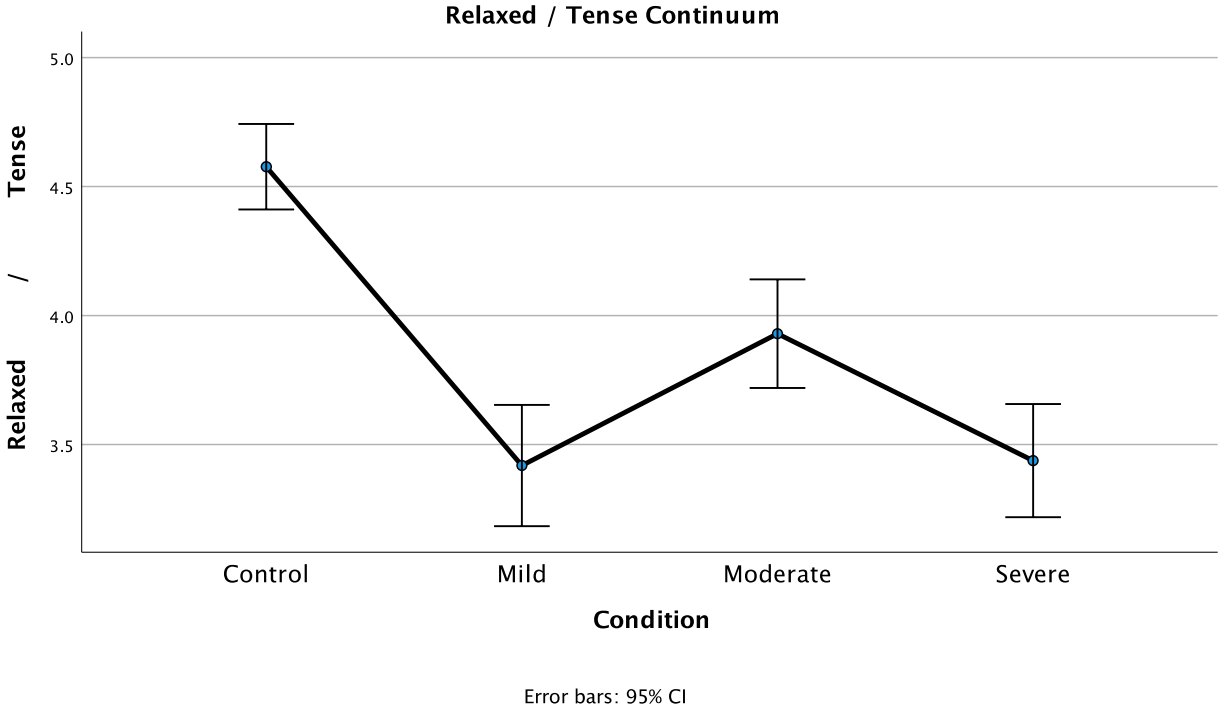
Figure 10: Reliable/Unreliable



Relaxed/Tense

Data uncovered a significant difference in the relaxed/tense trait pair, as detailed in Figure 11, [$F(3,777) = 32.236$, $p<.000$]. Bonferroni post hoc comparisons reveal the mild, moderate, and severe experimental disclosure conditions yielded favorable between group differences relative to control ($p<.000$, $p<.000$, $p<.000$, respectively). Likewise, mild and severe experimental disclosures significantly outperformed moderate experimental disclosure ($p=.012$, $p=.007$).

