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The Relationships Among Trauma History, Disordered Eating, Body Dissatisfaction, And Social Anxiety

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THE RELATIONSHIPS AMONG TRAUMA HISTORY, DISORDERED EATING, BODY
DISSATISFACTION, AND SOCIAL ANXIETY

by

REBEKAH M. MITCHELL

(Under the Direction of C. Thresa Yancey)

ABSTRACT

Eating disorders are highly prevalent and cause significant psychological impairment, up to and including death (Arcelus, Mitchell, Wales, & Nielson, 2011). This research examined how trauma history in the general population explains variation in eating disorder risk. The purpose of the current study was to provide further evidence for the relationship between abuse history and eating disorder risk. Disordered eating behaviors, body dissatisfaction, and social anxiety are all known risk factors for the development of eating disorders (Brewerton, 2007). Trauma history is related to all three of these known risk factors (Brewerton, 2007) with sexual trauma being more linked to disordered eating (Wonderlich et al., 2001), social anxiety (Bruce, Heimberg, Goldin, & Gross, 2013), and body dissatisfaction (Didie, Tortolani, Pope, Menard, Fay, & Phillips, 2006) than other forms of trauma (Kent, Waller, & Dagnan, 1999). We hypothesized individuals with a history of trauma would report greater eating disorder risk compared to individuals with no trauma history. Further, we expected individuals with a history of at least one incident of sexual trauma would report greater eating disorder risk compared to those with no trauma or those with trauma history not including sexual trauma. As an exploratory hypothesis, we examined whether age of first trauma incident interacts with trauma history to account for the variance in reported eating disorder risk. Participants ($N = 1,000$) were recruited via Amazon's Mechanical Turk to complete a surveying measuring their trauma histories and current symptoms of disordered eating, social anxiety, and body dissatisfaction. Participants were given the EAT 26, SIAS, BSQ 16B in random order. Then they were given the trauma Questionnaire and Demographic Questionnaire. Results show individuals with a history of trauma reported greater social anxiety and dissatisfaction than those without trauma history. Also, individuals who report sexual trauma reported greater eating disorder risk than those with no trauma or those with trauma history not including sexual trauma; age of first occurrence did not affect eating disorder risk. Future research should focus more on the differences of age of first occurrence. Research should focus on the differences in eating disorder risk between those who experienced physical trauma and those who experienced neglect. Also, researchers should look at other variables that could account for the variance in eating disorder risk such as perpetrator relationship and severity of abuse. Clinicians should take results into consideration when working with clients who report sexual trauma. They should look for symptoms of disordered eating, social anxiety, and body dissatisfaction.

INDEX WORDS: Trauma history, Eating disorders, Disordered eating, Social anxiety, Body Dissatisfaction, Age of trauma.

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DEDICATION

I would like to dedicate this project to all the people that have supported me, pushed me, and helped me get to this point and finish this project. I would like to recognize my awesome husband Bryan Mitchell for being supportive of my academic and career goals by constantly pushing me to do my best. I would also like to thank my amazing parents, Steven and Susan Grohn, for supporting me throughout this process and helping me accomplish my goals in any way that they can. I appreciate the amount of love and support I have received and could not have completed this project without it. Lastly, I dedicate this project to my committee chair and my mentor that has greatly influenced my life and helped me to accomplish all my dreams and goals. Dr. Thresa Yancey has been a huge influence in my life and has guided my career path. Dr. Yancey has been an essential part of my life and I am grateful for the guidance and knowledge I have gained from working with her.

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CHAPTER 1

INTRODUCTION

Eating disorders are highly prevalent and lead to significant consequences, up to and including death (Arcelus, Mitchell, Wales, & Nielson, 2011). Disordered eating behavior usually begins at a young age; 81% of 10-year-olds have a strong fear of being fat (Mellin, McNutt, Hu, Schreiber, Crawford, & Obarzanek., 1997) and 50% of teenage girls engage in disordered eating behavior such as extreme dieting, fasting, vomiting, or using laxatives (Wertheim, Paxton, & Blaney, 2009). Oldenhave, Muschter, Terpstra, and Noordenbos (2002) report 91% of women enrolled in college report controlling weight through strict dieting. Hudson, Hiripi, Pope, and Kessler (2007) found a median age of onset of eating disorders ranging from 18 to 21 years old. However, the average age of onset for anorexia nervosa was 10 to 15 years of age. Research shows eating disorders are found in all cultures and ethnic groups (Hudson et al., 2007; Marques et al., 2011; McGuinness & Taylor, 2016). Furthermore, Eating disorders are a significant problem in society found across many cultures, ethnic groups, genders, and ages.

Consequences of Eating Disorders

Physical consequences. Medical and physical complications commonly arise from eating disorders. Podfigurna-Stopa et al. (2015) found eating disorders occur across the lifespan, and often are a lifelong illness. Medical consequences include low BMI, cardiac complications, death, neurological complications, dermatological issues, gastric complications, low bone mass density, thyroid malfunction, anxiety, depression, and complications concerning reproductive health and social functioning (Podfigurna-Stopa et al., 2015). Podfigurna-Stopa et al. (2015) found most of these medical complications are reversible if the person experiencing eating disorders undergoes treatment. Unfortunately, some of the potential complications, such as death, thyroid malfunction, low bone mass density, and poor reproductive health, are irreversible

consequences of eating disorders. The most severe consequence of eating disorders is death. Studies show anorexia nervosa has the highest mortality rate of all mental health disorders (Arcelus et al., 2011).

