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Abstract

Non-suicidal self-injury (NSSI) is a relatively new subject of attention for psychopathology

researchers. It was not until the latest edition of the *DSM-5* that NSSI was listed independently;

rather than as simply a symptom of another disorder. In the *DSM-5,* NSSI is listed in the

Conditions for Further Study. Given that NSSI is now expressly categorized as needing further

study, researchers have done a remarkable job expanding our knowledge base on this condition,

which is defined by intentional harm to one's body without the intent to cause death. This said,

there is still much to learn about this maladaptive behavior. The current study focused on public

stigma towards NSSI by sex, as well as its perceived severity in comparison to major depressive

disorder (MDD). In addition, participants were given a questionnaire regarding their level of

familiarity with NSSI, as increased familiarity with a variety of mental health disorders has been

linked with lower levels of stigma. The current study employed an experimental design using four

vignettes that vary on sex (male or female) and clinically distressing behavior (NSSI or MDD) to

examine any difference in stigma based on sex or distressing behavior. It was hypothesized first

that vignette characters who were either male or engaging in NSSI behaviors would elicit more

stigma, than the MDD and female vignettes. Secondly, it was hypothesized that increased

familiarity with NSSI (i.e. LOF) would lead to a decrease in stigma (i.e. MISS). Results from the

current study did not support either hypothesis, indicating that neither main effect (sex,

psychological condition) nor familiarity with NSSI impacted public stigma. Implications and future

directions are discussed.

       Keywords: non-suicidal self-injury, mental health stigma, sex differences, level or familarity

Non-Suicidal Self-Injury

While not defined as an official disorder in the *Diagnostic and Statistical Manual of Mental Disorders, 5th edition* (*DSM-5*), non-suicidal self-injury (NSSI) does appear in the *DSM-5* under *Conditions for Further Study.* This means that presently, mental health professionals cannot give an official diagnosis of NSSI, but the current set of symptoms has become the subject of increasing research in recent years. The American Psychiatric Association (APA, 2013) defines NSSI as the act of inflicting damage to the surface of one's body without the intent of dying. Damage from NSSI can result from a variety of methods, including but not limited to: cutting, hitting, burning, and scratching oneself. It is thought that individuals engaging in NSSI expect to gain relief from the negative thoughts and emotions, escape from interpersonal difficulty, and create a positive state of being (APA, 2013).

Prevalence and Onset

Given that NSSI has not yet been classified as its own diagnosable condition via the *DSM-5*, many aspects of the condition are still being debated, including prevalence and onset. Researchers have spent much of the last 15 years exploring NSSI prevalence rates for both community and clinical populations. Some researchers, such as Klonsky, Victor, and Saffer (2014), reported a lifetime prevalence between 15 to 20%, whereas other studies have provided an even wider range of prevalence rates, ranging from 7.4 to 18% (Prinstein et al., 2010; Mars et al., 2019; Muehlenkamp, Claes, Havertape, & Plener, 2012). It is important to realize that these prevalence estimates are from community samples; primarily college students or adolescents. These non-longitudinal community studies have reported rates anywhere from 6 to 20% among adults and college students (Ammerman, Jacobucci, Kleiman, Muehlenkamp, & McCloskey, 2017; Klonsky, 2011; Whitlock, Eckenrode, & Silverman, 2006a) and 15.9% among high school-aged

adolescents (Muehlenkamp & Gutierrez, 2004). Therefore, a rough estimate of typical community sample NSSI prevalence is likely around 15%.

Clinical samples have been shown to have higher rates of NSSI than community samples, as would be expected. NSSI rates in clinical samples average between 40 to 60% (Klonsky et al., 2012; Klonsky et al., 2014; Whitlock et al., 2006a), but this is expected given the participants' complex mental health histories (e.g., increased prevalence of depression and anxiety) and poor emotional regulation. Research has also found higher rates of NSSI among individuals with a comorbid mental health disorder (e.g., clinical populations), increasingly among adolescents who already have a diagnosed mental illness (Klonsky, Muehlenkamp, Lewis, & Walsh, 2012; Nock, Joiner, Gordon, Lloyd-Richardson, and Prinstein 2006). Major depressive disorder (MDD) and borderline personality disorder (BPD) are among these disorders that increase the likelihood of NSSI engagement in clinical populations. The details on how the three (MDD, BPD, and NSSI) are linked will be explained in the following section under Etiology.

Further, those who are in a clinical population tend to have more severe psychological illnesses and may engage in more severe methods of NSSI, leading these individuals to be hospitalized. More severe methods that might involve medical assistance include needing stitches from lacerations or care for severe burns. Another reason NSSI rates might be so high in clinical settings is that there may be a social contagion effect of NSSI in a hospitalized population (Klonsky et al., 2012; Whitlock, Purington, & Gershkovich, 2009). The social contagion of NSSI is similar to that of a physical illness such as influenza: increased exposure to influenza increases the likelihood of getting influenza. Smoking is a behavioral example of social contagion, such as when an individual takes up smoking to soothe anxiety after being introduced to the behavior from an acquaintance. Recent studies have found that over the last couple of decades, there has been an

increase in the portrayal of NSSI in the media (i.e., television, movies, internet, and music), thus introducing even community populations of pre-adolescents, adolescents, and adults to NSSI (Whitlock, Powers, & Eckenrode, 2009b; Whitlock et al., 2009). The social contagion effect provides a plausible reason for why NSSI extends beyond clinical settings and into our homes.

In terms of NSSI onset, it is agreed upon by much of the NSSI research community that NSSI behaviors start in early adolescence; between ages 12 to 16 years (Muehlenkamp & Gutierrez, 2004; Nock & Prinstein, 2004; Whitlock et al., 2006a; Klonsky et al., 2014). With the age of onset so young and the increasing media depiction of NSSI, it is not surprising that there is a potential that the prevalence rates may change in the future. In the present time, a community lifetime prevalence rate of 15% with exceptions among clinical populations would be an appropriate statistic to agree upon.

Etiology

As with all mental and behavioral health problems, the etiology of NSSI is complex. This is exacerbated by the fact that historically NSSI has been seen solely as a symptom of other disorders (i.e. borderline personality disorder; Klonsky, Victor, & Saffer, 2014), meaning that research on NSSI independent of other diagnoses was rare. Nonetheless, researchers have found risk factors that predict an increased likelihood for an individual to begin harming themselves. To date, it is assumed that there are three likely categories of causes of NSSI. These three causes include: a) emotional/psychological, b) social, and c) genetic (Nock, Joiner, Gordon, Lloyd-Richardson & Prinstein, 2006; Xavier, Cunba, and Pinto-Goyveia, 2017; Cassels et al., 2018; Claes, Luyckx, Baetens, Van de Van, and Witteman, 2015; Prinstein et al., 2010).