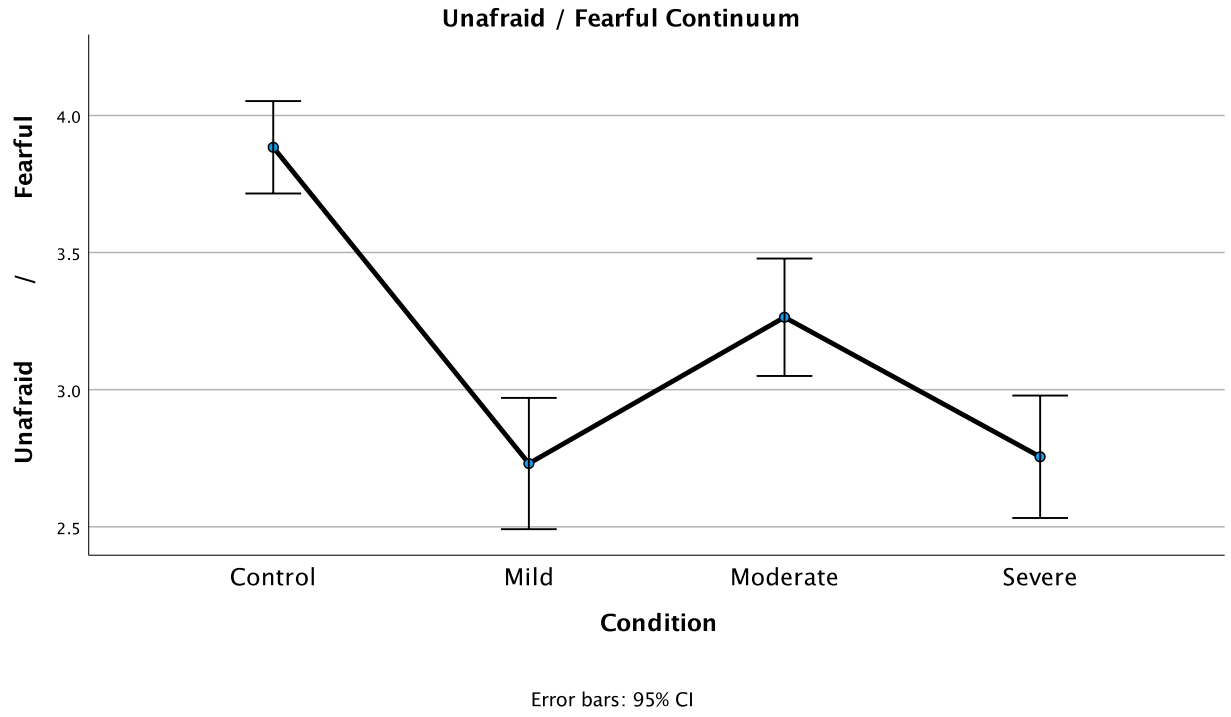
Figure 11: Relaxed/Tense



Unafraid/Fearful

Data uncovered a significant difference in the unafraid/fearful trait pair, as detailed in Figure 12, [$F(3,777) = 30.717$, $p<.000$]. Bonferroni post hoc comparisons reveal the mild, moderate, and severe experimental disclosure conditions yielded favorable between group differences relative to control ($p<.000$, $p<.000$, $p<.000$, respectively). Likewise, mild and severe experimental disclosures significantly outperformed moderate experimental disclosure ($p=.009$, $p=.006$).

