Retrospective Experiences of Cyberbullying and Emotional Outcomes on Young Adults Who Stutter

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Abstract

The objective of this quantitative research study was to identify and examine psychological effects on adults who stutter who were cyberbullied as an adolescent, specifically looking at depression, anxiety, and stress levels. Using survey methodology, a two-way between-groups multivariate analysis of variance (MANOVA) was utilized to determine if young adults who stutter and were cyberbullied in middle and/or high school express current depression, anxiety, or stress levels as compared to three other groups (no cyberbullying and no stuttering; cyberbullying and no stuttering; and no cyberbullying and stuttering). This study used the Depression Anxiety and Stress Scales (DASS) instrument in an online survey format to determine which, if any, lasting psychological stressors were found. Results indicate that the cyberbullied and stuttering group have significantly higher anxiety levels compared to the three additional groups, significantly higher depression levels compared to the group with no cyberbullying and no stuttering, and significantly higher stress levels compared to the groups with stuttering and no cyberbullying and no cyberbullying and no stuttering. This research indicates the effects that cyberbullying can have on mental health, and additionally the negative effect that stuttering can have on a person's overall mental health as well.

Keywords Bullying · Stress · Anxiety · Depression · Speech disorders · Quality of life

In its most basic form, to “bully” someone is the act of repeated intentional harm emotionally, verbally, or physically, often by someone who is in a higher power position (Olweus 1993). Bullying has been found to have lasting effects on victims (Cammack-Barry 2004). For people with disabilities, specifically those who stutter, those effects of bullying can be even more damaging to a person due to the vulnerability of this population (Blood and Blood 2004). The act of bullying has been shown to increase the severity of the stuttering and have increased reluctance to speak to authority figures or aggressive individuals after the bullying (Hugh-Jones and Smith 1999). This indicates that people

who stutter are not only more susceptible to bullying, but also how people who stutter have a greater lack of control of the situation compared to those who do not have a speech disability. People who stutter have been shown to utilize social media as an outlet to decrease anxiety and communicate without fear of negative evaluation (Fuse and Lanham 2016). When a person who stutters is cyberbullied, their safe outlet of social media used to communicate freely and confidently is jeopardized. New research in the field of bullying, specifically cyberbullying people who stutter, is critically needed due to the lack of available research and inconsistent findings which make it difficult to create effective treatment interventions for those struggling.

According to a 2012 study conducted by Common Sense Media, as much as 90% of adolescents aged 13–17 years old have used a social media site, with Facebook being the most popular (68%). This high frequency of social media use by adolescents creates limitless opportunities to cyberbully victims as they, or at the very least their information, are always available online in comparison to face-to-face bullying which can only be taken place in person.

Different from traditional face-to-face bullying, research regarding cyberbullying is greatly lacking and there is still

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research that needs to be done to fully understand the phenomenon and to provide the best treatment possible. It is often assumed that traditional bullying and cyberbullying result in the same negative effects, when in actuality the two are very different. Compared to traditional bullying, cyberbullying's effects have in fact been shown to be significantly worse as shown in academic performance and overall self-worth due to constant access to the victims (Sticca and Perren 2013).

The consistencies in the research regarding people with disabilities that are most often found are that people who stutter are often seen as being more vulnerable to bullying and have overall negative views from peers (Hughes et al. 2014). Children who stutter have been found to be three times more likely to be bullied, are seen as less popular, seen by peers as having less leadership skills, are more likely to be ignored or walked away from, and have lasting trouble forming social relationships and resolving social conflicts as they mature (Blood and Blood 2004; Davis et al. 2002; Langevin et al. 2010). Because research on cyberbullying suggests a greater effect on victims and people who stutter have a much higher risk of being bullied, it is crucial to study the relationship between cyberbullying and those who stutter to determine how best to treat those victims and create effective cyberbullying prevention and action plans to better serve that specific population.

Purpose of the Study

The purpose of the current study is to investigate depression, anxiety, and stress symptoms of previously cyberbullied victims who stutter which can help build on previous literature, create valuable treatment interventions, and overall better understand the damaging effects of cyberbullying. Due to the continuing development of the internet and additional ways to reach victims, it is crucial that research being conducted focuses more on cyberbullying in comparison to traditional bullying as the prevalence rates for cyberbullying continue to rise and the victims suffering remain misunderstood.

Bullying

Bullying is one of the more maladaptive ways often used to intimidate others to establish power and control over their victims (Donegan 2012). Putting another person down by means of bullying establishes a ranking order, putting the bully at the top and the victim on the bottom of the rank, hence fulfilling a drive to thrive in a competitive world.