Emotional and Psychological Causes

Emotional regulation processes associated with NSSI include poor emotional regulation, poor interpersonal problem solving abilities, high amounts of stress and self-criticism (e.g., self-hatred and perfectionistic thoughts and behaviors), and high levels of rumination (i.e., deep, concentrated, and focused thinking; Xavier, Cunba, and Pinto-Goyveia, 2017). These factors impact an individual's ability to regulate their impulses when they are in an overwhelmed state, in turn resulting in self-harm as an attempt to release the excess of emotions, thoughts, stress, etc. Without the ability to control such impulses, individuals search for the fastest means of release (i.e. self-harming). In addition, Xavier and colleagues (2017) highlight a transdiagnostic emotional issue related to NSSI: experiential avoidance (EA). The definition of EA is "a phenomenon that occurs when a person is unwilling to remain in contact with particular private experiences and takes steps to alter the form or frequency of these events and the context that occasion them" (Hayes, Wilson., Gifford, Follette, and Strosahl, 1996, p. 1154). In short, this would mean that an individual with a higher level of EA would likely engage in NSSI as a means of escaping the internal stress brought on by external stressors. EA has been associated with higher rates of depression and anxiety, as well as a lower quality of life (Xavier et al., 2017).

Klonsky et al. (2012) reported that in addition to EA, self-derogation and impulsivity are also factors related to NSSI. Self-derogation, particularly at high levels, may motivate engagement in NSSI for some individuals in the form of self-punishment (Klonsky et al., 2012). On the other hand, higher levels of impulsivity may increase an individual's likelihood to engage in NSSI once the thought enters their mind. High levels of impulsivity coupled with NSSI can be particularly dangerous as the combination increases suicide risk (Klonsky et al., 2012). This means that with the diminished thought before engaging in the act of NSSI (i.e. impulsive NSSI), the severity of the NSSI could lead to a potentially fatal injury.

NSSI has been found to be comorbid with several *DSM-5* diagnosable conditions. Most commonly mentioned in research are major depressive disorder (MDD), suicidality, and borderline personality disorder (BPD; Nock et al., 2006; Klonsky et al., 2012). One reason NSSI and BPD are comorbid is that they share the association with negative emotions that can prove difficult to regulate (Klonsky et al., 2012). Individuals who are diagnosed with BPD are likely to encounter a higher frequency of unstable moods, affect, and high impulsivity (APA, 2013, p. 663). The combination of the three create an increase in recurrent suicidal behavior, gestures/threats, and/or self-harm behaviors (APA, 2013, p. 663). Along with BPD and NSSI, MDD also shares the disruption in emotional regulation processes that leads to the increase in comorbidity between MDD and NSSI, and BPD and NSSI. Additionally, various symptoms of MDD and BPD overlap, thus strengthening the potential comorbidity between NSSI and one or both of the disorders. Some of these various symptoms include reduction in one's self-reported worth and increased suicidal ideation.

Social Causes

In addition to the emotional and psychological causes of NSSI, social environment can serve as a risk factor for NSSI. Childhood family adversity (CFA) and past trauma are also risks for an individual to develop NSSI behaviors. CFA may include any family adversities a person encounters during their childhood or adolescence. Common adversities include poor family function, stressed child and parent relationships, low socioeconomic status (SES), family members' history of prior mental illness diagnoses, and lack of a family support system (Cassels et al., 2018).

Cassels and colleagues (2018) concluded that, with respect to the many different types of CFA, individuals with the highest likelihood of engaging in NSSI tend to come from lower functioning families, lower SES households, and may have been diagnosed with a mental illness

before the age of 14 years. Though a mental health diagnosis before the age of 14 was not

statistically significant, it still carried some increased risk (Cassels et al., 2018). In addition to CFA,

Klonsky et al. (2012) report that childhood trauma has a positive relationship to NSSI. It is thought

that childhood trauma, such as maltreatment and/or sexual abuse, may lead to an individual's future

engagement of NSSI as a result of the negative emotions, self-criticism, and re-experiencing the

trauma.

Social factors contributing to NSSI may also include social contagion and bullying in a

group setting. As previously stated, the social contagion concept is prevalent among individuals

engaging in NSSI. This can be seen as an individual engaging in NSSI and then informing their

peers of their actions as if it were a positive coping mechanism. Additionally, the same effect may

take effect by direct observation of an individual engaging in self-harm for the same release (e.g.,

by observing a friend, watching a movie scene or music video). As a result, the peer may also

experiment with NSSI to see if it relieves their own stress or negative cognitions or affect (Klonsky

et al., 2012; Whitlock, Purington, & Gershkovich, 2009; Berger, Hasking, & Martin, 2017).

Bullying is another social factor that can contribute to NSSI. In their study, Claes, Luyckx,

Baetens, Van de Van, and Witteman (2015) found that being a victim of bullying, as well as being

a bully, can be linked with NSSI. Claes and colleagues (2015) found that there was an elevated

indirect effect of being a victim of bullying that may later lead to NSSI. Similarly, an indirect

pathway was found significant for both the bullies and their victims with depressive moods that

lead to NSSI (Claes et al., 2015). These results imply that there was not a direct effect, such as

being a victim of bullying means that the individual will begin engaging in NSSI. Rather the

emotions and psychological aftermath of bullying (e.g., depressive symptoms) increase the

likelihood the individual will go on to engaging in self-harm. The study conducted by Claes and

colleagues (2015) revealed a new potential risk factor: that the social behavior of bullying can pose as a risk factor for NSSI on both sides directly involved.

Genetic

Familial genetics also serve as a potential risk factor for NSSI. As with many other mental health disorders, there are certain familial traits that can be passed down from parents to their offspring, making them more susceptible to developing these specific disorders and maladaptive behaviors. This said, there is very little research on familial genetic factors of NSSI. Pooley, Houston, Hawton, and Harrison (2003) found a genetic link between self-harm and the TPH A779 allele while running a study on the links between six serotonergic gene polymorphisms and self-harm. The study monitored 129 participants who had a recent episode of self-injury. Results showed that the TPH A779 gene appeared in a higher percent of those with a history of self-harm than the controls, leading the researchers to conclude that the TPH A779 is associated with self-harm.

