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Sexual Victimization, Trauma, & Resilience to Disordered Eating

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SEXUAL VICTIMIZATION, TRAUMA, AND RESILIENCE TO DISORDERED EATING

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By

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I dedicate this thesis to survivors of sexual violence everywhere. I also dedicate this thesis to the incredible mentors that I have had, especially the strong female role models who have inspired me to persevere in the face of adversity.

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ABSTRACT

It is widely known that sexual assault disproportionately affects women. College-aged women are the highest risk population of all ages, in fact. Sexual assault can occur at any age and may have a varying range of emotional consequences for survivors. This includes pathological coping mechanisms, such as disordered eating behaviors. This study examined the mediating effect of resilience on the relationship between sexual assault and disordered eating behavior in a sample of women who reported negative sexual experiences. A sample of 519 undergraduate women at Western Kentucky University completed a survey assessing sexual experiences, trauma symptoms, disordered eating behavior, and resilience. Results confirmed the hypothesis in that resilience fully mediated the relationship between trauma symptoms and disordered eating behavior ($B = 0.008$, $p = 0.03$). These results highlight the importance of resilience as a mitigating factor in recovery from sexual trauma. Further research on ways to foster resilience post-assault is in order.

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Sexual Victimization, Trauma, and Resilience to Disordered Eating

Sexual assault (SA) is a pervasive phenomenon, and the study of SA and its psychological ramifications upon survivors is timely. The watershed moment of sexual assault and sexual misconduct allegations that has emerged in the early months of 2018 presents the opportunity, not only to ignite a nation-wide discussion about SA and the cultural contexts in which it occurs, but it also presents the opportunity to engage in a national discourse on mental health. SA does not occur in a vacuum – there are socio-cultural norms that precipitate it, and there are psychological and physiological manifestations of its consequences. Often, the psychological and physiological consequences are inextricable from one another. For example, post-traumatic stress disorder (PTSD) has been proposed as being uniquely related to SA (Dworkin, Menon, Bystrynski, & Allen, 2017), and a PTSD diagnosis includes physiological symptoms, such as hypervigilance, difficulty sleeping, heightened startle reactivity, etc. (*Diagnostic and Statistical Manual of Mental Disorders-5*; American Psychiatric Association, 2013). Additionally, disordered eating behavior can be equally as psychological as it is physical, and it is one of many common psychopathologies observed in survivors of SA post-assault (Dworkin et al, 2017). Of course, not all who experience SA present psychopathological symptoms at clinical levels, whether acutely or long-term.

There is a paucity of research on the indirect effects of resilience in the relationship between trauma incurred from sexual victimization and regulatory behaviors, such as disordered eating. The primary goal of this study is to carefully examine unique variation in response to SA in college-age women.

Sexual Assault in College-Age Populations

According to the National Intimate Partner and Sexual Violence Survey, 19.3% of women have been raped during their lifetime, and 43.9% of women have had some other form of unwanted sexual experience, such as sexual coercion or unwanted sexual touching (Breiding, Smith, Basile, Walters, Chen & Merrick, 2014). College-age women (18 – 24 years) are three to four times more likely to experience sexual assault than women of other ages (Rape, Assault, & Incest National Network, n.d.). A recent study by Cantor and colleagues (2015) found that 12% of female undergraduates had experienced non-consensual penetration via incapacitation or physical force since attending the university, and 20.8% of female undergraduates reported other forms of unwanted sexual touching since attending the university. Unfortunately, Cantor et al.'s (2015) results are not unique. In fact, the percentage of women who reported being sexually assaulted in their study is on par with the Bureau of Justice Statistics' report of approximately 1 in 5 women having been sexually assaulted since entering college (Krebs, Lindquist, Berzofsky, Shook-Sa, & Peterson, 2016). Sexual assault, particularly among young adult women, is a public health issue with potentially devastating effects on survivors.

Sexual Assault and Post-Traumatic Stress Disorder

The risk imposed upon college-age women is further heightened considering that sexual assault is a notorious risk factor for numerous psychopathologies (Dworkin et al, 2017; Faravelli, Giugni, Salvatori, & Ricca, 2004). A recent meta-analysis of psychopathology following sexual assault included 204 studies from 1970 – 2014 in

which one or more psychopathologies with onset following sexual assault were examined (Dworkin et al, 2017). The studies included met the following requirements: had quantitative results; operationalized SA using words like *rape, sexual violence, sexual assault,* and/or behavioral descriptions of assault; did not exclusively include children or survivors of childhood sexual abuse; had a comparison group of people who had not experienced SA within a given time period; examined at least one psychological outcome post-assault from a list of target psychopathologies determined by the authors; did not assess *risk* for SA *after* onset of mental disorder; included adequate data in English; and did not simply duplicate another eligible study (Dworkin et al, 2017). Finally, because the primary goal of this meta-analysis was to determine degree of risk for developing psychopathologies post-assault, it did not include studies with clinical samples because researchers would have "been unable to calculate estimates of group differences in such samples" (Dworkin et al., 2017, p. 70). Researchers identified trauma- and stressor-related conditions, such as post-traumatic stress disorder (PTSD), among the most common psychopathologies to occur in survivors post-assault with an effect size of g = .71 ($p < .01$) (Dworkin et al., 2017). Dworkin et al. (2017) suggested that PTSD may have a uniquely pervasive relationship with sexual victimization; other research supports this idea, as well.