Olweus (1993), a pioneer for bullying research, defines bullying as “when he or she is exposed, repeatedly and over time, to negative actions on the part of one or more other students” (p. 9). To further define, Olweus explains a “negative

action” to be an intentional injury, infliction, or discomfort on another person. This can be done verbally (threatening, teasing, name calling), physically (hitting, kicking, pinching, poking), or through offensive gestures (making faces, purposely excluding someone, disregarding someone's wishes) (Olweus 1993).

Nansel et al. (2001) studied nearly 16,000 United States students to determine several factors involving bullying. Sixth to tenth grade students were surveyed using the World Health Organization's Health Behaviour in School-aged Children survey. Results indicated that bullying rates were highest in grades sixth through eighth compared to grades ninth through tenth. These results are consistent with The Center for Disease Control and Prevention's 2009 study conducted in the state of Massachusetts (Centers for Disease Control and Prevention 2011). Nearly 6,000 randomly selected students in 138 public middle and high schools participated in a study aimed at identifying bullying prevalence. Their results indicated that nearly 27% of middle school students were categorized as victims of bullying, as compared to almost 16% of high school students (Centers for Disease Control and Prevention 2011).

Operationally, short-term effects can be defined as those that happen during or shortly after bullying has taken place. Short term-effects noted by Espelage (2013) on a victim of bullying include eating disorders, sleep disorders, poor peer relationships, increased drug and alcohol use, dropping out of school, frequent absences, trouble concentrating, and increased suicide risk. Additionally, youth victims of bullying were found to be three times more likely to experience suicidal thoughts compared to youth who were not bullied (Centers for Disease Control and Prevention 2011).

Long-term effects differ from short-term effects in that long-term effects are defined as occurring after the bullying has taken place and may well outlast the actual bullying. A longitudinal study done by the Duke University School of Medicine followed 1,270 adolescents into adulthood (Copeland et al. 2013). The researchers interviewed participants annually from the age of 9 to 16 years old using structured interviews to assess for depression, anxiety, antisocial personality disorder, substance use disorders, and suicidality. The results of this study showed that the victims of adolescent bullying were 3.4 times more likely to have a depressive disorder, 4.7 times more likely to have an anxiety disorder, 3.6 times more likely to have generalized anxiety, 3.2 times more likely to have panic disorder, and 5.3 times more likely to have agoraphobia as an adult compared to those who were not bullied.

Although research regarding victims of bullying with disabilities is sparse, the studies suggest that people with disabilities are more likely to be bullied compared to those without a disability (Rose et al. 2012). Rose et al. (2009) found in their study that people with disabilities had a

significantly higher bullying rate compared to those who were not in a special education program. In a 2011 mixed methods study, the most frequently mentioned characteristic of a typical victim is standing out in some way from the rest of the crowd (Guerra et al. 2011). McLaughlin et al. (2012) described a wide array of literature about prevalence rates for different populations of individuals with disabilities who are bullied: 83% of young people with learning disabilities, 82% of young people who stutter, 39% of children with other speech and language difficulties, 70% of children with autism or spectrum disorders with other characteristics, and 30% of young people with reading difficulties.

Cyberbullying

Technology has provided an outlet for people to engage in bullying behavior, but in a way that now provides constant access to the victim. The development of cell phones, text messages, computers, and the internet has offered additional ways for bullies to victimize others in an emotionally detached manner (Sticca and Perren 2013). The feeling of being anonymous creates a safe barrier between the bully and the victim so that the bully does not have to see the victim's reaction, making it morally easier to conduct and repeat the bullying (Sticca and Perren 2013).

Being a relatively new research topic, cyberbullying has not yet achieved a global definition (Langos 2012; Naruskov et al. 2012). Several studies around the world have tried to narrow down the definition of cyberbullying, with most of them arriving at similar results. Repetition, power imbalance, and intention have all been deemed consistent in the definition of cyberbullying (Langos 2012; Menesini et al. 2012; Naruskov et al. 2012).

Repetition can be thought of as repeated attacks to the victim or repeated exposures, regardless of the specific format those exposures take (Langos 2012). Langos (2012) explained that repetition can also be viewed in the sense that one attack can be viewed several times by many different people, making it a repeated act every time someone views it. For example, if a bully sends one text message to the victim and then shows the message to several people via handing it off or re-posting it, the attack is repeated in the sense that each new person "witnesses" the event.

Power imbalance is consistently present in the research for a definition of cyberbullying; the imbalance can be real or perceived. Real imbalance qualifies as physical stature, age, job position, or intelligence (Langos 2012). Perceived levels of power can include qualities such as shyness, low self-esteem levels, lower social status, and any other inferiority that is specific to each person's sense of self (Langos 2012). Computer skills, availability of the victim, and the support of other online members may contribute to the

power differential between victim and perpetrator (Naruskov et al. 2012).