There are additional medical complications associated with binge type disordered eating. Mitchell (2016) found those with binge-eating disorders had higher rates of asthma, cardiovascular disease, hypertension, cortisol dysfunction, menstrual dysfunction, and metabolic dysfunction compared to those who do not exhibit eating disorders. Forney, Buchman-Schmitt, Keel, and Frank (2015) found those who engage in purging behaviors have problems with their teeth, esophagus, gastrointestinal system, kidneys, skin, cardiovascular system, and musculoskeletal system. One study examined 1,203 participants between the ages of 15 and 18, gathering information on disordered eating behaviors and providing dental exams (Hermont, Pordeus, Paiva, Nogueira, Abreu, & Auad, 2013). The researchers found participants who had higher levels of disordered eating behaviors had evidence of significant tooth erosion. Tooth erosion is a very serious and irreversible problem (Hermont et al., 2013).

Another common physical consequence among those reporting eating disorders is gastrointestinal (GI) complications. Norris, Harrison, Isserlin, Robinson, Feder, and Sampson (2015) confirm people with eating disorders are at higher risk for developing severe GI complications and sometimes even severe liver complications compared to those without eating disorders. Norris and colleagues found severe, irreversible GI problems affecting the entire GI system among individuals who were severely malnourished as a direct result of eating disorders (Norris et al., 2015). Serious GI problems are one major consequence for those with eating disorders. For women, a more serious problem can arise from eating disorders. Kimmel, Ferguson, Zerwas, Bulik, and Meltzer-Brody (2015) identified another major medical risk of

eating disorders in women: severe and irreversible gynecological and reproductive complications. These issues include infertility, unplanned pregnancy, having a baby with a small head circumference, earlier cessation of breastfeeding, postpartum depression and anxiety, sexual dysfunction, complications in the treatment of gynecological cancers, and polycystic ovarian syndrome (Kimmel et al., 2015). Earlier cessation of breastfeeding and higher rates of polycystic ovarian syndrome are unique complications of eating disorders (Kimmel et al., 2015).

Behavioral and psychological consequences. One of the negative consequences of eating disorders is increased alcohol and substance use. Dunn, Larimer, and Neighbors (2002) examined associations between eating disorders and substance use in a sample of college students (N = 3,013). Students who reported disordered eating behaviors also reported more negative consequences related to drug and alcohol use. Negative consequences included interpersonal conflict, legal ramifications, and occupational dysfunction. In a sample of 391 women, Anderson, Martens, and Cimini (2005) found more frequent alcohol use and more instances of negative consequences of alcohol use (e.g., physical injury, fighting, unprotected sex, having someone force or threaten to force sex with them) among those who reported disordered eating behaviors compared to participants who did not report disordered eating.

Eating disorders are also strongly associated with other mental illnesses. As part of a larger study, Hudson et al. (2007) conducted face-to-face interviews with 9,282 participants across the United States. Findings demonstrate eating disorders are linked to anxiety, mood, impulse-control, and substance use disorders (Hudson et al., 2007). Hudson et al. (2007) found participants with eating disorders had high comorbidity with other psychiatric disorders such as depression and anxiety disorders. Manaf, Saravanan, and Zuhrah (2016) found a significant positive relationship between depression and eating disorders in a group of undergraduate

college students. Manaf et al. (2016) concluded treating depression could successfully lower disordered eating patterns. Tseng, Chang, Chen, Liao, and Chen (2016) found that patients (N = 288) who had high levels of disordered eating patterns had higher rates of major depressive disorder and bipolar disorders compared to those without disordered eating patterns. McElroy et al. (2016) found those with bipolar disorder had higher rates of disordered eating compared to those without bipolar disorder. McElroy et al. (2016) also concluded there is a high comorbidity between mental illnesses, especially bipolar disorder, and eating disorders. Sala and Levinson (2016) showed a link between worry, a core component of a generalized anxiety disorder, and disordered eating patterns such that participants high in worry had higher levels of disordered eating compared to those with no worry. Tavoracci, Grigioni, Richard, Meyrignac, Dechelotte, and Ladner (2015) surveyed 3,457 college students and discovered 20.5% of those participants had disordered eating behaviors. Participants endorsing disordered eating behaviors also reported higher levels of stress, depression, and substance use.

Eating Disorder Risk

Due to the severity and prevalence of eating disorders in societies across the world, researchers have studied risk factors leading to the development of eating disorders. Stice, Gau, Rohde, and Shaw (2017) identified two major risk factors for the development of DSM-5 eating disorders: body dissatisfaction and impaired interpersonal functioning (including social anxiety). Evans et al. (2017) conducted a longitudinal study using men and women and found body dissatisfaction and disordered eating behaviors were risk factors for the development of an eating disorder later in life. According to Evans et al. (2017), disordered eating behaviors are a significant risk factor for development of a DSM-5 eating disorder. The current study focuses on these three risk factors: disordered eating (Evans et al., 2017), body dissatisfaction (Jacobi,

Fittig, Bryson, Wilfley, Kraemer, & Taylor, 2011), and social anxiety (Fairburn, Welch, Doll, Davies, & O'Connor, 1997).