For example, results of Foa and Riggs' (1995) study demonstrated more pervasive and persistent PSTD symptoms in a sample of rape survivors, compared to a sample of non-sexual assault survivors. Foa & Riggs (1995) assessed traumatized samples of women in two ways: first, participants in one study were assessed for PTSD symptoms once a week over a three-month period according to DSM-III criteria (DSM-III; APA,

1980), and second, participants in another study were assessed once a month for PTSD symptoms over a three-month period according to DSM-III-R (DSM-III-R; APA, 1987) criteria. Each study's samples were composed of survivors of rape and of survivors of non-sexual assault; all participants had reported their assaults to the police (Foa & Riggs, 1995). In the first study, a greater proportion of survivors of rape met criteria for PTSD than did survivors of non-sexual assault consistently across time points. More specifically, 94% of rape victims versus 76% of non-sexual assault victims met criteria at two weeks post-assault; 64% for SA group versus 42% for non-sexual assault group at five weeks post-assault; and 47% for SA group versus 22% for non-sexual assault group at eleven weeks post assault (Foa & Riggs, 1995). Foa and Riggs' (1995) second study that utilized DSM-III-R criteria with monthly assessment found similar results. A greater proportion of the sexually traumatized group met criteria for PSTD than did the non-sexually traumatized group at each time point. More specifically, 90% for SA group versus 62% for non-sexual assault group at first assessment, 60% for SA group versus 44% for non-sexual assault group at second assessment, and 51% for SA group versus 21% for non-sexual assault group at third/final assessment (Foa & Riggs, 1995). Although the samples utilized in these studies were unique in that all participants had reported their assaults to the police, findings consistently support that sexual assault may be uniquely related to PTSD symptom severity.

Dworkin, Mota, Schumacher, Vinci, and Coffey (2016) found that SA was related to increased symptom presentation across PTSD symptom clusters compared to non-sexual intimate partner violence (IPV) alone in a substance-abusing, traumatized sample of non-treatment-seeking participants. Frazier and colleagues (2009) found

PTSD symptoms to be most probable and prevalent among survivors of SA compared to survivors of non-sexual assaults in a study of psychological impact of lifetime trauma in a college sample. In this study, participants were asked to rate their worst potentially-traumatic life events at two time-points (T1 and T2) across a two-month period during college. Among these, 31% (n = 87) of participants nominated SA as their worst event, making it the fifth most commonly rated worst event across the sample (Frazier et al., 2009). Of those who nominated SA as their worst event at T1 (n = 87), 13% had probable PTSD; compared to other top-ranking worst events (unexpected death of a loved one, accident, other's life threat, unwanted sexual attention, and family violence), for which probable PSTD rates per subgroup ranged from 2% - 6%, the probable PTSD rate for SA was two- to six-times higher (Frazier et al., 2009). Of those who reported experiencing SA between T1 and T2 who also nominated SA as their worst event in that time period (n = 7), 43% had probable PTSD; although, this rate was in stark contrast to probable PTSD rates for other top-ranking worst events that ranged from 0% - 13%, other worst events had notably larger occurrence between T1 and T2 (Fraizer et al., 2009).

Each of the described studies link SA to unique presentations of PTSD symptomology compared to other types of trauma, including other physical traumas. Supported by Foa & Riggs (1995), as well as Fraizer and colleagues (2009), it is possible that the intimate bodily experience of sexual assault, compared with other traumas, may produce unique presentations of PTSD. However, the body of literature offering explanation for *why* PTSD and SA appear to have a uniquely pervasive relationship is lacking.

Trauma and Disordered Eating Behavior

Trauma symptoms have been empirically tied to disordered eating behavior. Dubosc and colleagues (2012) found full mediation of PTSD symptoms in the relationship between SA and disordered eating in a sample of 296 French female students. Separately, Dubosc et al. (2012) tested depressive symptoms as a mediator and found that depressive symptoms partially mediated the relationship between SA and disordered eating. A simultaneous model showed that, together, PTSD and depressive symptoms fully mediated this relationship (Dubosc et al., 2012). These findings further support sexual assault as a potentially traumatic event, and furthermore that PTSD may provide an indirect pathway for disordered eating.

Additionally, Holzer, Uppala, Wonderlich, Crosby, and Simonich (2008) found significant relationships between trauma history and PTSD, trauma history and disordered eating behavior, as well as full mediation of PTSD symptoms in the relationship between sexual victimization history and disordered eating behavior. Furthermore, Holzer et al. (2008) found full mediation of specific trauma symptoms; for example, when a significant relationship was demonstrated among disordered eating behavior and trauma, as well as between trauma and arousal, the mediation analyses revealed full mediation of arousal in the relationship between sexual victimization and disordered eating behavior. Comparable results were yielded when including avoidance in the statistical model, revealing avoidance as a "nearly perfect mediator" in the relationship between trauma and disordered eating behavior (Holzer et al., 2008, p. 564). Holzer et al. (2008) suggest that those who experience PTSD with particularly high arousal and/or with significant social avoidance may be at higher risk for developing an

eating disorder as a mechanism by which they can regulate and/or avoid negative affect. As demonstrated by the aforementioned research that PTSD may provide an indirect pathway for disordered eating, and because SA is a unique risk factor for PTSD, trauma-linked eating disorder symptoms call for investigation.