In their study, Althoff and colleagues (2011) found when looking at and comparing the self-reported thoughts of self-harm and suicidal behaviors (SHSB) of twins, there was a significant genetic influence among the female twin pairs. In addition, Althoff et al. (2011) also found that though the heritability was higher among females, the rest of the varience was accounted through enviromental factors, leading them to conclude that the envrionment plays a key role in thoughts of self-harm and suicide ideation. Similarly, Maciejewski et al. (2017) looked at the genetic predictive overlap between depression and NSSI among twins. By using twin participants, they obtained similar end results as Althoff et al. (2011). Their results suggested that when both twins had depression, there was not a statistically significant link to either twin developing NSSI behaviors later on (Maciejewski et al., 2017). Thus, even when a genetic disposition for depression exists,

this is not enough to make an association that the individual is at an increased risk for NSSI. With this information, it is likely that NSSI behaviors are more environmentally linked rather than genetic.

The complexity of the etiology of NSSI comes with a new challenge of sex differences and whether the development of the maladaptive behavior is consistent between males and females. While the etiology described above is generalizable to both sexes, there are still behavioral differences between the sexes when it comes to NSSI. The following section will provide a variety of sex differences among those who engage in NSSI.

Sex Differences

One topic that divides NSSI researchers is whether or not there is a sex difference in its prevalence. Researchers have historically used the terms *gender* and *sex* interchangably, resulting in a lose distinction of which term the researcher is specifically asking for (Hartung & Lefler, 2019). The term *sex*, the biological distinction between a male and female, will be used and assumed of the current research. Many researchers and resources conclude that there *is* a sex difference in NSSI; specifically that females engage in NSSI more frequently than males, citing a sex ratio as high as three or four women to one man engaging in NSSI (APA, 2013, p. 804; DiCorcia et al., 2017; Xavier et al., 2017). Other researchers show the opposite effect, citing higher male engagement in NSSI (Brown, 2009; Brown, Williams, & Collins, 2007; Chao, Yang, & Luo, 2016). Finally, some other research groups have found no sex differences among the lifetime prevalence of NSSI (Muehlenkamp & Gutierrez, 2004; Klonsky et al., 2012; Maceiejewski et al., 2017). In short, current research is still at odds on deciding the exact female to male prevalence ratio of NSSI.

While there are conflicting views on differences in prevalence by sex, researchers are in agreement on sex differences in some other specific areas of NSSI. In particular, the methods and injury sites used during NSSI episodes, and pathways towards engaging in NSSI based on sex differences in etiology. Differences in method of NSSI between males and females is frequently documented. Males show preference to self-battery methods (e.g. hitting and punching) and burning, whereas females show preference towards cutting, scraping, carving, and pulling out hair (DiCorcia et al., 2017; Klonsky et al., 2012; Whitlock et al., 2008; Klonsky et al., 2014). Injury sites also differs between males and females. Males have a tendency to injure their hands, as opposed to females who typically injure their thighs and wrists (Whitlock et al., 2008).

Emotion regulation is a sex difference in the pathway of NSSI. As was mentioned, the Xavier and colleagues (2017) study concluded that higher levels of daily peer hassles and higher levels of emotional avoidance (EA) rumination among female adolescents. What this means is that females engaging in NSSI tend to do so in an effort to diminish negative feelings and emotions, likely due to the increased levels of EA (DiCorcia et al., 2017; Xavier et al., 2017). While increased levels of EA and daily peer hassles pose a risk factor for females, research has found different risk factors and outcomes for males engaging in NSSI. Previous research has linked increased NSSI engagement for males due to sex role conflicts and verbal violence (Chao et al., 2016). Along with these different risk factors, there is a potential difference in emotions after engaging in self-harm. While it has been mentioned prior that one reason for engaging in NSSI is the release of negative emotions, males have shown to report more serenity following self-harm than females. In a study on college students, Brown et al. (2007) found that their male participants reported higher levels of serenity following NSSI, than their female counterparts.

While sex differences do seem to exist in some aspects of NSSI, it should be noted that the vast majority of participants accross studies are white and female. This means that males and people of color have been largely neglected in this line of research. Researchers should be careful when making conclusions about these sex differences as many past studies used populations diagnosed with BPD, which is known to have a female preponderance (APA, 2013, p. 165 & 666; Hartung & Lefler, 2019). More careful research will help to separate true sex differences from stereotypes, often brought on by misconceptions of mental illness. Future studies should focus on the prevalence and development of NSSI in minoritized groups and males. This will need be done in efforts to reduce stigma surrounding NSSI and the possibility of overrepresting females engaging in NSSI, and underestimating the prevalence in males and minoritized groups

Mental Health Stigma and Familiarity

Mental health stigma can be defined as negative attitudes towards and/or beliefs about individuals with a mental illness (Brown, 2012; Angermeyer & Dietrich, 2006). Corrigan and Miller (2004) find four common types of stigma: public stigma, self-stigma, label avoidance, and structural stigma. The focus of the current study is public stigma. Public stigma largely relates to an individual's cognitions that those with mental health diagnoses are dangerous and a liability, and lead to social distance and blaming the individual for their mental health disorder (Corrigan & Miller, 2004; Nielsen and Townsend, 2018).

Stigma research has long focused on severe mental illnesses and individuals diagnosed with severe mental illness (Brown, 2012). Stigma research has shown that both public and self-stigma feed off each other, making it difficult for an individual to seek out treatment. The fear of being stigmatized by the public increases an individual's self-stigma. Brown and colleagues (2010) found that participants who were currently in treatment for depression had not only increased depressive

symptoms, but more self-stigma as well. Over the last several decades, researchers have begun to study how mental health stigma affects the family and friends of someone with a mental health diagnosis (Corrigan & Miller, 2004).

As mentioned, public stigma is how the general public views a specific topic, such as mental illness, NSSI, and MDD. Yet where did these ideas come from? Word-of-mouth is the main culprit, however what happens to an individual's stigma towards something after they have come in personal contact with it? To date, studies have found that personal contact has been linked with a reduction in mental health stigma (Angermeyer, Matchinger, & Corrigan, 2004; Corrigan & Miller, 2004; Nielsen & Townsend, 2018). Several studies have found that the more familiar an individual is with a particular mental illness, or mental illness as a whole, the less stigma the individual may harbor. For example, Angermeyer, Matschinger, and Corrigan (2004) looked at familiarity and stigma using a representative sample of 5,025 participants. Participants completed measures of social distance, perception of fear and danger, and familiarity with schizophrenia and major depression. What Angermeyer and colleagues (2004) found was individuals who had high familiarity with either disorder had lower levels of stigma on the other three measures (e.g., social distance, perceived danger, and fear). This suggests that the more personal experience and familiarity a person has with a mental illness, the less likely they are to have stigma towards said illness. Similar findings were reported by Nielsen and Townsend (2018) in their recent study on NSSI stigma in particular.