Disordered eating. Eating disorders and disordered eating behaviors are distinct, but disordered eating behaviors often lead to a diagnosis of an eating disorder (Evans et al., 2017). Disordered eating behaviors are the behaviors and thoughts that may eventually lead to the development of eating disorders as described in the DSM-5. Disordered eating includes behaviors such as avoiding eating when hungry, vomiting after eating, and feeling guilty after eating food.

Body dissatisfaction. Body dissatisfaction is considered the strongest risk factor for the development of eating disorders (Stice et al., 2017). Overall, it appears body dissatisfaction impacts men and women of all ages, and is becoming an increasing health problem for society. A study conducted by Fallon, Hams, and Johnson (2014) examined a representative sample of men and women (N = 1,893), finding 31.8% of the women and 28.4% of the men reported body dissatisfaction. McGuinness and Taylor (2016) examined body image and eating disorders in midlife men and women. Findings indicate women have greater body dissatisfaction and higher prevalence of eating disorders compared to men; however, men were not immune to body dissatisfaction and eating disorders.

Current research shows body dissatisfaction is strongly associated with eating disorder symptoms in adolescent girls across different ethnic groups (Bucchianeri, Fernandes, Loth, Hannan, Eisenberg, & Neumark-Sztainer, 2016). Boone, Soenens, and Luyten (2014) found girls (N = 455) with high levels of body dissatisfaction had higher levels of symptoms of an eating disorder. In a longitudinal study of 496 adolescent girls, participants with high levels of body dissatisfaction developed an eating disorder in late adolescent/early adulthood (Rhode, Stice, &

Marti (2015). There is also research connecting body dissatisfaction and eating disorders among adults. Anderson, Reilly, Gorrell, and Anderson (2016) found adult runners with evidence of body dissatisfaction had higher levels of disordered eating, as measured by the Eating Attitudes Test (EAT)-26.

Social anxiety. Social Anxiety Disorder (SAD) affects up to 13% of individuals over their lifespan (Ruscio, Brown, Chiu, Sareen, Stein, & Kessler, 2008). SAD affects all ages and genders, and is found across cultures. SAD is characterized by behaviors such as difficulty making eye contact, difficulty talking with others, and feeling tense mixing in a group.

Ghazwani, Khalil, and Ahmed (2016) found 11.7% of teenage/early adulthood men (N = 454) had severe social anxiety disorder. Other research examined young adult men and women (N = 1,200) and found 23.6% of them had moderate to severe SAD (Barahmond & Shahbazi, 2015). Further, the researchers found those with SAD also had high risk for developing eating disorders. Russell and Shaw (2009) report that SAD is the third most common mental health problem for society, with 10% of the 1,007 university students studied having severe SAD.

SAD is more common among those with eating disorders compared to those without eating disorders (Godart et al., 2003). Godart et al. (2003) examined 271 women with eating disorders and found 71% had lifetime comorbidity of SAD. Levinson and Rodebaugh (2016) found that eating disorders and SAD share similar symptoms and similar thought processes which contribute to the high comorbidity rate. Striegel-Moore and Bulik (2007) also identified high social anxiety as one of the major risk factors for the onset of an eating disorder. Individuals with eating disorders are more likely to have comorbid SAD than any other disorder (Levinson & Rodebaugh, 2016; Pallister & Waller, 2008). Pallister and Waller (2008) examined the prevalence of anxiety disorders with all subtypes of eating disorders (e.g., restrictive type,

purging type). They found SAD was the highest comorbid anxiety disorder across all subtypes. These high comorbidity rates indicate SAD is a significant risk factor for the development of eating disorders.

Given the significant negative outcomes associated with eating disorders, we need to be able to identify individuals at risk for developing eating disorders. Experience of trauma is related to these risk factors of eating disorders (i.e., disordered eating, body dissatisfaction, and social anxiety). Further exploring these relationships will add to the literature on risk for eating disorders and potentially aid mental and physical health providers in understanding risk of eating disorders.

Trauma and Eating Disorder Risk

Traumatic experiences are highly prevalent and can lead to several negative consequences throughout the lifespan. Traumatic life events include events such as the death of a loved one, a car wreck, sexual abuse, neglect, and physical abuse. There are multiple possible consequences of experiencing a traumatic event such as depression, anxiety, social isolation, low self-esteem, body dissatisfaction, and eating disturbances (Centers for Disease Control and Prevention, 2016). According to the Centers for Disease Control and Prevention (CDC), there were 702,000 victims of child abuse and neglect reported to child protective services (CPS) in 2014. Child maltreatment is a serious problem effecting one in four children (CDC, 2016). The rate of child abuse is on the rise and approximately 1,600 children died from childhood maltreatment in 2014 (CDC, 2016). Further, one in five women and one in 71 men will be sexually assaulted at some point in their life, and an estimated 1.9 million women and 3.2 million men are physically assaulted each year (CDC, 2016). Trauma experiences are related to risk factors for the development of eating disorders, including disordered eating, body dissatisfaction, and social anxiety.