The intent to harm is the third consistent criteria shown in research of cyberbullying. Research from focus groups has shown that the intent to harm the victim is critical for the act to be considered cyberbullying (Menesini et al. 2012). Intention to harm marks the difference between cyberbullying and "teasing" or "joking". The reason for the perpetrator's attack as well as how the victim perceives the attack makes the difference between cyberbullying and cyberjoking (Naruskov et al. 2012).

Kowalski and Limber launched a study in 2007 in hopes of getting accurate and updated prevalence rates of cyberbullying. They stated that they found great variability in prevalence rates of cyberbullying victimization, ranging from a low of 4% to a high of 72% (Kowalski and Limber 2013). They studied 931 students in Pennsylvania in grades 6–12 and found that nearly 10% of students disclosed being cyberbullied at least once and 4% of students being cyberbullied 2–3 times or more per month. Contrastingly, a study done in Serbia showed that approximately 22% of middle school students declared some form of cyberbullying (Popovic-Citic et al. 2011). A study composed of nearly 4,700 middle school and high school students in Midwestern states in the United States show that 23% said that they experienced cyberbullying (Litwiller and Brausch 2013).

Short-term effects are those that happen during or shortly after victimization. Of the available research regarding cyberbullying and short-term effects, many studies are consistent in their findings. Price and Dalgleish (2010) studied 548 Australian adolescents on their experiences, impacts, and coping strategies for cyberbullying. They found that "of the 86% who reported some effect, the most common areas of impact included reduced self-confidence (78%), self-esteem (70%) and friendships (42%). Notably, 35% reported a negative effect on their school grades, 28% on their school attendance and 19% on their family relationships" (p. 55). Additionally, Hoff and Mitchell found that those who experienced anonymous cyberbullying had more significant effects, specifically feeling increased powerlessness and fear. This indicates a separation between traditional bullying and cyberbullying in that it is less common and harder to be an anonymous face-to-face bully compared to a cyberbully (Hoff and Mitchell 2009).

Results from prior studies regarding long-term effects can be similar to short-term effects by name but differ in intensity and length. Suicidal thoughts and behaviors, eating disorders, depression, physical assault, homicide, committing crimes, and social anxiety are some of the effects that have been found in various studies (Kowalski et al. 2012; Litwiller and Brausch 2013). In regard to suicide specifically, Hinduja and Patchin (2010) found that "cyberbullying victims were 1.9 times more likely...to have attempted

suicide than those who were not cyberbullying victims” (p. 216).

Research has consistently shown that people with special needs have a considerably higher risk of being bullied compared to their non-disabled peers due to them being more likely to stand out and be different, making them easy targets for bullies (Baumeister et al. 2008; Didden et al. 2009; Humphrey and Lewis 2008). Ways in which they stand out include social skill deficits, not being accepted by their peers, social isolation, and other problem social behaviors (Estell et al. 2009). Of the research found, the prevalence rates for cyberbullying in people with disabilities vary; however, just as traditional bullying, the numbers are significantly different from people without disabilities. Didden and colleagues (2009) found that 11% of children with a developmental disability aged 12–19 years old had been cyberbullied via internet or text messaging, while Kowalski and Fedina (2011) found that 21% of 5th–12th grade students diagnosed with ADHD or Asperger’s Syndrome had been cyberbullied within the past two months.

Stuttering

A neurological condition that has no known cure or definitive etiology, stuttering is a disorder that negatively affects a person’s quality of life (Craig et al. 2009; Koedoot et al. 2011). Peer rejection, low self-esteem, and social and emotional withdrawal are among the effects that stuttering can have on a person (Blood and Blood 2004). Bullying exacerbates these effects by reinforcing their negative beliefs about themselves, thus worsening the effects and making an already susceptible population even more vulnerable when bullied.

Within the population of people with disabilities, people who stutter are among those who are most frequently bullied (Blood and Blood 2004). People with a speech impairment, such as stuttering, can be very easy to bully as the disability itself cannot be cured or avoided which provides a lifetime of opportunities to be victimized. Blood and Blood (2004) make a connection between traits of a typical target for a bully as well as typical traits in a person who stutters, stating, “students who stutter are described as more withdrawn, insecure, introverted, tense, anxious, fearful, shy, nonassertive, and fearful of communication than students who do not stutter... These negative stereotypes are remarkably similar to how bullies define their ‘targets’” (p. 69–70). This assertion may lead to the assumption that those who stutter are more likely to get bullied, and therefore obtain lasting effects on the already naturally occurring negative effects of being a person who stutters (Hugh-Jones and Smith 1999; Hughes et al. 2014.)