Stigma Associated with NSSI

The Nielsen and Townsend (2018) study is one of the few studies to look at individuals' motivation and willingness to help in response to someone engaging in NSSI behaviors. Additionally, Nielsen and Townsend (2018) looked carefully at the stigma towards NSSI. For

example, which age groups were more willing to help and how participants felt toward the individual engaging in NSSI. In their study, Nielsen and Townsend (2018) used vignettes (featuring a fictitious character, Megan) to measure public stigma towards NSSI. The study consisted of a cross-sectional, community-based survey that recruited participants online Nielsen and Townsend (2018) found that their participants reported more sympathy than criticism towards Megan, and that older participants were less likely to blame Megan for her NSSI behaviors. In addition, the older participants were less likely to be angry towards the character in the vignette and more likely to support less segregative and coercive treatment strategies. Nielsen and Townsend (2018) state that future research could extend the findings by looking at the type of familiarity (professional or personal) and the nature or quality of the previous contact, given the vast majority of their participants reported low to moderate familiarity with NSSI.

It is likely to be a slower road leading forward, as additional studies have shown that the public continuously interprets NSSI as "attention seeking" (Klonsky et al., 2014, p. 567). Individuals engaging in NSSI also fear being judged, or labeled as diseased, a cutter, or an injurer. This could be due in part to being worried they will be misunderstood, overlooked as attention seeking, or not being taken seriously. This level of self-stigma increases the difficulty of individuals seeking out help and disclosing their behaviors to mental health professionals (Whitlock et al., 2006a; Klonsky et al., 2014). If an individual is scared that they will not be heard, they are less likely to reach out for the assistance they are in need of. While several studies have been done to report findings similar to Whitlock et. al (2006a) and Klonsky et. al (2014), additional studies provide specific examples of the impact self-stigma can lead to.

Self-stigma has impacts on a person's decision to disclose their NSSI engagement, and who to disclose to. In a study completed by Armiento, Hamza, & Willoughby (2014), researchers found

that 57% of their college participants had never disclosed their NSSI engagement, with the majority

choosing not to disclose their behaviors to mental health professionals. Disclosing NSSI and

mental health struggles in general is difficult for an individual to do, with a lot of the difficulty

stemming from how the individual believes they will be perceived if they disclose their struggles..

Fortune et al. (2008) had their teenage participants reflect and describe their experience with NSSI,

finding many felt that their participation in NSSI was insignificant, misunderstood, and/or treatment

was not possible. One student's personal testimony stated, *I thought they would tell me my*

problems were insignificant and they wouldn't understand how and why I felt like this" (Fortune et

al., 2008, p. 7). Moving forward, future studies need to focus specifically on the public's view of

NSSI and what impacts these cognitions. By doing this, future interventions can be developed to

reach out to the public to inform them of what NSSI is, how to help reduce prevalence, and how to

support individuals who are disclosing their engagement in NSSI.

Current Study

Based on the findings of Nielsen and Townsend (2018), the current study focuses on the

public stigma towards NSSI and its perceived severity in comparison to depression, as well as by

sex. Given the sex differences in NSSI, the current study looks at whether there is a difference in

stigma towards a male or female vignette character. In addition, participants will be given a

questionnaire regarding their level of familiarity with NSSI, as increased familiarity with a variety

of mental health disorders has been linked with lower levels of stigma (Angermeyer et al., 2004;

Corrigan & Miller, 2004). The current study employed an experimental design using vignettes of

both male and female adolescents engaging in NSSI. In addition to creating an equal male to

female ratio, the use of the vignettes allow for a second mental health disorder (i.e., depression) to

be examined and serve as a comparison group.

Four vignettes were specifically designed for this study, each depicting a fictitious character who has recently become a victim of bullying. The four vignettes differ on two levels (two independent variables; IVs): sex (male or female) and psychological symptoms (depression or NSSI). Online participants were randomly assigned to view only one of the four vignettes, and then completed ratings on stigma and familiarity.

Thus, the current study assessed sex differences in the public stigma of NSSI by sex in comparison to a established stigmatized disorder (i.e., depression). The purpose of this study, therefore, is to gain insight on the attitudes towards NSSI behavior based on the sex of the individual engaging in the behavior, the relative amount of stigma in NSSI versus depression, and to explore the effect of familiarity on these variables. To that end, dependent variables (DVs) in this study were the Mental Illness Stigma Scale (MISS) and the Level of Familiarity Questionnaire (LOF). Two specific hypotheses were tested in this particular study.

Hypothesis 1. Participants will differ significantly on stigma towards the character in the vignette, measured using the *Mental Illness Stigma Scale (MISS).* A 2 x 2 independent sample ANOVA will be conducted to test the attitudes of participants on sex and psychological outcome (male or female; depression or engagment in NSSI) of the vingette (Dependent Variable: *MISS*).

a. Main Effect of Sex: It was hypothesized that males characters in the vignettes will elicit more stigma than female characters.

b. Main Effect of Disorder: It was hypothesized that characters engaging in NSSI will elicit more stigma than characters depicting depression.

c. Interaction Effect: It was hypothesized that male characters engaging in NSSI will elicit more stigma than any other combination.

Hypothesis 2. A negative correlation is predicted between LOF and MISS. That is, as participants' familiarity with NSSI increases, it is hypothesized that they will report significantly less stigma towards the characters in the NSSI vignettes. Correlations will be conducted using parcipants' scores on the LOF and a combined NSSI stigma scores (i.e., MISS) using only the two NSSI vignettes.

Methods

Participants

Prior to recruiting participants, an a priori power analysis was conducted using G*Power version 3.1. This allowed us to determine that a sample size of 175 participants (about 44 participants per group) was necessary to detect a medium effect size of 0.30 (Faul, Erdfelder, Lang, & Buchner, 2007). Participants were recruited by using Amazon's Mechanical Turk (MTurk), an online platform that was linked to the author's Qualtrics account. MTurk was chosen as the recruitment method over the introductory level psychology courses in an effort to recruit a more diverse sample. Historically, MTurk has shown to have a more diverse sample than a typical American university. Also, participants are gathered at faster rates and produce quality data (Shapiro, Chandler, & Mueller, 2013).