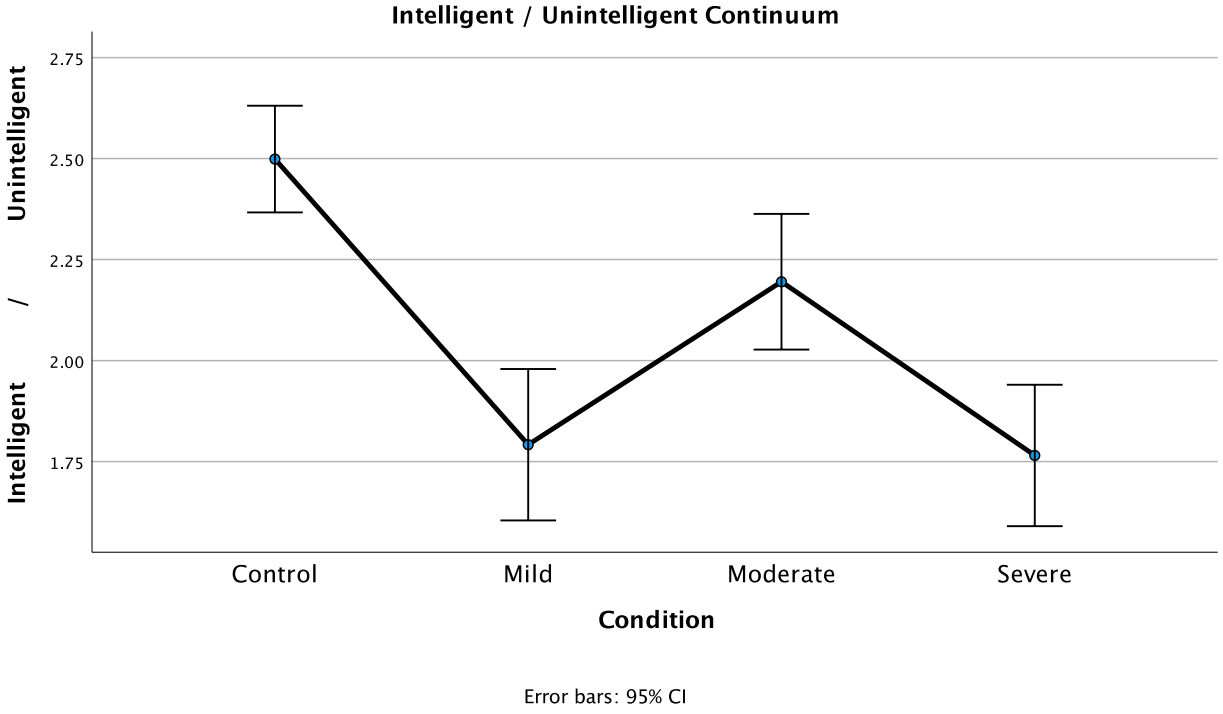
Figure 12: Unafraid/Fearful



Intelligent/Unintelligent

Data uncovered a significant difference in the intelligent/unintelligent trait pair, as detailed in Figure 13, [$F(3,777) = 19.650$, $p<.000$]. Bonferroni post hoc comparisons reveal the mild, moderate, and severe experimental disclosure conditions yielded favorable between group differences relative to control ($p<.000$, $p=.032$, $p<.000$, respectively). Likewise, mild and severe experimental disclosures significantly outperformed moderate experimental disclosure ($p=.011$, $p=.003$).

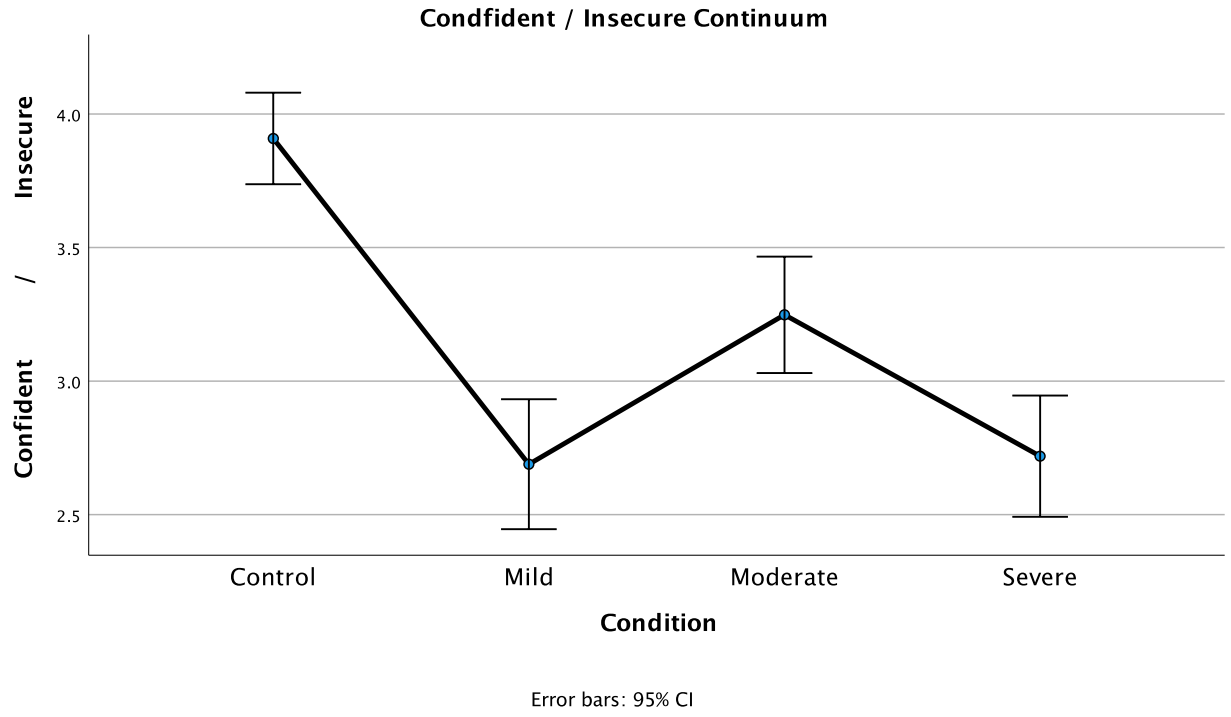
Figure 13: Intelligent/Unintelligent



Confident/Insecure

Data uncovered a significant difference in the confident/insecure trait pair, as detailed in Figure 14, [$F(3,777) = 32.825$, $p<.000$]. Bonferroni post hoc comparisons reveal the mild, moderate, and severe experimental disclosure conditions yielded favorable between group differences relative to control ($p<.000$, $p<.000$, $p<.000$, respectively). Likewise, mild and severe experimental disclosures significantly outperformed moderate experimental disclosure ($p=.006$, $p=.005$).