There does not appear to be research regarding cyberbullying of people who stutter. The research background of

stuttering is not limited in quantity, though many questions still remain about best treatment practices, epidemiology, and if and what a cure can be. Secondly, cyberbullying is a relatively new research topic on its own due to the continuing development of the internet and technology as a whole. With the quickly growing technology industry and the high usage of these platforms in the adolescent population, cyberbullying is expected to continue. People around the world will continue to be negatively affected, putting them at risk of developing chronic mental health disorders such as major depression and anxiety disorders as an adult which can make it difficult to engage in typical activities such as obtaining and maintaining a job, forming meaningful relationships, and having an overall good quality of life.

Both traditional bullying and cyberbullying are known to cause severe damage to a person’s self-esteem and overall quality of life (Patchin and Hinduja 2010). The limited research that compares cyberbullying and traditional bullying and its effect on depression, anxiety, and stress levels suggest that cyberbullying has greater consequences for the victim compared to traditional face-to-face bullying (Sticca and Perren 2013). Specific to people who stutter, an already vulnerable population (Craig et al. 2009), those who are victimized during childhood are more likely to have poorer psychosocial outcomes as adults, indicating lingering effects of childhood victimization (Blood and Blood 2016). A study focused on quality of life for people who stutter found that the most affected domains were vitality, social functioning, emotional functioning, and mental health status (Craig et al. 2009). The Depression Anxiety Stress Scales (DASS) is a 42-item self-report measure that includes three subscales: depression, anxiety, and stress. Respondents are asked to use a 4-point Likert scale to assess the severity/frequency to which they have experienced each state over the past week.

Collectively, the reviewed literature warrants the need for additional research on the emotional effects of adults who have been cyberbullied as adolescents. The following hypotheses were developed with consideration of the reviewed literature: H1: There will be a significant difference between groups on depression, anxiety, and stress scores as measured by the DASS; H2: The group who experiences stuttering and cyberbullying will have significantly higher depression, anxiety, and stress scores as measured by the DASS compared to the other 3 groups; H3: The group who does not experience stuttering or cyberbullying will have significantly lower depression, anxiety, and stress scores as measured by the DASS compared to the other 3 groups.

Method

Research Design

This quantitative study utilized survey methodology to determine if people who stutter who experienced

cyberbullying as adolescents (middle school age through high school age) self-report different levels of psychological distress in young adulthood. More specifically, levels of depression, anxiety, and stress were studied using the Depression Anxiety Stress Scales (DASS), a self-report survey. Four separate groups had their depression, anxiety, and stress scores compared: participants who were cyberbullied and who stutter; participants who were cyberbullied who do not stutter; participants who were not cyberbullied who stutter; and people who were not cyberbullied and who do not stutter. The scores from all four groups were compared to determine if there was a significant difference between the groups. In addition, the cyberbullying and stuttering group had their scores compared to those scores of the additional three groups. Lastly, the scores from the no stuttering or cyberbullying group had their scores compared to those scores of the additional three groups.

The research design of this study used a two-way between-groups multivariate analysis of variance (MANOVA) design. This study identified differences between four groups with variables that were already determined. The stuttering and cyberbullying status had already taken place and were analyzed *ex post facto*.

Participants

Participants for this study included male and female 18–30-year-old young adults. Both people who stutter and those who do not stutter, as well as people who were cyberbullied and who were not cyberbullied, were recruited for the purpose of comparison. Volunteer participants completed a confidential web-based survey. The main recruiting strategies were: posting a web version of a flyer with the survey link via social network sites (Facebook, Twitter, and Craigslist) and emailing contacts known by this author utilizing the snowball technique.

Participants were chosen based on the following criteria: (a) between the age of 18–30 years old; (b) individuals who are not actively suicidal, homicidal, or psychotic (all determined by asking if participants exhibited active suicidal or homicidal thoughts, and if they are actively experiencing positive psychotic symptoms of visual or auditory hallucinations); (c) for those who stutter, they must have been diagnosed with stuttering by a professional (pediatrician, general medical doctor, speech-language pathologist, etc.); (d) they cannot have experienced any other traumatic experience unrelated to the cyberbullying or stuttering that continues to cause emotional distress; (e) if stuttering is indicated, the majority of the cyberbullying behaviors were directed toward their speech instead of any other factors such as co-occurring disabilities or

other traits. (f) for those who indicate cyberbullying, the cyberbullying must have taken place in middle and/or high school for a longer amount of time than traditional bullying (if they indicate being bullied and cyberbullied). These criteria were confirmed by the participants responding to these questions in the screening questionnaire.