The current study included 170 viable participants ($N = 170$) after needing to exclude 66 participants. Reasons for exclusion included having a duplicated IP Address ($n = 25$), a completion time under 120 seconds ($n = 40$), and failing to complete the survey ($n = 2$). Many participants were excluded for two or more of these factors. Of the 170 final participants, 105 were male (61.8%) and most held a Bachelor's degree (53.5%). While the sample majority were white (50%), there was some diversity with 49 participants identifying as Asian-American/Asian-Canadian (28.8%), and 20 identifying as Black/African/African-American (11.8%). Participant age ranged

from 18 to 65 years, with a mean of 33.85 years ($SD = 9.34$). The majority reported not having a previous mental health diagnosis (74.1%). With regard to NSSI in particular, 48 participants (22%) indicated that they had previously engaged in self-harm.

Procedure

MTurk participants completed the Qualtrics-based study with the use of an internet-enabled device of the participants choosing (e.g. smartphone, tablet, computer). Qualtrics is an online survey platform. Upon giving consent, participants were shown one of four randomly assigned vignettes, followed by one stigma measure, a similarity measure, and finally, the demographics questionnaire. Each vignette depicted a high school sophomore who was coping with being a victim of bullying. The vignettes differed on two levels of the IV: sex of the character (i.e., male or female) and symptom set (i.e., engaging in NSSI behaviors versus showing symptoms of depression). Therefore, the four conditions were male/NSSI, female/NSSI, male/depression, and female/depression. Following the completion of the survey, participants were instructed to create a random four character code containing two letters and two numbers. This was used to scan for MTurk bots.

Vignettes

As was mentioned above, participants were assigned at random to receive one of four vignettes that varied on sex (male or female) and clinically distressing behavior (NSSI or Depression; See Appendix C). All four vignettes describe a scenario of a sophomore in high school who has recently become a victim of bullying, and then described the sophomore engaging in NSSI or becoming depressed. Sex was differentiated by the use of the character's name (i.e., Emma/Jacob). Each vignette was approximately 50 words in length. Character names were

selected from the United States Social Security Administration's most popular names by state in

2002 (Social Security Administration).

Measures

Mental Illness Stigma Scale. The *Mental Illness Stigma Scale (MISS)* consists of twenty-eight

items that measure an individual's attitudes towards mental illness, via seven specific factors (Day,

Edgren, & Eshleman, 2007). Scale factors are anxiety, visibility, personal hygiene, recovery,

disruptive relationships, treatibility, and professional efficiency. The scale uses a 7-point Likert-type

scale, ranging from *strongly disagree* (1) to *strongly agree* (7). This scale was modified to only

include 4 factors (removing viability, personal hygiene and professional efficiency) and adapted for

the purposes of the current study to include character names (i.e., Emma or Jacob). Sample items

include: "There are effective medications that can help Emma return to her normal and productive

life", "I would feel anxious and nervous if I was around Jacob.", and "I think that a personal

relationship with Jacob would be too demanding". Cronbach's alpha indicates good internal

consistency reliability in the initial study at α = .90 (Day et al., 2007). The current study adapted

the *MISS* for each vignette type, resulting in acceptable to good internal consistency ranging from α

= 0.77 (acceptable) to 0.81 (good). See Appendix D.

Level of Familiarity Questionnaire. The *Level of Familiarity Questionnaire* (LOF) measures an

individual's personal experience with and exposure to a mental illness(es) (Corrigan, 2004), and

was modified for the current study to relate to NSSI. LOF is a self-report questionnaire that asks

the individual if they have ever been exposed to 11 independent scenarios (e.g., "A friend of the

family has engaged in self-harm"). The questionnaire is then scored on the highest level of

exposure based on ordinal rank. The highest level of exposure is the individual's personal

engagement in NSSI. Internal consistency reliability has been reported between α = 70 to .73 in

previous studies (Strong, Guajardo, & Arsiwalla, 2015; Strong, 2017). However the current study

reports an internal consistency reliability of α = 0.69. See Appendix E.

Demographics. A demographics questionnaire was administered to determine participant's

biological sex, age, ethnicity, education, and mental health history. This form was created by the

author of the current study. See Appendix F.

Results

Preliminary Analyses

After the data were collected, the data set was cleaned and prepared for analysis. There

were 236 data points collected for the current study. Of the 236 that were collected, 170 data points

were viable; suggesting that 66 participants were excluded from the study. Participants were

excluded for not completing the survey ($n = 2$), having a duplicate IP address ($n = 25$), and/or

completing the survey in under two minutes ($n = 40$). Of the participants who shared identical IP

addresses, one was selected at random to keep.

Primary Analyses

Hypothesis 1. The first hypothesis in the current study consisted of three parts: two main

effects and an interaction. This was conducted with a 2 (male or female) ✕ 2 (MDD or NSSI)

independent samples ANOVA. Hypotheses 1a stated that vignettes displaying a male character

would elicit more stigma (via the MISS) than female characters (i.e., a main effect of sex). Results

yielded non-significant results ($F(1, 170) = 1.96$, $p = .16$; $M_{Male} = 4.00$, [$SD_{Male} = .89$]; $M_{Female} =$

4.07, [$SD_{Female} = .94$]). This indicates that there was no main effect of sex on stigma in the current

study.

The second hypothesis, hypothesis 1b, predicted an increase in stigma for NSSI vignettes

as compared to MDD vignettes. Specifically, it was predicted that vignettes that featured a

character engaging in NSSI behaviors would elicit more stigma than the characters in the MDD

vignettes (i.e. main effect of disorder). Similar to sex, the main effect of disorder was

non-significant ($F(1, 170) = .18$, $p = .67$; $M_{NSSI} = 4.13$, [$SD_{NSSI} = .87$]; $M_{MDD} = 3.93$, [$SD_{MDD} =$

.95]).

Finally, an interaction was hypothesized (hypothesis 1c), wherein the male with NSSI was

predicted to elicit the most stigma (i.e., an interaction effect). Results indicated non-significant

findings for this hypothesis ($F(1, 170) = .82$, $p = .78$; Figure 1), as stigma was not greater for the

male with NSSI than any other group..