Sexual Assault as Pervasive Risk Factor for Trauma-Linked ED

While Dworkin et al. (2017) found that sexual assault was positively, significantly related to a myriad of psychopathologies, disordered eating behavior ranked among the smallest effect sizes ($g = .39$, $p < .01$) of the meta-analysis. This result contrasts a body of literature that identifies disordered eating behavior as a common psychopathology following sexual assault (e.g., Brewerton, 2007; Dansky, Brewerton, Kilpatrick, & O'Neil, 1997; Fischer, Stojek, & Hartzell, 2010).

Dansky et al. (1997) investigated bulimic and binge eating behaviors in a nationally representative sample of women. Respondents were categorized into three groups: Bulimia Nervosa (BN) group, Binge-eating Disorder group (BED), and non-BN/BED group (Dansky et al., 1997). The non-BN/BED group did not meet criteria for the target disordered eating behaviors. Lifetime prevalence of BN and BED were 2.4% and 1.0%, respectively (Dansky et al., 1997). Rape victimization was significantly higher among the BN group ($n = 72$, 26.6%) compared to the non-BN/BED group ($n = 2,929$, 13.3%), but there were no significant group differences in rape victimization, otherwise (Dansky et al., 1997). In addition to this, the BN group reported greater proportions of molestation and other forms of direct assault than both other groups (Dansky et al., 1997). High compensation for bingeing was positively related to rape and aggravated assault victimization; rape victimization was twice as high among those who used

multiple methods of purging than among those who used only one method of purging. Similarly, rape victimization was twice as high among those who experienced high loss of control during binges versus those who experienced low loss of control. Moreover, lifetime prevalence of PTSD significantly differed across groups, with prevalence rates nearly two to three times greater for the BN (n = 72, 36.9%) and BED groups (n = 30, 21.0%) than for the non-BN/BED group (n = 2,929, 11.8%), signifying PTSD as a potential mediator of the SA-disordered eating relationship, supported by Holzer et al. (2008). These results suggest a unique etiology of binging behaviors, specifically, and situate disordered eating behavior as an important outcome of sexual assault.

Further supporting Holzer et al. (2008), Faravelli, Giugni, Salvatori, and Ricca (2004) highlight the importance of differentiating *sexual* assault, compared to other physical assault, in examining post-victimization psychopathology. Faravelli et al. (2004) compared a matched sample of women with no history of childhood sexual abuse who were survivors of rape, as decided by a court of law, in the four to nine months preceding the study (n = 40), to a control group of women who had experienced life-threatening, non-sexual violence (n = 32). Faravelli et al. (2009) found that women who experienced adult sexual violence displayed greater PTSD symptoms (n = 38, 95%, $p < .001$) and ED symptoms (n = 21, 53%, $p < .001$) than the control group (PTSD symptoms (n = 15, 47%, $p < .001$); eating disorder symptoms (n = 2, 6%, $p < .001$). The significant difference between presentation of PTSD and ED symptoms between the SA group and the non-sexual assault group support the idea that SA is a particularly pervasive risk factor for PTSD and ED; moreover, results demonstrate significant co-morbidity of PTSD and ED.

Not only has PTSD and ED been empirically linked, but ED has also been linked to adult sexual-victimization when controlling for childhood abuse.

For example, Fischer et al. (2010), controlled for childhood abuse in disordered eating outcomes of survivors of adult sexual assault, and found 1) that childhood emotional abuse was the only significant predictor of present eating disorder symptoms when controlling for childhood sexual and physical abuse, and 2) that sexual assault in adulthood is significantly related to disordered eating, even when controlling for childhood emotional abuse. These data were collected from a sample of college-age women (Fischer et al., 2010). By controlling for childhood abuse, this research establishes psychopathological response to adult sexual assault as distinct from residual psychological difficulty from negative childhood abuse.

Similarly, controlling for abuse by adults in adolescent samples lends importance to the psychological effects of peer victimization. Ackard and Neumark-Sztainer (2002) examined a statewide sample of students in Minnesota, grades 9 and 12 (n = 81,247) for history of date violence, date rape, and disordered eating behaviors. Of the female students who had experienced date rape alone (N = 589), 38% endorsed binge-eating, 57.6% endorsed fasting, 19.2% endorsed taking diet pills, 17.7% endorsed vomiting, and 5.3% endorsed taking laxatives, all with $p < .00001$ significance. This is in stark comparison to the group of female students who had not experienced any form of date rape or violence (N = 37, 423), of whom 24.4% endorsed binge-eating, 40.9% endorsed fasting, 7.9% endorsed taking diet pills, 7.6% endorsed vomiting, and 1.5% endorsed taking laxatives at $p < .00001$ significance (Ackard & Neumark-Sztainer, 2002). Overall, Ackard and Neumark-Sztainer (2002) found significant associations between date rape

and disordered eating behaviors in a sample of adolescents, even after controlling for abuse by an adult.