Trauma and disordered eating. Imperatori et al. (2016) found those who experienced childhood trauma had higher rates of dysfunctional eating patterns, especially among participants who were overweight or obese. Brewerton (2007) extended the link between trauma history and disordered eating to men, older adults, and non-clinical populations. Brewerton (2007) found that those who experienced childhood trauma (defined as sexual abuse, neglect, and physical abuse) had significantly higher rates of disordered eating behaviors compared to participants with no history of childhood trauma. Further, Brewerton (2007) found the link between disordered eating and sexual abuse, physical abuse, and neglect is significant for all ages and for men and women. Another study extended the link between trauma and disordered eating to college students. Smyth, Heron, Wonderlich, Crosby, and Thompson (2008) surveyed 249 college students on trauma type, trauma severity, and disordered eating behaviors. The researchers discovered that higher levels of trauma significantly predicted disordered eating behaviors for college students.

Trauma and body dissatisfaction. There are several traumatic events related to higher levels of body dissatisfaction. Vartanian, Smyth, Zawadzki, Heron, and Coleman (2014) found that childhood adverse events are linked to the development of high levels body dissatisfaction in later life. Research also shows experiencing traumatic events is positively correlated with body image dissatisfaction (Schechter, Schwartz, & Greenfeld, 1987). Schechter et al. (1987) concluded that trauma experience is strongly associated with body distortion and body dissatisfaction, which is in turn strongly associated with eating disorders. There is also some evidence that body dissatisfaction levels vary based on the type of trauma experienced, with mixed results. Didie, Tortolani, Pope, Menard, Fay, and Phillips (2006) surveyed 75 participants on childhood trauma experiences and current body distortion. The researchers found participants who experienced childhood sexual abuse had higher levels of body distortion than those who

experienced other forms of trauma, including physical abuse and neglect. Dunkley, Masheb and Grilo (2010) found sexual and emotional childhood abuse were associated with higher levels of body dissatisfaction. Some research finds physical abuse is more strongly associated with body dissatisfaction. Treuer, Koperdak, Rozsa, and Furedi (2005) examined 63 patients with eating disorders. The researchers found physical abuse had the strongest association with body dissatisfaction, compared to other types of abuse. Briere, Kaltman, and Green (2008) found physical and sexual trauma were correlated with several trauma symptoms (e.g., anxiety, depression, anger). Although there are differing results, at the current time, there appears to be more evidence for sexual abuse/assault having the strongest association with body dissatisfaction compared to other types of childhood abuse. Sexual abuse leads to higher levels of body dissatisfaction, which is an important and strong risk factor for the development of eating disorders (Evans et al., 2017; Stice et al., 2017).

Trauma and social anxiety. Individuals with high social anxiety levels often self-report a history of trauma in childhood. Bruce, Heimberg, Goldin, and Gross (2013) surveyed 68 individuals with a primary diagnosis of SAD. Participants with a history of trauma reported higher social anxiety than those who did not report a history of trauma. This suggests traumatic experiences are related to greater levels of social anxiety. Kuo, Goldin, Werner, Heimberg and Gross (2011) found those with SAD reported more childhood trauma compared to those without SAD. Kuo et al. (2011) concluded individuals who experience childhood trauma are more at risk for the development of SAD.

Age of trauma. The age a person experiences trauma may be important when examining outcomes. Most research focuses on childhood traumatic experiences but not adolescent or adulthood trauma. The effects of trauma on eating disorder risk may depend on when the trauma

occurred. There is some literature suggesting high levels of body dissatisfaction experienced in adolescence (13-17 years of age) correlates to more risk for the development of eating disorders compared to those without body dissatisfaction (Rohde, Stice, & Marti, 2015). Currently, there is a dearth of literature on the relationship between age of trauma experience and risk of eating disorder. This relationship was explored in the current study.

Types of Trauma

Three main types of trauma are known risk factors for eating disorders: sexual trauma, physical trauma, and neglect. Connors and Morse (1993) found 30% of eating disorder patients have a history of sexual abuse in childhood. Kong and Bernstein (2008) studied 73 patients with eating disorder diagnoses, discovering emotional abuse, physical neglect, and sexual abuse significantly relate to eating disorders.

Sexual trauma. Sexual trauma is defined by the CDC (2016) and the DSM-5 as any completed, attempted, or coerced sexual act, sexual contact with, or exploitation of a person. Sexual acts defined as trauma for this study will include forced and unwanted penetration (of any type), fondling, and exposure to sexual activity (such as pornography, filming sexual act without consent, and forced or coerced prostitution). Research suggests childhood sexual abuse is a risk factor for eating disorders later in life (de Groot & Rodin, 1999; Fischer, Stojek, & Hartzell, 2010; Schechter, Schwartz, & Greenfeld, 1987; Wonderlich et al., 2001).