Hypothesis 2. The second hypothesis in this study focused on the influence familiarity with

NSSI on stigma towards NSSI. This hypothesis predicted that the more familiarity the participant

has with NSSI, the less stigma they would have towards the NSSI vignettes (i.e., a negative

correlation). For this analysis, a Pearson's correlation was conducted using only participants who

received a NSSI vignette ($n = 89$). The results indicated null findings, showing that familiarity of

NSSI was not correlated with one's stigma towards the behavior ($r (89) = .19$, $p = .07$).

Discussion

The current study examined the stigma of non-suicidal self-injury (NSSI) in adolescent girls

and boys. This was done by utilizing a vignette-based experimental design, where four separate

vignettes were created. Vignettes varied based on sex of the character and the mental health

condition they were displaying (i.e., NSSI or depression). Participants rated the vignette character

on the Mental Illness Stigma Scale (MISS), and also filled out the Level of Familiarity

Questionnaire (LOF) which was modified to focus on NSSI.

Researchers in the current study looked at how NSSI stigma compared to a disorder that

has been previously examined in stigma research: major depressive disorder (MDD). Concurrently,

researchers observed whether the sex of the individual within a vignette engaging in the maladaptive behavior influenced the participant's stigma towards that vignette. Prior exposure to NSSI was observed to determine if previous exposure contributed to an individual's level of stigma towards the NSSI vignettes.

Hypothesis One

The first hypothesis predicted two main effects and an interaction. The first hypothesis was that male vignette characters would elicit more stigma than their female counterparts. Secondly, it was hypothesized that stigma towards NSSI would be higher than MDD stigma . Finally, an interaction between sex and disorder was predicted, such that the greatest reported stigma would come from participants who were given the male-NSSI vignette. With both predicted main effects and the interaction indicating null findings, hypothesis 1 was not supported.

Reasoning as to why hypothesis 1 was not supported have been speculated. Currently, NSSI is not yet a diagnosable condition in the *DSM-5*, making it possible that many individuals have either not heard of the maladaptive behavior or have very little understanding of how it presents itself. Previous studies that have observed the public's opinions and ideations towards NSSI have focused on a college-aged participant pool (Nielsen & Townsend, 2018). The current study utilized a participant pool with the average participant between 33 to 34 years old.

The current study and Nielsen and Townsend (2018) did create vignette characters that were close in age. Nielsen and Townsend (2018) utilized a 17-year-old female character, where the current study utilized both male and female characters who were sophomores in high school (about 15 to 16 years of age). It could be that given the wide range of participants' ages in the current study, different age groups could report higher or lower levels of stigma towards the young fictional vignette character. It is possible that the older the participant was, the more empathy and

less stigma they had towards the vignette (Nielsen & Townsend, 2018). Therefore, the closer the

participant's age was to the vignette, the more stigma they held toward the vignette. The current

sample was also more diverse than college samples, meaning that there were several participants

who may have different customs and come from cultures that do not find NSSI to be an issue.

Some countries have different views on mental health as a whole and topics, such as NSSI, may

not be discussed all together.

Finally, the participants in the current study did not elicit high levels of stigma overall for

any vignette; in fact, the average stigma rating across all vignettes was 4.04 on a 7-point scale. This

indicates that the participant pool did not hold a lot of stigma towards the vignettes, regardless of

the psychological condition or sex of the ficticious character. It is possible that participants could

have either had little mental health stigma, or that because of the lack of attention checks embedded

in the current study, participants were simply not paying close attention (e.g., fence-setting).

Furthermore, it is possible that stigma attitudes have decreased over the years.

Hypothesis Two

Contradictory to previous general stigma research (Angermeyer, Matchinger, & Corrigan,

2004; Corrigan & Miller, 2004; Nielsen & Townsend, 2018), the current study found null results

when testing whether higher levels familiarity with NSSI resulted in lower perceived NSSI stigma .

This indicates that hypothesis 2 was not supported. Indeed, there was no correlation at all between

level of familiarity with NSSI and NSSI stigma. Reasons for these results were speculated in depth.

The first factor to consider is that NSSI is not a diagnosable condition; therefore, little is known

about the maladaptive behavior itself. Individuals may find that NSSI is not a significant problem

in adolescents. Given the current lack of information about NSSI, it is plausible that many

participants did not know what NSSI was or what to look for when they were reading through the vignettes.

Additionally, there is a lack of knowledge when it comes to NSSI behaviors. This could be as simple as not being able to seperate what NSSI looks like in reality from the media, or the differences in severity. The vignettes were designed to show common methods of NSSI that are used regardless of sex. However, the vignettes were short and not as descriptive as what the media may portray. In turn this may make it difficult to cognitively imagine the maladaptive disorder outside of what participants may have observed through a screen.

Arguably, due to the comorbidity of other disorders (i.e. MDD or BPD), NSSI behaviors could be observed as a symptom of another disorder. This was seen in the past, given that NSSI had not made its appearance outside of BPD until the *DSM-5*'s appearance in 2013 (Klonsky, Victor, & Saffer, 2014). This implies that it is possible that participants were linking NSSI behaviors to that of a different psychological condition, such as MDD. Thus resulting in similar stigma means between both portrayed psychological conditions.

Lastly, due to the lack of attention checks, participants could simply have not been paying attention, thus resulting in random guessing or fence-setting. The lack of attention checks is covered more in depth in the Limitation and Future Directions section. There future directions of replicating the current study with the use of attention checks.

Clinical Implications

Though both hypotheses indicated null findings, the findings from the current study may still be used for clinicians and other mental health personnel. The data from the current study can be used to help clinicians develop future treatment plans for individuals engaging in NSSI and to help create awareness platforms. This study is one of the first to look specifically at NSSI stigma.

While sex differences in the development and presentation of NSSI exist, the current study shows that there are no sex differences in stigma towards NSSI. In the future, clinicians and other mental health personnel may utilize these findings to develop treatment plans for their clients, regardless of sex. In addition, clinicians and other personnel can use the correlation data to use as a tool when creating future awareness efforts on NSSI. Potentially utilizing current awareness materials that exist for MDD, given the stigma for both psychological conditions presented similar levels of public stigma.

Limitations and Future Directions

Results from the current study should be understood in the context of its limitations. Participants were recruited using an online platform in efforts to obtain a diverse sample. This goal was achieved as only half of the sample identified as white (49%), with the next ethnic/race being Asian/Asian-Canadian (28.8%), followed by Black/African/African-American (11.8%). Given the range in the current study's platform for data collection, with minimal oversight on how careful participants were, several participants were excluded from the data set due to duplicate IP addresses. This resulted in a lower power, than originally anticipated. This resulted in roughly 41 participants per vignette vs the needed 45 participants to each vignette as expressed in the methods section. Given the low power of the current study, researchers might not have detected the true effects.