Again, the result of these studies suggest that SA is a uniquely pervasive risk factor not only for trauma, but for disordered eating. The unique association of sexual violence and increased disordered eating behavior evidenced here warrants more research to examine the relationship between SA and disordered eating. There are many factors that may mediate individual outcomes following SA, for example, resilience to adversity.

Resilience to Trauma

Resilience has been defined in many ways – for example, Smith, Dalen, Wiggins, Tooley, Christopher, and Bernard (2008) defined it as one's ability to recover from adversity. Contrary to Smith et al (2008), Bonanno (2004) asserted that resilience is distinct from recovery in that *resilience* connotes the ability to maintain equilibrium in the face of adversity, whereas *recovery* connotes a return to pre-event functioning. Bonnano (2004) also defines resilience as an inherent human quality that is common among all people – not just rare exceptions. This is exemplified in the majority of people who do not develop threshold-level PTSD symptoms after potentially traumatic events (Bonanno, 2004). Contrastly, Block and Kremen (1996) described resilience as a trait on a continuum in which high-resilience, or ego-resilient, people possess the ability to dynamically change and self-regulate in accordance with their shifting environment and circumstances, whereas low-resilience, or ego-fragile, people approach changes in more rigid manner with poorer self-regulation. By conceptualizing resilience as a continuous trait, rather than a universal quality, Block and Kremen (1996) control for individual

differences in response to trauma, while recognizing that not all people possess the same degree of resilience throughout their lifecourse.

Critical of previous measures of resilience that assessed for what Smith et al (2008) refers to as "resilience resources" (p. 195), rather than resilience itself, Smith et al (2008) developed the Brief Resilience Scale (BRS) to assess resilience as one unitary construct that was related to, but not defined by, resilience resources. The six-item scale was administered to four samples, including participants receiving behavioral medicine treatment and healthy controls (Smith et al., 2008). The hypothesis that the BRS would assess resilience as one unitary construct, related to resilience resources was supported by results (Smith et al., 2008). Overall, resilience was demonstrated to mitigate negative physiological and psychological outcomes following stress and has been found to be negatively related to a myriad of poor psychological and physiological symptoms following stressful events, such as depression, anxiety and negative affect (Smith et al., 2008).

Wingo, Wrenn, Pelletier, Gutman, Bradley, and Ressler (2010) found supporting results from their study that included a traumatized sample of 792 predominantly low-income, African-American adults. Participants completed a self-report measure assessing for history of childhood abuse, other trauma, resilience, and depression (Wingo et al., 2008). Results showed that both childhood abuse and other trauma influenced depression severity, as expected, and resilience significantly moderated this relationship by mitigating the harmful effects of trauma (Wingo et al., 2008).

Zhou, Wu, and An (2016) studied the roles fear and resilience in the relationship between trauma exposure and depression a sample of adolescent survivors of the 2008

earthquake in Wenchuan, China. The cross-sectional study identified significant, positive effects of trauma on fear and depression, respectively, and notably, examined whether resilience moderated the relationships (Zhou et al., 2016). Analyses showed that fear mediated the trauma-depression relationship, but resilience did not moderate the trauma-depression relationship, which is inconsistent with previous research; however, resilience *did* moderate the fear-depression relationship (Zhou et al., 2016). Because fear mediated the trauma-depression relationship, and resilience moderated the fear-depression relationship, these results demonstrate resilience as a protective factor against fear-potentiated depressive symptoms following non-sexual trauma (Zhou et al., 2016).

In Bonanno, Galea, Bucciarelli, and Vlahov's (2007) study of residents of New York City following the 9/11 attack, resilience was defined as having one or zero Post-Traumatic Stress Disorder symptoms in the six months following the event; results showed that resilient participants displayed significantly lower depressive symptoms, as well as having been less likely to use marijuana or cigarettes than those who displayed more than one PTSD symptom in the six months following the event. Bonanno et al. (2007) indicate that highly resilient people may experience healthier adjustment in the aftermath of disaster than do less resilient people. These results gain support from the findings of Waugh et al. (2008).

Waugh et al. (2008) studied participants' affective recovery from anticipated threats. Using a repeated recovery anticipation task, subjects were exposed to three signals in 100 repeated trials: safety, threat, and aversive (Waugh et al., 2008). Each trial included a six-second signal, a three-second photo presentation, and a four-second recovery period; throughout each period, participants could freely and continuously

adjust a rating dial (0 – 9 scale) to reflect their affect, with lower scores indicating more negative affective rating (Waugh et al., 2008). The safety and aversive signals preceded either neutral or aversive photos, respectively, 100% of the time; whereas threat signals produced either neutral or aversive photos with 50/50 probability (Waugh et al., 2008). Prior to completing the task, participants were given a battery of assessments for trait resilience by which they were categorized into high- and low-resilience groups for analysis (Waugh et al., 2008). Overtime, participants' affective recovery converged between certain and uncertain neutral trials, but there remained a small difference in recovery that indicates that participants never fully recovered from anticipated threat (Waugh et al., 2008) A mixed ANOVA revealed that resilience moderated participants' lack of ability to fully recover from anticipated threat during the recovery period, meaning that highly resilient people were capable of more complete affective recovery than less resilient people (Waugh et al., 2008). Waugh et al. (2008) indicate that resilient people are capable of inhibiting negative affect, which might protect from rumination on negative feelings.