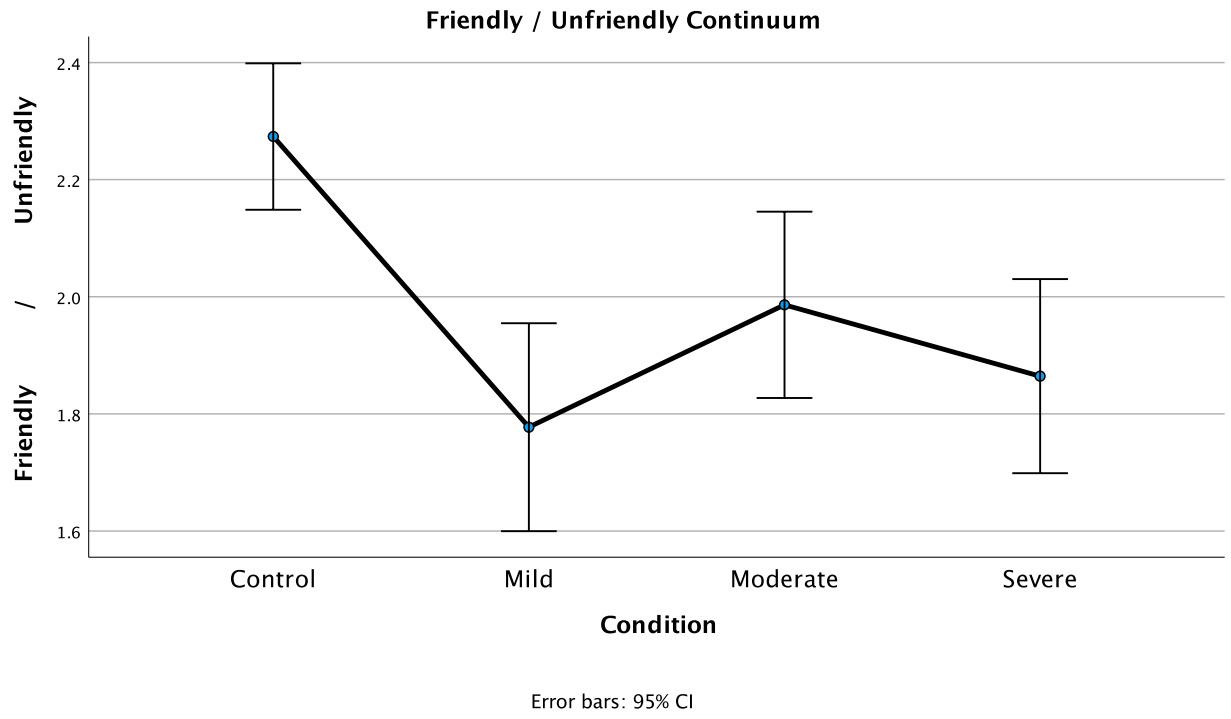
Figure 14: Confident/Insecure



Friendly/Unfriendly

Data uncovered a significant difference in the friendly/unfriendly trait pair, as detailed in Figure 15, [$F(3,777) = 8.528$, $p<.000$]. Bonferroni post hoc comparisons reveal the mild, moderate, and severe experimental disclosure conditions yielded favorable between group differences relative to control ($p<.000$, $p=.039$, $p=.001$, respectively).