Participants were excluded based on the following criteria: (a) 17 years of age or younger or 31 years of age or older; (b) have experienced face-to-face bullying for a longer amount of time than cyberbullying or have not experiencing any cyberbullying at any time; (c) report being actively suicidal, homicidal, or psychotic; (d) for those who stutter, they have not been diagnosed by a professional; (e) if stuttering is indicated, the majority of the cyberbullying behaviors were not directed toward their speech, but instead directed toward other factors such as co-occurring disabilities or other traits; (f) they experienced any traumatic event that is unrelated to cyberbullying or stuttering; (g) for those who have been cyberbullied, the cyberbullying took place only in elementary school and/or after high school.

Participants were recruited using two main techniques. The first one involved posting a web version of a flyer for the study with the web address to the survey on social networking sites such as Facebook, Twitter, and Craigslist. The second technique used to recruit participants was directly emailing contacts known by this author. These contacts included stuttering organizations, bullying organizations, friends, and family members. The snowball technique was used in that the people who were contacted were asked to spread the flyer to other people that they know in hope of acquiring additional participants.

Instrumentation and Measures

The survey was transcribed into an electronic version conducted via Qualtrics and included a screening questionnaire, informed consent and bill of rights, demographics questionnaire, and the Depression Anxiety Stress Scale (DASS). The screening questionnaire was developed for the current study and was the first form that the participants filled out which determined whether or not the participant were eligible for the study. If the participants were deemed eligible, the demographics questionnaire responses determined which group the participant was placed. The DASS is a 42-item self-report measure that includes three subscales: depression, anxiety, and stress. The questionnaire was scored by adding up each subscale and determining how severe each subscale category is, ranging from normal, mild, moderate, severe, and extremely severe. Respondents were asked to use a 4-point Likert scale to assess the severity/frequency to which they had experienced each state over the past week. The DASS's reliability and validity were deemed good through a data analysis of 2,914 adults in the general

population. The reliability scores regarding the Cronbach's alpha for each scale were determined to be 0.91 for the depression scale, 0.84 for the anxiety scale, and 0.90 for the stress scale (Lovibond and Lovibond 1995).

Data Collection

Data collection was done via online administration to the extent possible due to the benefits of being able to reach a larger population, decreased cost, the convenience of storing data, and convenience for the participants who choose to use the online survey as it can be taken on any technological device that has access to the internet. The offered methods of data collection used was completing the online survey or completing a paper version of the survey and sending it via mail. Participants using the online survey were directed to it by a direct web address. If found via the internet through social networking sites, the web address was located directly on the web version of the flyer and accessed by: (a) clicking directly on the live link; (b) copying the link and pasting it directly into the address bar; or (c) manually typing in the web address into the address bar. If the web address was found via hard copy, participants manually typed in the web address to the survey. Participants were required to be at a computer or mobile device and have access to the internet. Once they got to the appropriate web address, they were first required to read and agree to the consent form before the survey is given. The option for the paper version of the study was not chosen by any participants. The participants spent approximately 10–20 min completing the entire survey.

Data Management

Data collected from the survey was stored via Qualtrics and downloaded into Statistical Package for the Social Sciences (SPSS) software, version 21 (SPSS Inc., IBM Corporation, Chicago, Illinois) for statistical analysis. The data that were loaded onto SPSS was stored on a password-protected computer. The data was reviewed for missing information or errors as well as data that do not meet inclusion criteria were excluded.

Data Analysis

Hypothesis one was tested using a two-way between-groups multivariate analysis of variance (MANOVA) to determine whether a significant difference existed in depression, anxiety, or stress scores among the four groups. The participants' cyberbullying status and stuttering status was the independent variable factors for analysis while the depression, anxiety, and stress scores were the continuous dependent variables. R-Squared will be used as an indicator for effect size.

Hypothesis two was tested using a two-way between-groups multivariate analysis of variance (MANOVA) to determine whether significant differences existed in depression, anxiety, or stress scores among the four groups. The participants' cyberbullying status and stuttering status was the independent variable factors for analysis while the depression, anxiety, and stress scores were the continuous dependent variables.

Hypothesis three was tested using a two-way between-groups multivariate analysis of variance (MANOVA) to determine whether a significant difference existed in depression, anxiety, or stress scores among the four groups. The participants' cyberbullying status and stuttering status was the independent variable factors for analysis while the depression, anxiety, and stress scores were the continuous dependent variables.