These studies indicate that resilience not only mitigates the negative impact of trauma but may protect against other co-morbid psychopathologies. Because PTSD and SA are strongly and uniquely linked, as are trauma and disordered eating behavior, SA and disordered eating may be linked by pathway of trauma. Because resilience has been demonstrated to alter relationships between trauma and other psychopathology (e.g., Bonanno et al., 2007; Waugh et al., 2008; Wingo et al., 2010; Zhou et al., 2016), it is reasonable to postulate that resilience may alter the pathway from trauma symptoms due to sexual victimization to disordered eating behavior.

The Current Study

Given the prevalence of SA among college-age women (RAINN, n.d.), the relationship between SA and trauma symptoms (e.g. Dworkin et al, 2016; Dworkin et al, 2017; Faraveli et al, 2004; Foa & Riggs, 1995; Frazier et al, 2009), and the comorbidity of trauma symptoms and disordered eating behavior (e.g. Dubosc et al, 2012; Dworkin et al, 2017; Faravelli et al, 2004; Fischer et al, 2010), as well as the protective role of resilience (e.g. Bonanno et al, 2007; Kobasa et al, 1982; Smith et al, 2010; Waugh et al, 2008; Wingo et al, 2010; Zhou et al, 2016), empirical examination of these constructs in conjunction with each other is imperative. If resilience significantly influences the effect of trauma symptoms related to sexual victimization on disordered eating, then resilience could have major clinical implications, warranting development of resilience-informed trauma care. Moreover, such results would demand further investigation of resilience's unique functionality as a protective factor against specific psychopathologies, like disordered eating behavior. This study examined the relationship among history of sexual assault, symptoms of PTSD, symptoms of disordered eating, and resilience in a sample of undergraduate women. It was hypothesized that survivors of sexual victimization would have higher PSTD, eating disorder symptoms, and lower resilience over all compared to the non-sexually victimized group. Additionally, it was hypothesized that resilience would mediate the relationship between trauma symptoms and disordered eating behavior in a sexually-victimized sample of college-age women.

Method

Participants

Participants in this convenience sample were 570 undergraduate women from a mid-sized university in the southcentral United States. Fifty-one participants were removed from final analyses due to incompleteness of their survey responses, therefore 91% of responses were used for final analysis (n = 519). The remaining respondents had a mean age of 19.64 years (SD = 8.3), the majority of participants identified as heterosexual (84.04%) and white (81.25%).

Procedures

Respondents were recruited via an online university study board and completed an online self-report survey. The survey was posted to the university's Study Board site, and students enrolled in psychology or psychological sciences courses received class credit for their participation. Additionally, linked access to the survey was distributed via email list-servs for both the university Gender & Women's Studies department and the university Panhellenic sorority list-serv. Participants who were not enrolled in psychology or psychological science courses did not receive compensation.

The university Institutional Review Board reviewed ethical and methodological concerns, and granted approval for this study. Participants completed online informed consent documents prior to beginning the survey and reviewed an online debriefing document following conclusion of the survey. The debriefing page included phone numbers and web-links to the university counselling center, Texting Crisis Support Line, National Suicide Prevention Lifeline, a local sexual trauma recovery center, and RAINN

National Sexual Assault Hotline, as well as the email address and office phone number for the university professor who oversaw the study.

Anonymity was maintained by requiring no identifying information from respondents. Additionally, the survey included skip-logic that presented pop-up boxes with the crisis hotline number for the local sexual trauma recovery center and a link to RAINN webchat for participants who reported a history of sexual assault.

Measures

Sexual Experiences Survey

Koss and Oros' (1982) Sexual Experiences Survey (SES) assessed participants' experiences with various forms of sexual assault and harassment, including coercion, attempted assault and rape, and completed assault and rape. In an empirical review of reliability and validity of the SES, women's level of victimization in self-report and level of victimization when interviewed by a researcher revealed a Pearson correlation of .73 ($p < .001$) (Koss & Gidycz, 1985). *Sexual assault* is classified as "sexual contact or behavior that occurs without explicit consent of the victim" (RAINN, n.d.); therefore, not all sexual assault qualifies as rape. *Rape* is legally defined as "The penetration, no matter how slight, of the vagina or anus with any body part or object, or oral penetration by a sex organ of another person, without the consent of the victim" (US Department of Justice, 2012).

In this measure, *coercive experiences*, such as circumstances in which the aggressor used verbal or emotional manipulation to coerce the victim to give consent to any type of sexual act, were assessed in questions such as "Have you ever found out that

someone had obtained sexual intercourse with you by saying things they didn't really mean?" and "Have you ever had sexual intercourse with someone when you didn't really want to because you felt pressured by their continual arguments?" (Koss & Oros, 1982). *Attempted sexual assault and rape* were assessed via questions such as "Have you ever been in a situation where someone tried to get sexual intercourse with you when you didn't want to by threatening to use physical force (twisting your arm, holding you down, etc.) if you didn't cooperate, but for various reasons sexual intercourse did not occur?" (Koss & Oros, 1982).