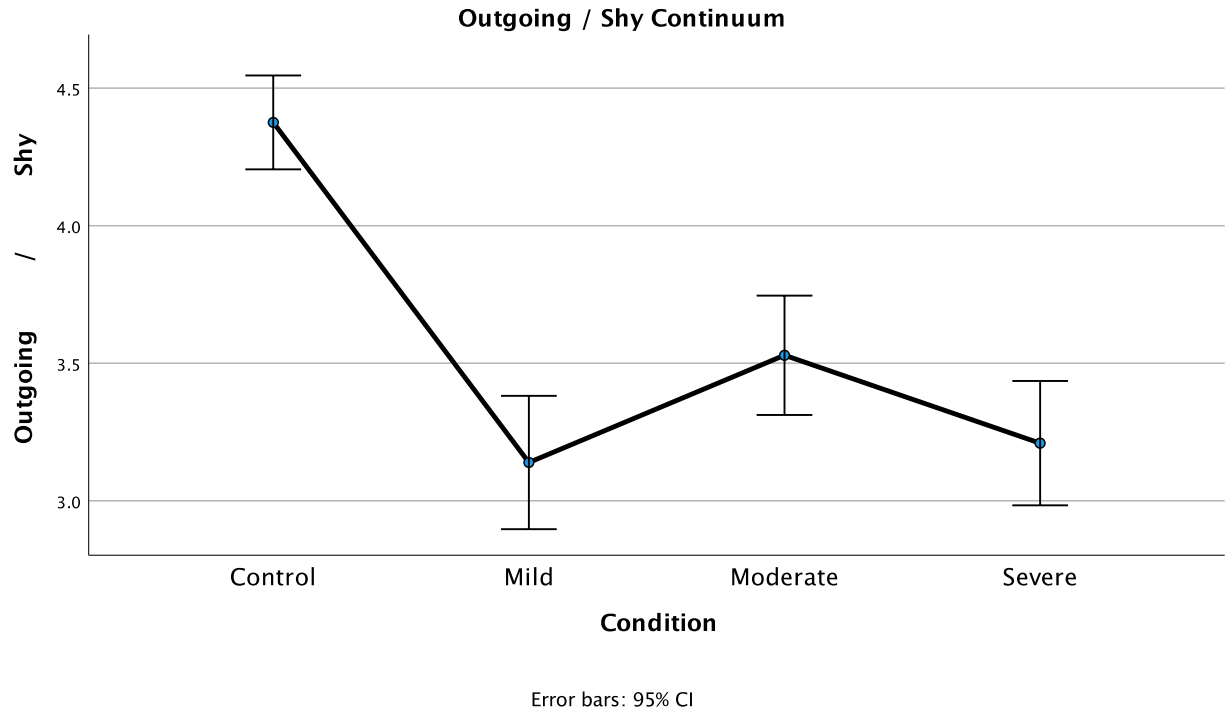
Figure 15: Friendly/Unfriendly



Outgoing/Shy

Data uncovered a significant difference in the outgoing/shy trait pair, as detailed in Figure 16, [$F(3,777) = 36.005$, $p<.000$]. Bonferroni post hoc comparisons reveal the mild, moderate, and severe experimental disclosure conditions yielded favorable between group differences relative to control ($p<.000$, $p<.000$, $p<.000$, respectively).