Sexual trauma is related to the three risk factors for eating disorders included in the current study. Wonderlich et al. (2001) examined the relationship between eating disorders and sexual trauma across the lifespan in 97 participants who experienced sexual abuse in childhood, rape in adulthood, both, or had no history of sexual assault and concluded that sexual trauma (childhood or adult) was significantly associated with current disordered eating patterns. Bruce et al. (2013) also found that those participants with a history of sexual abuse had higher levels of

social anxiety. Further, Didie et al. (2006) found that individuals with a history of sexual abuse had higher levels of body distortion. Based on this literature, we predicted that participants in the current study who experienced sexual abuse/assault will have higher levels of eating disorder risk than those with no history of sexual trauma.

Physical trauma. Physical trauma is defined as the intentional or non-accidental acts of physical force (such as kicking, biting, punching, stabbing, throwing, pulling, shaking, restraining, slapping, hitting with fist or object, poisoning, burning, or using a weapon) resulting in, or having the reasonable potential to result in, physical injury ranging from minor bruises to permanent disfigurement (CDC, 2016).

Neumark-Sztainer and Story (2000) found sexual and physical abuse in adolescent girls and boys are significant and independent risk factors for eating disorders. In addition, physical dating violence in adolescence is strongly associated with eating disorders (Ackard & Neumark-Sztainer, 2002). Other research found participants with dysfunctional family environments and histories of physical abuse were at a higher risk for the development of an eating disorder compared to those with no history of physical abuse (Schmidt, Humfress & Treasure, 1997). Fuemmeler, Dedert, McClernon, and Beckham (2009) found that participants who experienced physical abuse exhibited more disordered eating behaviors such as limiting food intake, skipping meals, and more concern about weight compared to than those with no trauma. Tekin et al. (2016) found that those participants who experienced childhood physical abuse reported higher levels of social anxiety compared to participants with no history of physical abuse. However, the researchers concluded participants who experienced sexual abuse were at higher risk for SAD than participants who experienced physical abuse (Tekin et al., 2016) Although physical abuse is related to symptoms of SAD, sexual abuse appears to result in higher risk for development of

SAD (Tekin et al., 2016). Based on the previous literature, we expected physical trauma experience to relate to eating disorder risk, although likely to a lesser extent than sexual trauma.

Neglect. Neglect is defined for the purpose of this study as failure by a person to provide a dependent basic need (e.g., nutrition, hygiene, shelter, clean clothing, food, emotional needs, medical care, dental care, vision care, medication, education) resulting or potentially resulting in physical or psychological harm (CDC, 2016). There is very little research on the relationship between childhood neglect and current eating disorder risk. Past research finds emotional neglect has a strong association with unhealthy eating habits in adults (Fischer, Stojek, & Hartzell, 2010; Kent, Waller, & Dagnan, 1999). Vartanian et al (2014) found early adverse events (including forms of neglect) are linked to higher body dissatisfaction, which is a risk factor for disordered eating. Kuo et al. (2011) found that participants who experienced childhood neglect reported higher levels of SAD than those who experienced other forms of trauma such as physical or sexual abuse. Kent and Waller (2000) found that childhood neglect usually occurs with other forms of abuse such as physical or sexual abuse. Therefore, it is difficult to determine the relationship between neglect in isolation and eating disorder risk.

In the current study, we examined how trauma predicted eating disorder risk among the general population. Trauma was defined as sexual abuse, physical abuse, and neglect, but included childhood, adolescent, and adult experiences of these trauma types.

Current Study

Eating disorders are currently a major issue in society and have serious health and mental consequences (Arcelus et al., 2011; Hudson et al., 2007; Podfigurna-Stopa et al., 2015). Disordered eating behaviors, body dissatisfaction, and social anxiety are all known risk factors for the development of eating disorders (Evans et al., 2017; Fairburn et al., 1997; Jacobi et al., 2011). Trauma history is related to all three of these known risk factors for the development of

eating disorders (Brewerton, 2007). Further, sexual abuse in childhood appears to be a stronger predictor of eating disorder risk than other types of trauma (Wonderlich et al., 2001). The purpose of the current study was to provide further evidence that abuse history is associated with higher eating disorder risk as measured by disordered eating behaviors, body dissatisfaction, and social anxiety. In addition, we explored whether age of first trauma (childhood, adolescence, or adulthood) interacts with trauma history to account for variations in eating disorder risk. The following hypotheses were tested:

Hypothesis 1. Individuals with a history of trauma will report greater levels of eating disorder risk compared to individuals with no trauma history. Eating disorder risk is defined as having higher scores on measures of disordered eating, body dissatisfaction, and social anxiety.

Hypothesis 2. Individuals who experience at least one incident of sexual trauma will report greater eating disorder risk compared to those with no trauma or those with trauma history that does not include sexual trauma.

Hypotheses 3. As an exploratory analysis, we examined whether age of first trauma incident interacts with a history of sexual trauma to account for variation in reported eating disorder risk. Given the lack of available literature on this area, we did not predict direction of results.