Next, assessment of *completed sexual assault and rape* were measured in questions such as "Have you ever been in a situation where someone used some degree of physical force (twisting your arm, holding you down, etc.) to try to make you engage in kissing or petting when you didn't want to?", and "Have you ever had sexual intercourse with someone when you didn't want to because they used some degree of physical force?" (Koss & Oros, 1982). While the previous question alluded to the legal definition of rape without using the word *rape,* the survey concluded with the question "Have you ever been raped?" (Koss & Oros, 1982). This question is necessary because survivors of rape may not know or recognize that their experience meets the legal definition of rape. For each question to which a participant answered *yes*, skip-logic ensued with the follow-up questions "How many times?" and "How old were you?" (Koss, & Oros, 1982).

This measure included thirteen questions that warrented dichotomous *yes* and *no* responses (*yes* = 1, *no* = 0). In the event of a *yes* response, the follow-up response for number of occasions remained a numeric response. The follow-up response for age was qualified into one of three categories: childhood (ages 0-14), adulthood (ages 15+), and

both (multiple occasions across lifespan). For these variables, *childhood* = 1, *adulthood* = 2, *both* = 3. Although these responses were categorized and coded, they are not utilized in present analysis of data. Overall, participants' experiences were categorized into *no negative sexual experience, coercion, attempted assault/rape,* and *completed assault/rape* variables. Categories of sexual experiences were condensed into a *yes/no* variable to create a final category of *any negative sexual experience* that was utilized for final analyses.

Post Traumatic Stress Disorder Checklist 5

The Post Traumatic Stress Disorder Checklist 5 (PCL-5), the same measure recommended in the DSM-5 (American Psychiatric Association, 2013), was used to assess participants' present trauma symptoms (Weather, Litz, Palmieri, Marx, & Schnurr, 2013). Validity studies of this measure revealed high internal consistency (a = .94) and high test-retest reliability (r = .82) (Belvins, Weathers, Davis, Witte, & Domino, 2015). Reliability analysis from the present study reported Cronbach's alpha of .96. The PCL-5 includes 20 items that asked participants to report how much they are bothered, in the previous month, by symptoms such as "Repeated, disturbing, and unwanted memories of the stressful experience," "Feeling very upset when something reminds [them] of the stressful experience," and "Trouble remembering important parts of the stressful experience" (Weathers et. al, 2013). Participants report how much they are bothered on a five-point Likert scale from *not at all* = 0 to *extremely* = 4. Responses for each were coded accordingly and summed to create composites scores that reflect degree of trauma symptoms experienced by individual participants, and does not provide conclusive diagnostic information.

Brief Resilience Scale

Next, the Brief Resilience Scale (BRS) assessed participants' ability to recover from adversity (Smith et al, 2008). BRS is a commonly used assessment for resilience. An evaluation of this measure found good test-retest reliability in two samples of participants who were given the BRS twice, revealing in intra-class correlation of .69 for one group, and .62 for the other (Smith et. al, 2008). The same evaluation also found high internal validity with Cronbach's alpha ranging from .80 to .91 among four samples of participants (Smith et. al, 2008). Reliability analysis from the present study revealed Cronbach's Alpha of .62. Respondents reported their level of endorsement for six statements about their personal resilience on a Likert scale of five possible responses, ranging from *strongly disagree* to *strongly agree,* to statements such as "I tend to bounce back quickly after hard times" and "I have a hard time making it through stressful events" (Smith et. al, 2008). Responses to the six-item questionnaire were scored on a 1 – 5 scale, with responses indicating lowest resilience scoring 1, and responses indicating highest resilience scoring 5. Mean scores are calculated and higher scores indicate greater resilience.

Eating Disorder Inventory-2

Finally, the Eating Disorder Inventory-2 (EDI-2) assessed participants' disordered eating behaviors using the subscales of drive for thinness, bulimic behavior, and body dissatisfaction, which comprise the eating disorder composite score (Garner, 1991). An empirical evaluation of reliability found good internal consistency (a = .82 - .93) (Thiel & Paul, 2006). Reliability analysis from the present study report Cronbach's alpha of .95 for the eating disorder composite score. This twenty-three-item measure asked

participants to report their level of endorsement to statements from each subscale. For example, sample items for drive for thinness, bulimic behavior, and body dissatisfaction, respectively, are as follows: “I think about dieting,” “I have gone on eating binges where I have felt that I could not stop,” and “I think that my thighs are just the right size” (Garner, 1991). Participants reported endorsement on a six-point Likert scale that ranged from *never* = 1 to *always* = 6. Answers were scored on a 1 – 6 scale, weighted, and summed. Composite scores are calculated, and higher scores indicate greater disordered eating behavior. These scores reflected only symptoms of disordered eating and were not used for diagnostic purposes. For the purposes of this study, only the composite score was utilized.

Results

Of the 519 participants, 44.7% (n = 232) reported a history of sexual coercion; 12.3% (n = 64) reported a history of attempted rape or attempted sexual assault; 19.7% reported a history of completed sexual assault *(*n = 102); 16.2% (n = 84) reported a history of completed rape; and the remaining 48.2% (n = 250) reported no history of the above experiences. Overall, 51.8% (n = 269) of participants reported a history of one or more of the above sexual experiences.