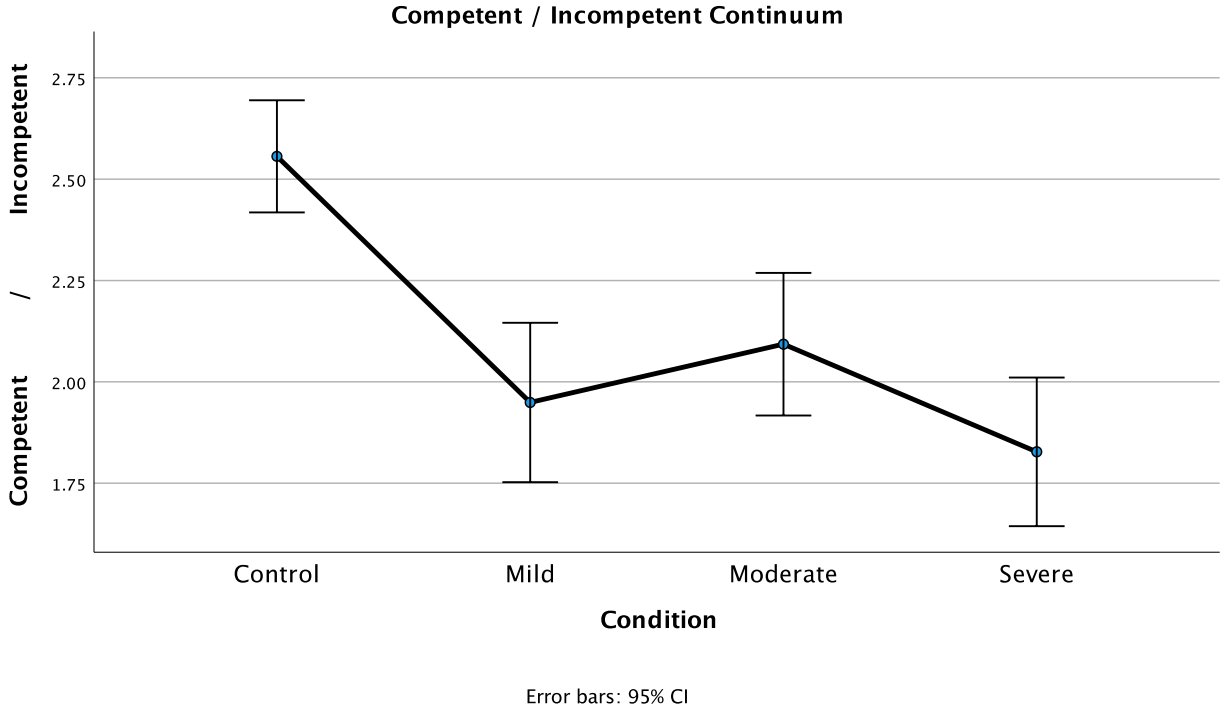
Figure 16: Outgoing/Shy



Competent/Incompetent

Data uncovered a significant difference in the competent/incompetent trait pair, as detailed in Figure 17, [$F(3,777) = 15.707$, $p<.000$]. Bonferroni post hoc comparisons reveal the mild, moderate, and severe experimental disclosure conditions yielded favorable between group differences relative to control ($p<.000$, $p<.000$, $p<.000$, respectively).

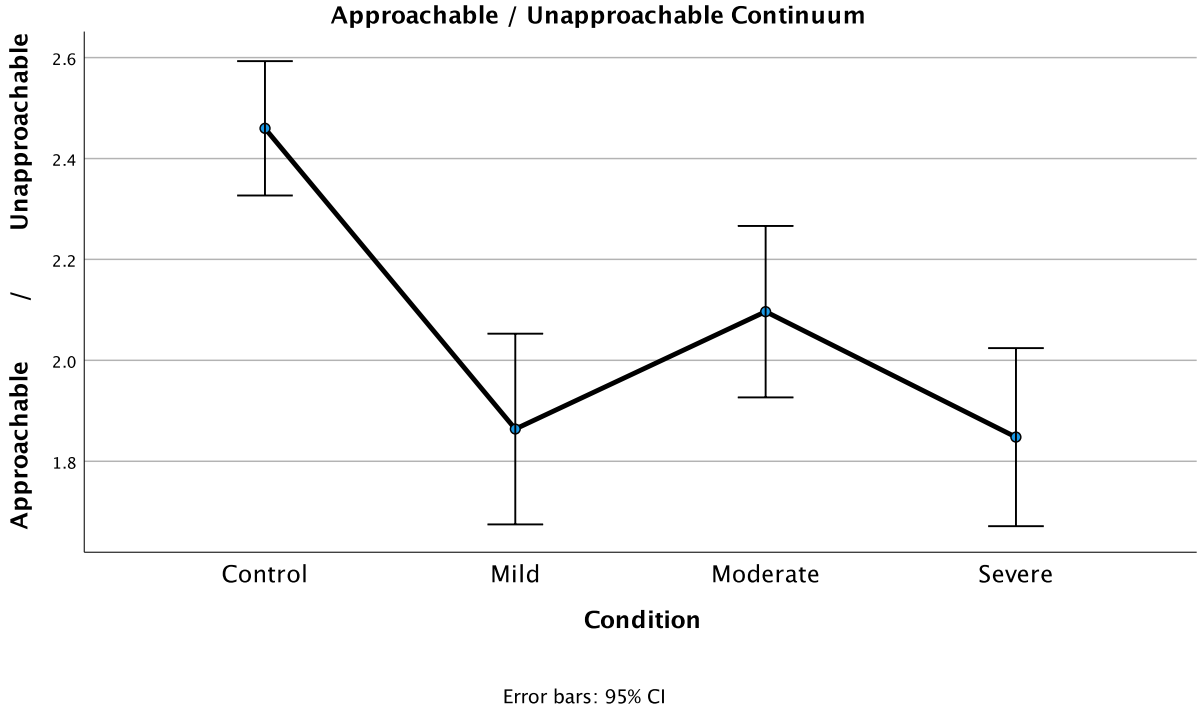
Figure 17: Competent/Incompetent



Approachable/Unapproachable

Data uncovered a significant difference in the approachable/unapproachable trait pair, as detailed in Figure 18, [$F(3,776) = 13.063$, $p<.000$]. Bonferroni post hoc comparisons reveal the mild, moderate, and severe experimental disclosure conditions yielded favorable between group differences relative to control ($p<.000$, $p=.008$, $p<.000$, respectively).