Results

Demographic Data

Of the 358 participants who initiated the survey online, 226 completed the survey and 137 met criteria to be eligible for statistical analysis ($N = 137$). Of the excluded participants, four were excluded for incomplete surveys and 89 were excluded due to not meeting inclusion criteria. Participant demographic descriptives for the 137 completed surveys include age, when the cyberbullying occurred, if they have engaged in treatment for being cyberbullied or face-to-face bullied, how they were diagnosed with stuttering, if they have been bullied face-to-face, by which method they were cyberbullied, and which group the participants were placed in based on their cyberbullying and stuttering status.

Participants were placed into one of three age groups. Of the 137 participants, 53 were between 18 and 21 years old, 51 were between 22 and 25 years old, and 33 were between 26 and 30 years old. Table 1 provides additional demographic information for each group.

Gender

The current study's demographics overall were primarily females. However, when broken down into separate groups, there were differences in demographics that may better explain the differences in depression, anxiety, and stress levels. The group that endorsed cyberbullying and no stuttering had only two male participants. A 2007 study analyzing gender differences regarding cyberbullying found that 60% of their sample's cyberbullying victims were female, while 40% of the males were the bully (Li 2007). Li's study may help explain and further demonstrate the results in the current study. The group that endorsed cyberbullying but does not

Table 1 Demographic descriptives per group

	CB + ST ^a	ST + No CB ^b	CB + No ST ^c	No CB + No ST ^d
Males	10	19	2	10
Females	14	19	31	32
Age group 18–21	6	9	19	19
Age group 22–25	10	13	10	18
Age group 25–30	8	16	4	5
CB in middle school	3		13	
CB in high school	9		9	
CB in both	12		11	
Support for CB	10		6	
No support for CB	14		27	
Speech therapy	23	36		
No speech therapy	1	2		

^aCyberbullying and Stuttering Group^bNo Cyberbullying and Stuttering Group^cCyberbullying and No Stuttering Group^dNo Cyberbullying and No Stuttering Group

stutter had the fewest number of males, and the results from Li (2007) indicate it could potentially be due males instead being placed in the bully category instead of being the victim. The group who stutters without cyberbullying had the highest number of males, which would be similar to existing literature regarding stuttering prevalence rates (Bloodstein and Bernstein-Ratner 2008). According to research, there should have been more males in the stuttering group than females (Bloodstein and Bernstein-Ratner 2008); the current gender demographics are contrasting to existing research when looking at the overall male to female ratio due to the males and females being similar in numbers.

Grouping of Participants

To determine which individual group the participant would be placed in, all 137 eligible participants were asked if they were cyberbullied in middle and/or high school and if they have been diagnosed with stuttering. Their response placed them in one of four groups: cyberbullied and who stutter; cyberbullied who do not stutter; were not cyberbullied who stutter; and were not cyberbullied and who do not stutter. The power analysis conducted prior to collecting data indicated that each group required a minimum of 20 participants to meet power at the 0.05 level. Each group was represented with over 20 people, successfully meeting power. The group who has been cyberbullied and who stutters had 24 participants; the group who has been cyberbullied and who does not stutter had 33 participants; the group who were

not cyberbullied and who stutter had 38 participants; and the group who had neither been cyberbullied or stutters had 42 participants. The participants from each category above were placed solely in one group.

Research Hypotheses

The first hypothesis was that there would be a significant difference between groups on depression, anxiety and stress scores as measured by the DASS. There was a statistically significant difference between groups, substantiating hypothesis 1.

The second hypothesis was that the group who experiences stuttering and cyberbullying will have significantly higher depression, anxiety, and stress scores as measured by the DASS compared to the other three groups. The cyberbullying and stuttering group was found to be significantly higher in anxiety scores compared to all groups, but they were not significantly higher compared to all groups in depression and stress scores. The depression scores for the cyberbullying and stuttering group were significantly different compared to the no cyberbullying and no stuttering group, but not significantly different compared to the stuttering and no cyberbullying group and the cyberbullying and no stuttering group. The stress scores for the cyberbullying and stuttering group were significantly different compared to the no cyberbullying and no stuttering group and the stuttering and no cyberbullying group, but not significantly different compared to the cyberbullying and no stuttering group. These findings partially supported hypothesis 2, as the stress scores for the cyberbullying and stuttering group were only significantly higher for two of the groups, not all three as originally predicted.