Lack of attention checks was a limitation to the current study. Thus allowing the potential for retaining participants in the dataset that were not paying attention. Future directions would include installing attention checks throughout the study. The current study did instruct participants to generate their own unique code as an attempt to check for attention. However, this was done at the very end and completion of the study.

Finally, the internal consistency of the LOF scale was low, reporting at $\alpha = 0.69$. Though the internal consistency was low, researchers do not find the score to effect the accuracy of the scale in the current study. This is due to the nature of the scale. The LOF looks at the different interactions that an individual has or has not encountered with a particular illness/disorder (mental, physical). Therefore, given the specific participant's background, some items may not be applicable to them specifically. One example is "My job involves providing services/treatment for persons engaging in self-harm," many participants may not work with these individuals, thus lowering the alpha but not necessarily causing a problem with the data.

Future directions include improving upon limitations of the study. The first change moving forward will be to recruit an additional 35% participants to compensate for the exclusions that will come with working with an online platform. The current study recruited an additional 25% participants, yet fell five participants ($N = 170$) short from the desired amount. In addition, it would be beneficial to implement restrictions on MTurk to accept only IP addresses once. Finally, the implementation of attention checks in future similar studies would be critical to ensure that the data points are valid and accurate. This will provide the ability to scan for participants who are fence-setting, rather than being fully engaged.

NSSI stigma research is presently limited. Moving forward, research should expand to looking at collecting data that can be generalized to the current population. For example, the current study utilized an internet platform to collect data from a diverse population. If replicated, the current study should be done with one country in focus, with efforts to reach all regions of that country. Using the United States as an example, it would be crucial to ensure that the study collects data from participants across the country (e.g. rural, urban, southern, northern).

Conclusion

The current study is one of the few studies to look specifically at stigma towards NSSI, as well as the first to look at how familiarity impacts stigma towards NSSI. While the current study's hypotheses were not supported, the results provide insight for future researchers and clinicians involving NSSI. However, if replicated, the results indicate there is not a difference in NSSI stigma in regards to sex, and that the stigma is equal to that of depression. This can be utilized by researchers, academics, and clinicians when considering future treatments for individuals engaging in NSSI.

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Figure 1

Participant Reported MISS Stigma for Each Individual Vignette
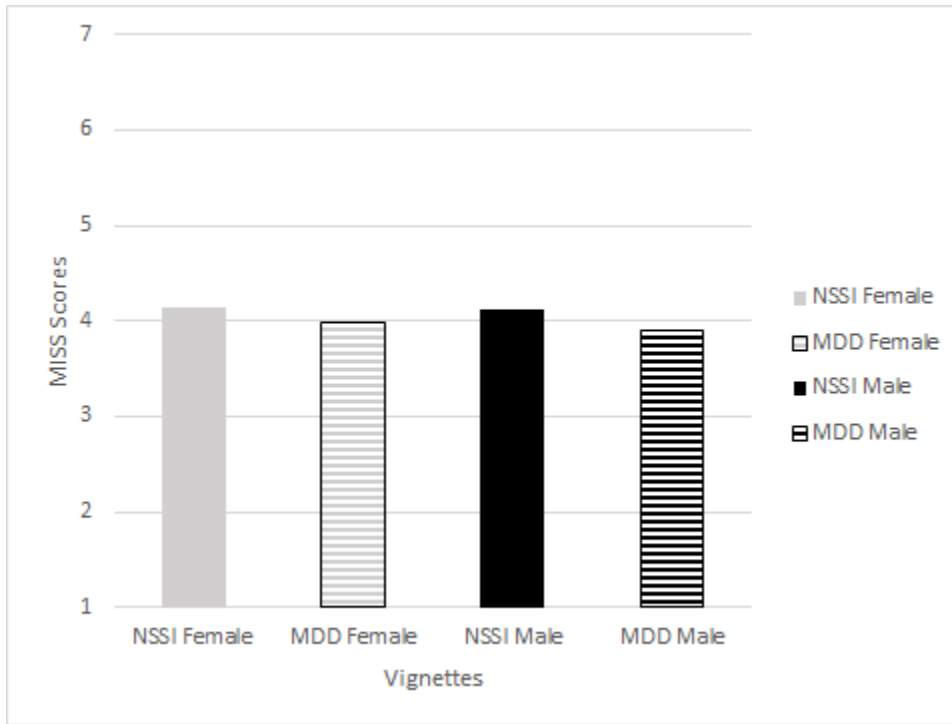
Note. All comparisons were non-significant.

Appendix A

DSM-5 Nonsuicidal Self-Injury Symptoms (APA, 2013, p. 803)

Criterion A: frequency
Within the past year, the individual has intentionally self-inflicted damage to the surface of their skin on 5 or more days with the intention of causing minor or moderate physical harm. Self-inflicted damage may be caused by cutting, hitting, excessive rubbing, and/or stabbing. This behavior *must* be carried out without suicidal intent.clinically

Criterion B: expectations
1. Relief from negative feelings or thoughts.
2. Resolve interpersonal difficulty.
3. Increase positive state of mind.

Criterion C: intention is associated with one or more of the following
1. Interpersonal difficulties or negative feelings/thoughts (e.g., depression, anxiety, tension, self-criticism, etc.) occurring in the moments prior to the injurious act.
2. A previous preoccupation contemplating the intended behavior that is difficult to suppress just before engaging in the act.
3. Frequent thoughts of self-harm, even when not acted on.

Criterion D: social approval
Self-injurious behavior is not socially sanctioned and not restricted to picking a scab or nail biting. Socially sanctioned behaviors may include getting tattoos, body piercings, and religious/cult rituals.

Criterion E: distress and impairment
Clinically significant distress and social interference (e.g. interpersonal and academic) are a result from engaging in said behavior

Criterion F: exclusion
Behavior does not occur exclusively during psychotic episodes, delirium, substance intoxication, or withdrawl.
Individuals with a neurodevelopmental disorder, the behavior is not part of a pattern of repetitive stereotypies.
Behavior is not better explained by any other mental disorder or medical condition, such as trichotillomania, excoriation, psychotic disorder, autism spectrum disorder, etc.