Figure 18: Approachable/Unapproachable



DISCUSSION

These data suggest that all self-disclosures increased the positive perceptions of speech skills and personality characteristics of an adolescent who stutters, despite different overt stuttering severity levels. These findings correlate with previous studies that researched the use of disclosures and perceptions on a PWS (Byrd, Croft, et al., 2017; Lincoln & Bricker-Katz, 2008; Snyder et al., 2020). However, the findings of this study have contributed to the expansion within the paradigm by exploring perceptions of self-disclosure relative to the different overt stuttering severities. Self-disclosure renders favorable for a PWS through alerting listeners of potential stuttering events prior to verbal communication, thereby desensitizing listeners and increasing confidence of the speaker (Byrd et al., 2017; Collins & Blood, 1990; Murphy et al., 2007). A PWS is more likely to be perceived in a positive manner when incorporating the use of disclosure prior to conversation.

However, these data also suggest that not all severity levels during stuttering disclosures perform equally relative to the perceptions of speech skills and personality characteristics of a PWS. While data revealed all self-disclosure methods outperformed no disclosure, it was evident that mild and severe severity level disclosures yielded more favorable than moderate severity level disclosures. Specifically, data results reveal severe disclosure outperforms moderate disclosure for perceptions on speech intelligibility, and reliable/unreliable trait pair. Furthermore, data results reveal both mild and severe disclosure outperform moderate disclosure for perceptions of the following speech skills: ease of listening, and degree of handicap. Likewise, data results reveal both mild and severe disclosure outperform moderate disclosure for

the following personality characteristic trait pairs: relaxed/tense, unafraid/fearful, intelligent/unintelligent, and confident/insecure.

These data findings align with previous research in which severe stuttering severity disclosures yield the most beneficial results (Collins & Blood, 1990). This can attribute to severe stuttering severity being more prominent and likely to be perceived as a disability compared to other severity levels; therefore, self-disclosure develops awareness and comfortability for both parties (Collins & Blood, 1990). Other research suggests that when presented with mild, moderate, and severe stuttering severity, listeners would only differentiate between mild and severe stuttering, thereby, completely overlooking and excluding the thought of moderate stuttering severity (Turnbaugh et al., 1979). It has also been stated that the Stuttering Foundation of America recognizes three levels of disfluency: normal disfluency, mild stuttering, and severe stuttering (Prasse & Kikano, 2008), suggesting a cultural categorization of stuttering severity levels that excludes moderate severity. This might suggest why moderate disclosure did not outperform the other severity levels on any occasion, as interpretations of moderate stuttering by listeners may have been divided between mild and severe severity interpretation.

Application of these Data to Overt & Covert Stuttering Treatment

Research reveals that an overuse of covert stuttering avoidance techniques, such as circumlocutions, incomplete phrases, pauses, or revisions may be perceived more negatively than overt stuttering behaviors; consequently, listeners may perceive covert stuttering in a PWS as more incompetent, as opposed to a PWS who produces overtly stuttered speech (Von Tiling, 2011). It was revealed that listeners felt that the PWS was more focused on the technicality of speech production, rather than engaging in a meaningful conversation (Von Tiling, 2011). Specifically, when analyzing the different speech samples (stuttered, stuttered/hesitant, hesitant,

and prolonged), the findings of this study indicated that the stuttered/hesitant speech was perceived most negatively by participants (Von Tiling, 2011). It can be suggested that any person with a stutter is susceptible to the use of covert avoidance techniques. However, a PWS should avoid covert stuttering techniques and seek advising on other supplemental treatments (Douglass et al., 2018). It is more beneficial for a PWS to use alternative methods to stuttering avoidance techniques, which implies heavy emphasis on the importance of continuing to research the disclosure paradigm (Collins & Blood, 1990; Douglass et al., 2018; Lincoln & Bricker-Katz, 2008). While moderate overt severity stuttering disclosure underperformed relative to mild and severe overt severity during stuttering disclosures remains unknown, data suggests that overt stuttering outperforms covert stuttering relative to stuttering disclosures and the perceptions of a PWS.

Strengths and Limitations

Strengths of this study include a large population size, which likely created a better representation of the perceptions of a PWS. This created stronger, more evident conclusive results, and revealed notable trends in the data. Additionally, each survey question revealed a significant main effect, with the exception of success related to speech fluency. This uncovers significant findings that support the researchers claim of the benefits of disclosure for a PWS.

Possible limitations of this study include the transition from pre Covid-19 procedures to post Covid-19 procedures. When the study was first administered, participant responses were collected in a face-to-face classroom setting. Due to mandated health and safety precautions, the remaining participant responses were collected through an online survey format. The setting in which the survey was distributed had the potential of affecting responses. The research team was unable to manage possible distracting environmental factors. While the research team insisted

the survey be taken in a quiet, distraction free setting, all data responses were reported with reliance on study participants adhering to requested testing protocols.