ANOVA results confirmed significant group differences among the sexually victimized group and non-sexually victimized group for both PSTD symptoms ($p < .001$) and resilience ($p < .032$), with the sexually-victimized group displaying greater trauma symptoms and lower resilience scores than the non-sexually-victimized group. No significant group differences were found in overall disordered eating behavior (see Table 1). The mediation hypothesis was tested using the bootstrap mediation analysis function in Process (Hayes, 2013) for SPSS. Analysis included only participants who reported any type of negative sexual experience (n = 269). All coefficients are unstandardized. The analysis confirmed a significant negative relationship between trauma symptoms and resilience (B = -.007, SE = .002, $p < .001$), as well as a significant negative relationship between resilience and eating disorder symptoms (B = - .387, SE = .122, p = .002). After factoring in resilience, the relationship between trauma symptoms and eating disorder symptoms became non-significant (B = .005, SE = .004, p = .16). The test of the indirect effect supported significant mediation (indirect effect = .003, CI [.008, .006]), as the confidence interval did not include zero. This result indicates an indirect effect of resilience on disordered eating outcomes related to PTSD following SA (see Figure 1).

Table 1. ANOVA and Descriptive Statistics for Trauma Symptoms, Resilience, and Eating Disorder Symptoms Between Groups

Variable	Group	N	Mean	SD	F	*p*
Trauma Symptoms	No Negative Sexual Experience Group	235	33.13	15.28	70.56	<.0001
	Any Negative Sexual Experience Group	250	46.60	19.63		
	Total	485	40.07	18.88		
Resilience	No Negative Sexual Experience Group	246	3.20	.58	4.61	.032
	Any Negative Sexual Experience Group	264	3.09	.57		
	Total	510	3.14	.58		
Eating Disorder Symptoms	No Negative Sexual Experience Group	229	1.00	.81	1.67	.197
	Any Negative Sexual Experience Group	248	1.09	.80		
	Total	477	1.05	.80		

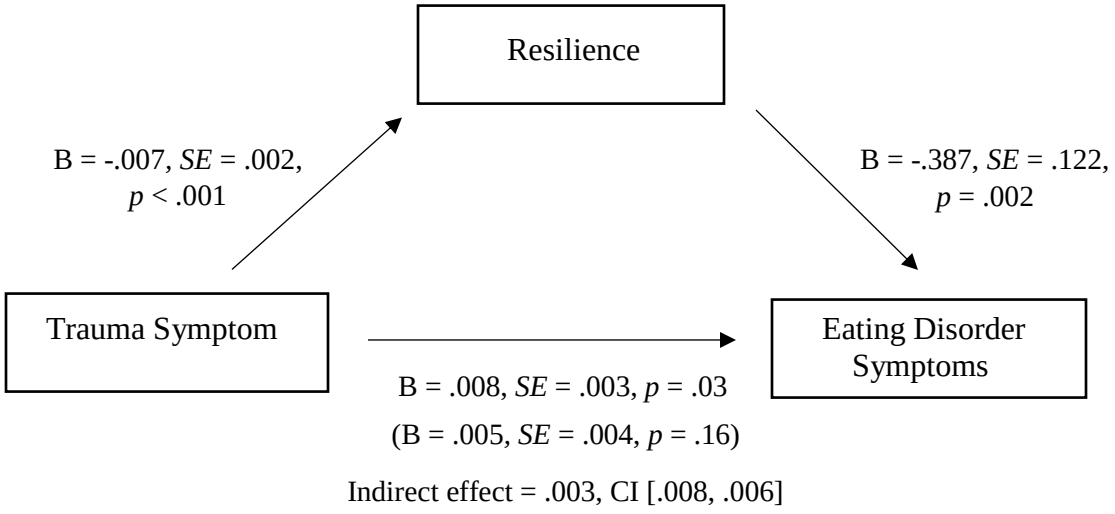

Figure 1. Resilience as a mediator of the relationship between trauma symptoms and eating disorder symptoms. Path values represent unstandardized regression coefficients.

Discussion

The primary goal of this study is to examine the role of resilience in the relationship between trauma symptoms and disordered eating in a sexually victimized sample. Results support the hypothesis that resilience is a mediator of the association between trauma symptoms and eating disorder behavior among women with a history of sexual victimization. Greater trauma symptoms were related to lower resilience, and greater resilience was related to lower disordered eating. Analysis revealed a direct effect of trauma symptoms on disordered eating behavior, but when resilience was added to the model, it accounted for this relationship through mediation. While trauma symptoms were associated with greater eating disorder symptoms, resilience weakened this relationship. This mediatory relationship indicates the importance of resilience in possibly mitigating the negative outcomes associated with trauma symptoms, including those related to sexual assault history.

What remains undetermined by the current study is the *functionality* of resilience within its mediating role between trauma symptoms and eating disorder symptoms. Some research, such as Waugh et al. (2008) suggest that resilience may have regulatory benefits. The results of Waugh et al. (2008) demonstrate the ability of highly resilient people to inhibit negative affect, which is an emotion-regulatory function. It is possible that the emotion-regulatory benefits of resilience interact with the emotion-regulatory difficulties that characterize disordered eating to inhibit detrimental affective fluctuations that contribute to ED, particularly binge-related disorders. Investigation of this

relationship should include assessment for specific interactions of resilience and specific characteristics of ED, such as inhibition of negative affect and rumination.