The third hypothesis was that the group who does not experience stuttering or cyberbullying would have significantly lower depression, anxiety, and stress scores as measured by the DASS compared to the other three groups. The group that denied cyberbullying and denied stuttering was found to be significantly lower in anxiety scores compared to all groups, but were not significantly lower compared to all groups in depression and stress scores. The depression scores for the group that denied cyberbullying and denied stuttering were significantly lower compared to the cyberbullying and stuttering group, but not significantly lower compared to the stuttering and no cyberbullying group and the cyberbullying and no stuttering group. The stress scores for cyberbullying and stuttering group were significantly higher compared to the no cyberbullying and no stuttering group and the cyberbullying and no stuttering group, but not significantly different compared to the no cyberbullying and stuttering group. These findings were inconsistent with hypothesis 3. Tables 2, 3 and 4 shows the differences

between the groups in anxiety, depression, and stress levels, respectively.

Discussion

Cyberbullying has been shown to have detrimental effects on a person (Hinduja and Patchin 2010; Sticca and Perren 2013). Victims have been shown to have lower academic performance, lower family relationship quality, several psychosocial difficulties, and increased risk of affective disorders (Tokunaga 2010). Humiliation and level of threat have been shown to be factors in the motive for the listed effects, demonstrating the level of interpersonal and intrapersonal fear and shame that cyberbullying creates (Sticca and Perren

2013). The differences between each of the groups further indicate a need to look closer into the effects that cyberbullying has on a person. These results provide additional insight into the problem of cyberbullying, making it critical that not only additional research is done, but also intervention strategies and plans be developed to help intercept some of these effects that are being shown through this study and existing literature.

Individually, stuttering or cyberbullying can be detrimental to a person's overall well-being. However, when coupled together, the effects can become significantly worse. Anxiety and cyberbullying have demonstrated a relationship through the current findings as well as existing literature (Gunn et al. 2014; Hoff and Mitchell 2009). The current study found the group that was diagnosed with stuttering and who had been

Table 2 Post-hoc multiple comparisons analysis for anxiety

	Group	Compared to group	Mean difference	Significance
Total anxiety ^c	CB + No ST ^a	CB + ST	− 7.09*	0.002
		No CB + No ST	5.39*	0.011
		No CB + ST	− 0.05	1.000
	CB + ST ^b	CB + No ST	7.09*	0.002
		No CB + No ST	12.48*	0.001
		No CB + ST	7.04*	0.002
	No CB + No ST ^c	CB + No ST	− 5.39*	0.011
		CB + ST	− 12.48*	0.001
		No CB + ST	− 5.43*	0.007
	No CB + ST ^d	CB + No ST	0.05	1.000
		CB + ST	− 7.04*	0.002
		No CB + No ST	5.43*	0.007

^aCyberbullying and No Stuttering Group

^bCyberbullying and Stuttering Group

^cNo Cyberbullying and No Stuttering Group

^dNo Cyberbullying and Stuttering Group

^eR Squared = 0.255 (Adjusted R Squared = 0.238)

Table 3 Post-hoc multiple comparisons analysis for depression

	Group	Compared to group	Mean difference	Significance
Total depression ^a	CB + No ST	CB + ST	− 4.81	0.311
		No CB + No ST	4.72	0.168
		No CB + ST	1.52	1.000
	CB + ST	CB + No ST	4.81	0.311
		No CB + No ST	9.53*	0.001
		No CB + ST	6.33	0.053
	No CB + No ST	CB + No ST	− 4.72	0.168
		CB + ST	− 9.53*	0.001
		No CB + ST	− 3.20	0.718
	No CB + ST	CB + No ST	− 1.52	1.000
		CB + ST	− 6.33	0.053
		No CB + No ST	3.20	0.718

^aR Squared = 0.114 (Adjusted R Squared = 0.094)

Table 4 Post-hoc multiple comparisons analysis for stress

	Group	Compared to group	Mean difference	Significance
Total stress ^a	CB + No ST	CB + ST	−4.09	0.427
		No CB + No ST	8.55*	0.001
		No CB + ST	3.19	0.677
	CB + ST	CB + No ST	4.09	0.427
		No CB + No ST	12.65*	0.001
		No CB + ST	7.28*	0.007
	No CB + No ST	CB + No ST	−8.55*	0.001
		CB + ST	12.65*	0.001
		No CB + ST	−5.37	0.030
	No CB + ST	CB + No ST	−3.19	0.677
		CB + ST	−7.28*	0.007
		No CB + No ST	5.37	0.030