CHAPTER 2:

METHOD

Participants

Data were collected from 1,000 participants in a national community sample. Of the initial sample, 904 completed all measures and were retained for data analysis. All participants were at least 18 years old and current residents of the United States; there were no other exclusionary variables. Participants registered online through Amazon's Mechanical Turk (MTurk) to participate in the study. Data collection was conducted via Amazon's Mechanical Turk, an online, anonymous survey collection site. Of the final sample, participants were mostly women (62.7 %, $n = 567$), and Caucasian (74.8%, $n = 676$), with 75 African Americans (8.3%), 65 Asian Americans (7.2%), 45 Hispanic/Latinx Americans (5.0%), and 43 (4.8%) identifying as another ethnicity or declining to provide this information. The average age was 37.42 years ($SD = 12.86$). A significant number of participants reported sexual trauma/multitrauma including sexual ($n = 339$; 37.5%), other trauma (physical trauma & neglect; $n = 206$; 22.8%), or no history of trauma ($n = 357$; 39.5%). Please see table 1 for group comparisons.

Measures

The following measures were randomly presented via an online survey and data collection tool (MTurk).

The Eating Attitudes Test-26 (EAT-26; Garner & Garfinkel, 1979). The Eating Attitudes Test-26 measures disordered eating behaviors. The EAT-26 is designed for use with adults and has been widely used in non-clinical samples. The EAT-26 is a 26-item self-report questionnaire assessing the extent to which a person shows eating disordered behavior on a 6-point Likert Scale, ranging from "always" to "never." Sample questions include, "Am terrified about being overweight?" and "Feel extremely guilty after eating?" The EAT-26 has high reliability ($\alpha = .90$;

Garner, Olmsted, Bohr, & Garfinkel, 1982). For the current study, the full score was used for analyses. For this study, the EAT-26 had high reliability ($\alpha = .89$).

The Body Shape Questionnaire 16-B (BSQ 16B; Evans & Dolan, 1993). The BSQ 16-B measures body shape concerns (Evans & Dolan, 1993). The BSQ-16B consists of 16 self-report questions measuring body concerns on a 6-point Likert Scale, with 1 indicating “never” and 6 indicating “always.” Sample questions include, “Have you been afraid that you might become fat?” and “Have you felt excessively large and rounded?” The BSQ-16B has high reliability in a non-clinical sample ($\alpha = .96$; Evans & Dolan, 1993). For the current study, the full score was used in the analyses. For this study, the BSQ-16B had high reliability ($\alpha = .97$).

Social Interaction Anxiety Scale (SIAS; Mattick & Clark, 1998). The SIAS measures discomfort and distress in various social situations. The SIAS is a 20-item self-report questionnaire measuring distress on a 5-point Likert scale, with 0 indicating “not at all characteristic or true of me” to 4 indicating “extremely characteristic or true of me.” Sample questions include, “I have difficulty making eye contact with others,” and “When mixing socially, I am uncomfortable.” This questionnaire is widely used and regarded as a valid and reliable measure of anxiety in social situations ($\alpha = .88$ in undergraduate samples; Mattick & Clark, 1998). For the current study, the full score was used in the analyses. For this study, the SIAS had high reliability ($\alpha = .96$).

Demographics Questionnaire. Participants provided current demographic information (e.g., age, gender). In addition, participants reported ethnicity/race, employment status, and education attainment. See Appendix A for Demographic Questionnaire.

Trauma Questionnaire. Created for the current study, the trauma questionnaire measured the type of trauma, age of first experience, and relationship to perpetrator. Many questionnaires

in previous literature only ask about childhood trauma and exclude trauma experienced in adulthood such as rape. Also, many questionnaires do not include continuous variables. The questions in this questionnaire include the definition of the different types of trauma by the CDC and DSM-5 and participants indicate how often they have experienced the trauma on a Likert scale from Never to Three times or more. If the participant indicates they experienced a type of trauma, they indicate the age they first experienced the trauma categorically (i.e., 0-12, 12-17, or 18+) and indicate their relationship to the perpetrator. A sample question is, “Sexual trauma is defined by the CDC (2016) and the DSM- 5 as any completed, attempted, or coerced sexual act, sexual contact with, or exploitation of a person. Sexual acts for this study will include forced and unwanted penetration (of any type), fondling, and exposure to sexual activity such as pornography, filming sexual act without consent, and forced or coerced prostitution. Please indicate how often you have experienced anything included in the definition of sexual abuse/assault above: Never, Once, Twice, Three or more times.” If the participants answer once, twice, or three or more times, they will indicate age of first experience (“Please indicate which age you first experienced sexual abuse/assault noted in the previous question: 0-12 years of age, 12-17 year of age, or 18 years of age or older”). Then participants indicate their relationship to the perpetrator of first incident. See Appendix A for Trauma Questionnaire.

CHAPTER 3:

RESULTS

Prior to hypothesis testing, correlational analyses were examined for the three dependent measures (disordered eating, social anxiety, and body dissatisfaction). Results indicate all three dependent measures were significantly correlated in the direction and to the degree expected. (See table 2 for correlations).