Appendix B

MTurk Description

Share your views on mental health! Read a short description of an adolescent, and then rate your views on their mental health concern.
Keywords: Mental Health, Psychology, Adolescence

Debrief Section

If any of the questions from the study caused any discomfort or stress, we encourage you to reach out to the following websites and text/call lines.

U.S.A. Crisis Text Line: 741-741

U.S.A. Suicide Prevention Line: 1-800-273-8255 or https://suicidepreventionlifeline.org/

International Hotlines: https://ibpf.org/resource/list-international-suicide-hotlines

International Association for Suicide Prevention (IASP):
https://www.iasp.info/resources/Crisis_Centres/

Appendix C

Vignettes

(Jacob/Emma) is a sophomore in high school who has recently become a victim of bullying. In the last couple months, (Jacob/Emma) has been feeling worried about (his/her) friendships, self-critical, and has had (depressed thoughts/thoughts about harming (himself/herself)). In fact, (he/she) has (felt very down, (he/she) is not able to sleep, and (he/she) is losing interest in things (he/she) used to enjoy/started self-harming by cutting (his/her) arms with a razor and burning (his/her) legs with a cigarette).

- Emma is a sophomore in high school who has recently become a victim of bullying. In the last couple months, Emma has been feeling worried about her friendships, self-critical, and has had thoughts about harming herself. In fact, she has started self-harming by cutting her arms with a razor and burning her legs with a cigarette.

- Jacob is a sophomore in high school who has recently become a victim of bullying. In the last couple months, Jacob has been feeling worried about his friendships, self-critical, and has had thoughts about harming himself. In fact, he has started self-harming by cutting his arms with a razor and burning his legs with a cigarette.

- Emma is a sophomore in high school who has recently become a victim of bullying. In the last couple months, Emma has been feeling worried about her friendships, self-critical, and has had depressed thoughts. In fact, she has felt very down, she is not able to sleep, and she is losing interest in things she used to enjoy.

- Jacob is a sophomore in high school who has recently become a victim of bullying. In the last couple months, Jacob has been feeling worried about his friendships, self-critical, and has had depressed thoughts. In fact, he has felt very down, he is not able to sleep, and he is losing interest in things he used to enjoy.

Appendix D

Mental Illness Stigma Scale

Please indicate the extent to which you agree or disagree with the statements

listed below using the following scale:

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

(1 = completely disagree)   (7 = completely agree)

____ 1. There are effective medications that can help Jacob/Emma return to his/her normal and

productive life. (Treatability)

____ 2. I don't think that it is possible to have a normal relationship with Jacob/Emma.

(Relationship Disruption)

____ 3. I would find it difficult to trust Jacob/Emma. (Relationship Disruption)

____ 4. It would be difficult to have a close meaningful relationship with Jacob/Emma.

(Relationship Disruption)

____ 5. I would feel anxious and uncomfortable if I'm around Jacob/Emma. (Anxiety)

____ 6. There are no effective treatments for Jacob/Emma. (Treatability; reverse-scored)

____ 7. A close relationship with Jacob/Emma would be like living on an emotional roller coaster.

(Relationship Disruption)

____ 8. There is little that can be done to control the behaviors that Jacob/Emma has.

(Treatability; reverse-scored)

____ 9. I think that a personal relationship with Jacob/Emma would be too demanding.

(Relationship Disruption)

____ 10. Once someone develops behaviors similar to Jacob/Emma, (s)he will never be able to fully recover from them. (Recovery; reverse-scored)

____ 11. Behaviors like Jacob's/Emma's prevent him/her from having normal relationships with others. (Relationship Disruption)

____ 12. I would feel anxious and nervous if I was around Jacob/Emma. (Anxiety)

____ 13. When talking with Jacob/Emma, I would worry that I might say something that will upset him or her. (Anxiety)

____ 14. People engaging in behaviors similar to Jacob/Emma will have them for the rest of their lives. (Recovery; reverse-scored)

____ 15. I don't think that I can really relax and be myself if I was around Jacob/Emma. (Anxiety)

____ 16. If I was around Jacob/Emma, I would worry that he or she might harm me physically. (Anxiety)

____ 17. I would feel unsure about what to say or do if I were around Jacob/Emma. (Anxiety)

____ 18. I would feel nervous and uneasy if I was near someone with Jacob's/Emma's behaviors. (Anxiety)

____ 19. Mental health professionals, such as psychiatrists and psychologists, can provide effective treatments for Jacob/Emma. (Professional Efficacy)

Appendix E

Level of Familiarity Scale

Please read each of the following statements carefully. After you have read all the statements

below, place a check by **EVERY** statement that represents your experience with someone who has

engaged in self-harm behavior(s).

____ I have watched a movie or television show in which a character depicted a person engaging in self-harm.

____ My job involves providing services/treatment for persons engaging in self-harm.

____ I have observed, in passing, a person I believe may have had engaged in self-harm.

____ I have observed persons who self-harm on a frequent basis.

____ I have self-harmed.

____ I have worked with a person who engaged/was engaging in self-harm at my place of employment.

____ I have never observed a person that I was aware had self-harmed.

____ A friend of the family has engaged in self-harm.

____ I have a relative who has self-harmed.

____ I have watched a documentary on television about self-harming.

____ I live with a person who has engaged in self-harm.

Appendix F

Demographics

1. What is your biological sex?
   a. Male
   b. Female
   c. Intersex
   d. Other: _____

2. What is your age? _____

3. What is your race/ethnicity? (check all that apply):
   a. African American/Black
   b. Asian American
   c. Caucasian/White
   d. Latino/Latina/Hispanic
   e. Native American/Alaskan Native
   f. Bi-racial/Multiracial
   g. Other: _____

4. What is your highest completed level of education?
   a. Some high school
   b. High school
   c. Some college
   d. Associate's degree
   e. Bachelor's degree
   f. Master's degree
   g. Doctorate degree

5. Have you ever been diagnosed with a mental illness?
   a. Yes
   b. No
   c. Prefer not to answer

6. If you said yes to question 5, what illness(es) have you been diagnosed with?
   a. _____

7. Do you know anyone who has dealt with self-harm in the past/present?

a. Myself
b. Friend
c. Parent
d. Grandparent
e. son/daughter
f. aunt/uncle
g. Cousin
h. Co-worker
i. Acquaintance
j. Employee
k. boss/employer
l. Spouse
m. Other:_____
n. I don't know anyone who has dealt with self-harm
o. Prefer not to answer