^aR Squared=0.230 (Adjusted R Squared=0.212)

cyberbullied in middle and/or high school had significantly higher levels of anxiety compared to all three other groups. The stuttering and cyberbullying group had an average score of 14.3, which placed them in the upper “moderate” clinical range for anxiety according to the DASS scoring system. Regarding depression and cyberbullying, the current study’s results are similar to results found by Ybarra (2004) in which there was a link between major depression symptoms and online harassment more so than those who did not report online harassment. Results from the current study indicate significantly higher depression scores in the stuttering and cyberbullying group compared only to the no stuttering and no cyberbullying control group. The cyberbullying and stuttering group had an average depression score of 12.95 which places them in the “mild” range of depression using the DASS scoring system. With this, it can be inferred that cyberbullying and stuttering coupled together suggest the greatest risk of developing depressive symptoms as the control group had a significantly lower depression score. In considering the existing literature in addition to the current study, it is again suggesting the importance of early intervention in order to lower the risk of developing clinical depression and learning to manage the perpetuating factors derived from being a victim of cyberbullying and being a person who stutters. Stress levels for the cyberbullying and stuttering group were considerably higher compared to the stuttering and no cyberbullying group and the no stuttering and no cyberbullying group but were not significantly higher compared to the group with cyberbullying and no stuttering. The average stress score for the group with stuttering and cyberbullying was 18.1, placing them in the upper range for “mild” stress levels according to the DASS scoring system. Combining existing literature with the current study’s results expands upon research, further finding that not only does stuttering and cyberbullying separately produce stress

responses, but combined it creates an even bigger effect on stress.

The current study confirmed that high levels of anxiety are linked to cyberbullying and stuttering, along with additional important findings regarding the population surveyed. Regarding cyberbullying, the results of this study demonstrate the importance of intervention when cyberbullying is occurring to avoid long-term mental health effects such as stress and anxiety. Intervention and support for a person who stutters can be a safeguard to prevent against emotional distress, as well as for those being victimized by cyberbullying. For a person who stutters and who is being/has been cyberbullied, the results indicate an essential need for substantial support to avoid high levels of anxiety, stress, and depression since these often in the present study were in the clinical range years later still.

For those who treat and diagnose people who stutter, specifically SLPs who accounted for 82% of the current study’s stuttering diagnosis, these results indicate several important findings that impact how they can be treating their patients. The high levels of stress and anxiety found in the groups that stutter without cyberbullying and who stutter with cyberbullying suggest the need for Speech-Language Pathologists to be attentive to not only their fluency and other speech techniques, but also the person’s emotional wellness. Making outside referrals for mental health resources may benefit people who stutter to aid in social support, self-esteem, and overall quality of life.

Parents, psychologists, and school staff members can all play a role in intervention strategies to minimize the short-term and long-term negative effects that cyberbullying has on victims. Increased online supervision, assessing for bullying behaviors, assessing for common symptoms of victimization, and the implementation of bullying intervention programs at school are some of the intervention strategies that

can be beneficial in an effort to minimize risk of long-term mental health effects such as depression, anxiety, and stress.

The present findings also highlight the importance of social support for both stuttering and cyberbullying. Individually, cyberbullying and stuttering have both been shown to have a negative effect on social skills (Craig et al. 2009; Price and Dalgleish 2010). Focusing on social skills for a person who stutters can not only help to build meaningful and supportive peer relationships, but in doing so can also increase self-esteem and feelings of self-worth to defend against feelings of fear, shame, and embarrassment that have been shown to be present in a person who stutters (Blood and Blood 2004). Additionally, if a person who stutters is being victimized by cyberbullying, having peer relationships and the appropriate social skills may help increase resiliency to the bullying as it could increase social support and the ability to apply appropriate social skills to victimizing situations, decreasing the risk of feeling helpless and alone.

Limitations

The present study included a modest sample size, considering the large number of people in the world who stutter and who have been cyberbullied. Additionally, the sample was primarily female with 96 participants identifying as female and 41 participants identifying as male. The perception of cyberbullying and/or stuttering could differ by gender and the results should be interpreted with the knowledge of the gender limitation. The stuttering population data were primarily recruited and collected through a non-profit organization (National Stuttering Association) annual conference for people who stutter. This could have a potential impact on the results, as the participants at the conference were in a supportive environment when taking the survey. Regarding limitations of the measure, the only measure used in this study was the DASS. Though the measure has good validity and reliability for the general population, it has not been specifically studied for people who stutter or who have been cyberbullied. In addition, the sole use of this measure on its own limits the results to only be analyzed through one measure. The results were all self-report and taken online, with no objective measure to corroborate the self-report data relying on the honesty and accuracy of the participants responses.

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Compliance with Ethical Standards

Disclosure of Interest All authors declare that they have no conflicts to report.

Ethical Standards and Informed Consent All procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation [institutional and national] and with the Helsinki Declaration of 1975, as revised in 2000. Informed consent was obtained from all patients for being included in the study.

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