Hypothesis 1

A one-way between-groups MANOVA was conducted to determine if individuals with a history of trauma have greater eating disorder risk compared to individuals with no trauma history. The results revealed an overall group difference between trauma history and eating disorder risk (disordered eating, social anxiety, and body dissatisfaction), Wilk's Lambda = .943, $F(3,892) = 17.96$, $p < .001$, partial $\eta^2 = 0.57$. Post-hoc univariate ANOVAs revealed a significant group difference between those with trauma history and social anxiety, $F(1,894) = 30.50$, $p < .001$ such that those with trauma history ($M = 33.35$, $SEM = .80$) reported higher social anxiety than those without trauma history ($M = 26.49$, $SEM = .93$). There was a significant difference between those with trauma history and body dissatisfaction, $F(1, 894) = 43.99$, $p < .001$ such that individuals with trauma history ($M = 49.41$, $SEM = .91$) reported higher body dissatisfaction than those without a trauma history ($M = 40.05$, $SEM = 1.11$). There was not a significant difference between those with trauma history and disordered eating $F(1,894) = 2.58$, $p > .05$. Those with a trauma history ($M = 12.75$, $SEM = .49$) reported similar levels of disordered eating behaviors as those without a trauma history ($M = 11.53$, $SEM = .62$). See figure 1 for MANOVA results.

Hypothesis 2

A one-way between-groups MANOVA was conducted to determine if individuals with at least one incident of sexual trauma have greater eating disorder risk than those without sexual trauma or no trauma. The results revealed an overall significant group difference between sexual trauma history and eating disorder risk (disordered eating, social anxiety, and body dissatisfaction). Wilk's Lambda = .933, $F(3,891) = 21.43.96$, $p < .001$, partial $\eta^2 = 0.67$. Post-hoc univariate ANOVAs revealed a significant group difference between those with a sexual trauma history and disordered eating, $F(1, 893) = 5.285$, $p = .022$ such that those with a sexual trauma ($M = 13.42$, $SEM = .64$) reported higher disordered eating scores than those without sexual trauma history ($M = 11.59$, $SEM = .48$). There was a significant group difference between sexual trauma and social anxiety, $F(1,893) = 28.44$, $p < .001$ such that those with sexual trauma history ($M = 34.81$, $SEM = .99$) reported greater social anxiety than those without sexual trauma history ($M = 28.09$, $SEM = .78$). Finally, there was a significant group differences between sexual trauma history and body dissatisfaction, $F(1, 893) = 58.83$, $p < .001$ such that individuals with sexual trauma history ($M = 52.63$, $SEM = 1.17$) reported greater body dissatisfaction than those without a sexual trauma history ($M = 41.50$, $SEM = .87$). See figure 2 for MANOVA results.

Hypothesis 3

A 2 (sexual trauma: other trauma vs. sexual trauma) x 3 (age of first experience: 0-12 vs. 13-17 vs. 18+) between groups MANOVA was utilized to examine if age of first experience interacts with sexual trauma history to account for the variance in eating disorder risk (disordered eating, social anxiety, and body dissatisfaction). At a multivariate level, the results revealed a group difference of sexual trauma, Wilk's Lambda = .967, $F(3, 532) = 6.10$, $p < .001$, partial $\eta^2 = 0.33$. (See figure 3 for main effect of sexual trauma). There was no significant group differences for age of first experience, Wilk's Lambda = .990, $F(6, 1064) = .890$, $p > .05$, partial

$\eta^2 = 0.005$. There is not an interaction between sexual trauma and age of first experience, Wilk's Lambda = .990, $F = .857$, $p > .05$, partial $\eta^2 = 0.005$. (See figure 4 for main effect of age of first trauma).

Disordered Eating. Post hoc univariate ANOVAs revealed no significant effect of age of first trauma experience on disordered eating $F(2, 534) = 391.09$, $p > .05$, partial $\eta^2 = 0.005$ such that disordered eating was similar for participants who first experienced trauma as a child ($M = 13.43$, $SEM = .68$), as an adolescent ($M = 12.85$, $SEM = 1.07$), or as an adult ($M = 11.08$, $SEM = .89$).

Social Anxiety. There was no significant effect of age of first experience on social anxiety $F(2, 534) = 811.62$, $p > .05$, partial $\eta^2 = 0.004$ such that social anxiety was similar for participants who first experienced trauma as a child ($M = 34.67$, $SEM = 1.08$), as an adolescent ($M = 32.34$, $SEM = 1.70$), or as an adult ($M = 31.09$, $SEM = 1.71$).

Body Dissatisfaction. There was not a significant effect of age of first experience on body shape concern $F(2, 534) = 1501.07$, $p > .05$, partial $\eta^2 = 0.006$ such that body shape concern was similar for participants who first experienced trauma as a child ($M = 50.88$, $SEM = 1.23$), as an adolescent ($M = 49.66$, $SEM = 1.90$), or as an adult ($M = 45.50$, $SEM = 1.90$). There was no effect of sexual trauma on disordered eating $F(1, 534) = 391.99$, $p > .05$, partial $\eta^2 = 0.005$ such that disordered eating was similar for participants who had sexual trauma ($M = 13.46$, $SEM = .63$) and those who had other forms of trauma ($M = 11.61$, $SEM = .77$). There was a significant effect of sexual trauma on social anxiety $F(1, 534) = 1442.62$, $p = .042$, partial $\eta^2 = 0.008$ such that individuals who experienced sexual trauma had higher social anxiety ($M = 34.80$, $SEM = 1.00$) than those with other forms of trauma ($M = 30.93$, $SEM = 1.34$). There was a significant effect of sexual trauma on body shape concern $F(1, 534) = 7863.17$, $p < .001$, partial $\eta^2 = 0.028$ such that

body shape concern was higher for participants who had sexual trauma ($M = 52.74$, $SEM = 1.16$) than those who had other forms of trauma ($M = 43.84$, $SEM = 1.39$).