Large-scale cultural attitudes contribute to survivors' struggle to recover post-assault, including the stigmatization of mental health issues that is compounded by the shame imposed upon survivors of sexual assault. Borkenhagen (1975) exemplifies the unfair treatment of rape victims by law enforcement in the fictional scenario entitled "The Rape of Mr. Smith" in which a male lawyer in an expensive suit is held at gunpoint by a robber late at night; when he reports the robbery to law enforcement, Mr. Smith is chastised by law enforcement for being out at night, wearing provocative clothing that would entice a robber to steal from him. Mr. Smith is also blamed for his victimization for having a history of giving money to others (Borkenhagen, 1975). By paralleling the victim-blaming experienced by SA survivors with that experienced by a victim of a non-sexual assault, Borkenhagen (1975) demonstrated the ridiculous and cruel nature of the victim-blaming that permeates patriarchal culture. Moreover, by utilizing a male character in the vignette, Borkenhagen (1975) draws attention to the devaluation of women's experience; not only is it hard to imagine interrogative victim-blaming of a person who survived a robbery, but it is doubly hard to imagine a successful adult male being doubted for his word. This denial of women's lived experience is pervasive in survivors' experience post-assault. Kilpatrick, Resnick, Ruggiero, Conoscenti, and McCauley (2007) found being blamed by others to be the most common barrier to disclosure identified by survivors of sexual assault in a nationally representative sample of women. Although women are most often victims of sexual violence, one in six men have been victims of sexual violence (1in6, 2018), and are not immune to victim-

blaming, either. Perhaps the apparent denial of survivor's experiences contributes to the uniquely pervasive relationship of SA and PTSD.

So how can resilience be fostered in a clinical setting? The answer to this is many-fold because resilience has been defined in many ways (e.g., Block & Kremen, 1996; Bonnano, 2004; Smith et al, 2008), and there are innumerable challenges to the wellness of survivors of SA. If Bonanno (2004) is correct in the assumption that resilience to adversity is common, then all people experience resilience in varying degrees. Additionally, if resilience is a dynamic construct, then it must change over time – an individual may be far more resilient at some times in their life than others (Block & Kremen, 1996). In light of these theories, it may be necessary to begin resilience-based care with an assessment of an individual's baseline resilience and create an individuated plan from there. While clinical care can support a person in crisis, resilience does not exist in a vacuum – individual's resiliency may be deteriorated by the culture in which they live.

Limitations of this study include utilization of entirely self-report measures, as well as online data collection. Additionally, the sexual experience history assessment did not account for assault during incapacitation. Because the data collection did not require participants to report the date of last assault, temporal effects could not be examined in analyses, thus all data is cross-sectional. Finally, due to sample size, all negative sexual experiences were collapsed into an *any* variable; analysis of negative sexual experiences in groups such as *attempted assault* and *completed assault* could possibly have revealed group differences.

Further study should include a moderation analysis of high- and low- resilience groups for direct comparison of outcomes. Additionally, the mediation evidenced here calls for further investigation of resilience as a protective factor against disordered eating behavior. For example, Mallorqui-Bague and colleagues (2017), in a longitudinal and cross-sectional study of women diagnosed with eating disorders (ED), identified emotion regulation (ER) difficulties as a transdiagnostic risk factor for ED with binge-related disorders, such as BN or BED, showing greater ER difficulty than restrictive disorders, such as anorexia nervosa. The transdiagnostic nature of ER difficulties in ED diagnoses lends disordered eating behavior as a maladaptive emotion-regulatory mechanism; this offers a possible explanation for disordered eating behavior as a likely co-morbid psychopathology with PTSD following SA.

The current study supports resilience as a crucial factor to recovery from disordered eating behavior following sexual victimization, but it is likely that resilience mediates the relationship between PTSD and other assault-related psychopathologies, as well. More research is necessary to determine the functionality of resilience in those specific relationships and as a protective factor, in general. While trauma- and resilience-informed care for those suffering from an eating disorder, could provide support to individual survivors of SA who seek help, a cultural change is necessary to addressing sexual victimization and its ramifications. Sexual victimization will persevere as a pervasive cultural problem, as long as the patriarchal status-quo remains unchallenged. This status-quo maintains male power over women via affirmation of male right of access to women's bodies; moreover, maintenance of hegemonic masculinity that encourages violence as assertion of dominance perpetuates violence against women, children, and

men. Emergence of the #MeToo movement exemplifies challenge to the patriarchal system that protects perpetrators of sexual violence and punishes survivors. Survivors of SA demand to be heard by giving themselves and others a public voice that affirms their experiences and breaks the silence imposed upon them. Hopefully, the #MeToo movement is the beginning of an enduring cultural shift that not only validates survivors of SA, but also reconstructs social systems that normalize perpetration of sexual violence. Ideally, this cultural change, paired with improvements in scientific knowledge and treatment of assault-related psychopathology, will improve the lives of survivors everywhere.

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