Shifting data collection to an online modality was revealed as a source of covariance. This was an unpredictable and unavoidable repercussion of the Covid-19 pandemic. Moreover, the observed covariance may have potentially reflected regression towards the mean, as online data collection represents majority of the responses compared to the amount of live data collected.

Additionally, the length and topic of the primary video stimulus could have reduced the attention of the participants, thereby lowering interpretation of the survey. It is also uncertain if participants had a fully developed comprehension of the defined meaning of stuttering. This unawareness may have resulted in mislabeling others as a PWS.

Clinical Application and Future Research

The use of self-disclosure for all severity levels significantly outperformed, moreover, speech language pathologists should implement teaching this method to PWS as a supplemental treatment for stuttering. Future research should enforce data collection execution through a single procedural method. This would enhance the external validity of the data responses. The research team should make efforts to educate participants on the defined meaning of stuttering to generate more accurate responses, such that they could offer a standardized definition to participants before proceeding with the survey. Further research within the paradigm could include exploring a different gender of the perceived speaker, such as featuring a female PWS. Moreover, new study ideas could implement researching perceptions of an adult who stutters, opposed to a child who stutters or adolescent who stutters (Snyder et al., 2020). Likewise, different disclosure methods can be explored, such as telephone disclosure, live disclosure, or

using more apparent severity. The researchers can also investigate different lengths and topics of the primary video stimulus to determine any potential adverse effects.

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Appendix A: Text of Stuttering Disclosure

"The video you are about to watch features me, a person who stutters. You may see or hear me stutter during this video. I appreciate you taking the time to watch this video and complete a quick [brief] survey afterwards."

Appendix B: Speech Skills & Personality Characteristics Survey

SURVEY OF PERCEPTIONS OF A SPEAKER'S VIDEOTAPED PRESENTATION

I. SPEECH SKILLS: Please circle one number on each line to show your rating of the speaker's oral speech skills along each dimension. **For example**, for "Speech Intelligibility," a rating of "1" would indicate completely intelligible speech, and "7" would indicate completely unintelligible speech.

1.	Speech Intelligibility:							
Intelligible	1	2	3	4	5	6	7	**Unintelligible**
2.	Speech Fluency:							
Fluent	1	2	3	4	5	6	7	**Disfluent**
3.	Speech Rate:							
Appropriate Rate	1	2	3	4	5	6	7	**Inappropriate Rate**
4.	Speech Volume:							
Appropriate Volume	1	2	3	4	5	6	7	**Inappropriate Volume**
5.	Ease of Listening (i.e., how easy is it to listen to this person's speech):							
Easy	1	2	3	4	5	6	7	**Difficult**
6.	Degree to which you feel the person is handicapped by his speech abilities:							
Not Handicapped	1	2	3	4	5	6	7	**Handicapped**
7.	In your opinion, is this person likely to succeed in their professional career?							
Yes					**No**			
8.	Is your perception of their professional success related to their speech fluency?							
No	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**Yes**

II. PERSONAL CHARACTERISTICS: Please circle one number on each line to show your rating of the speaker along each of the following personal characteristics. **For example**, for "Calm/Nervous," a rating of "1" would indicate that the speaker is judged to be extremely calm, and "7" would indicate that the speaker is judged to be extremely nervous.

1.	**Calm**	1	2	3	4	5	6	7	**Nervous**
2.	**Reliable**	1	2	3	4	5	6	7	**Unreliable**
3.	**Relaxed**	1	2	3	4	5	6	7	**Tense**
4.	**Unafraid**	1	2	3	4	5	6	7	**Fearful**
5.	**Intelligent**	1	2	3	4	5	6	7	**Unintelligent**
6.	**Confident**	1	2	3	4	5	6	7	**Insecure**
7.	**Friendly**	1	2	3	4	5	6	7	**Unfriendly**
8.	**Outgoing**	1	2	3	4	5	6	7	**Shy**
9.	**Competent**	1	2	3	4	5	6	7	**Incompetent**
10.	**Approachable**	1	2	3	4	5	6	7	**Unapproachable**

III. PARTICIPANT DEMOGRAPHIC INFORMATION:					
1. Gender:	Female	Male	2. Age:		
3. Race (please **circle** one):					
African American	Asian	Latin X	Native American (North America)	White	Other
4. Major (or profession):					
5. What year in college are you?					
Freshman	Sophomore	Junior	Senior	Graduate Student	Other
6. Number of **immediate** family members who stutter:					
7. Number of **extended** family members who stutter:					
8. Number of **friends** or **acquaintances** who stutter:					
9. Number of your total **previous/current instructors** who stutter:					