CHAPTER 4:

DISCUSSION

The main purpose of the current study was to investigate how exposure to different types of trauma affects eating disorder risk measured by disordered eating behaviors, social anxiety, and body dissatisfaction. This research adds to current research important information about the effects of different types of trauma, specifically sexual trauma on symptoms that could lead to eating disorders. Eating disorders can cause several significant health and mental consequences. It is important to understand the factors in all populations that put individuals at risk for developing an eating disorder. Researchers and clinicians need to be aware of this research to prevent the development of eating disorders in all populations.

Hypothesis 1

We compared participants with histories of trauma (i.e., sexual, physical, and neglect), and no history of trauma on all dependent variables. Participants with trauma did not have significantly higher disordered eating symptoms than those without history of trauma. This finding is inconsistent with previous research showing that those with a history of trauma have higher disordered eating behaviors than those without a history of trauma (Brewerton, 2007; Imperatori et al., 2016; Smyth et al., 2008). Given the small number of men in the current study, further research should seek to clarify if these findings are also present for men with a trauma history. Our results could be due to the trauma questionnaire. Previous literature used more established forms of trauma history that only measured childhood trauma. Our questionnaire asked about all forms of trauma and measured current and past trauma history.

As expected, participants with histories of trauma had higher levels of social anxiety compared to those without a history of trauma. This finding is consistent with Bruce et al.'s

(2013) results that individuals with trauma history report higher social anxiety than individuals with no history of trauma. Future research should focus on trauma history compared to more severe forms of social anxiety and other outcomes associated with eating disorders. For example, future researchers should consider conducting more research on the factors associated with eating disorders in a population with a diagnosis of social anxiety or have high levels of social anxiety.

Participants with trauma histories reported higher body shape dissatisfaction scores than those without trauma history. These results are consistent with Vartanian et al. (2014) who report adverse childhood events such as trauma are linked to high levels of body dissatisfaction later in life. This research did not focus on body dissatisfaction severity as part of analysis but future research should consider measuring body dissatisfaction severity compared to those with a history of trauma. Researchers should consider using multiple measures of body dissatisfaction to gain a deeper understanding of the development and increasing severity of body dissatisfaction associated with trauma.

Hypotheses 2

We compared participants with histories of sexual trauma and those with no history of sexual trauma (i.e., those who reported physical trauma, neglect, or no history of trauma) on all three indices of eating disorder risk. As expected, participants with sexual trauma histories reported higher disordered eating scores than those without a history of sexual trauma. This finding is consistent with previous research demonstrating sexual abuse is a risk for eating disorders (de Groot & Rodin, 1999; Fischer, Stojek, & Hartzell, 2010; Schechter, Schwartz, & Greenfeld, 1987; Wonderlich et al., 2001). For example, Wonderlich et al. (2001) examined 97 participants who had experienced sexual trauma and found that sexual trauma was significantly

related to current disordered eating patterns. Our results remain consistent with these findings that sexual trauma is significantly related to disordered eating. Clinicians working with individuals with a history of sexual abuse need to be aware of the possibility that the client may be at greater risk for disordered eating patterns than clients without a sexual trauma history. Also, clinicians working with clients displaying disordered eating patterns should consider the client's trauma history when deciding on treatment. Given these results, clinicians should assess for evidence of a sexual trauma history in clients who appear to have disordered eating patterns.

Participants with sexual trauma histories also reported higher social anxiety scores than those without a history of sexual trauma. This finding is consistent with Bruce et al. (2013) who surveyed individuals with a primary diagnosis of Social Anxiety Disorder and found that those with a history of sexual abuse report significantly elevated symptoms of social anxiety. Our results remain consistent with previous literature in that a history of sexual abuse was significantly related to high levels of social anxiety. Future research should consider looking at the severity of sexual abuse compared to levels of social anxiety. Researchers should consider measuring the severity of sexual abuse by examining abuse characteristics or using information from other informants (e.g., police reports, family member accounts).

My results indicate that participants who reported sexual trauma reported significantly higher levels of body dissatisfaction. This finding is consistent with Didie et al. (2006) who concluded that individuals with sexual abuse reported higher levels of body distortion than other forms of trauma. Based on previous literature and results from the current study, individuals with sexual trauma are more likely to report higher body image dissatisfaction than those without a history of sexual trauma or have no trauma history. This study did not analyze severity of sexual trauma and body dissatisfaction levels. It is possible severity of previous sexual trauma relates to

body dissatisfaction. Therefore, future research should consider the severity of sexual trauma associated with body dissatisfaction levels. Clinicians working with sexual trauma survivors should consider the effects of sexual trauma on body image. Also, given the current and previous findings showing individuals with sexual trauma history report high body dissatisfaction, clients presenting with high levels of body dissatisfaction should be assessed carefully for sexual trauma history.

Hypothesis 3

Given that previous research has yet to examine compared the differences between those sexual trauma and individuals with other history of trauma (physical & neglect) and age of first experience, we explored the relationship among these variables to investigate whether age of first experience of sexual trauma (child, adolescent, or adulthood) relates to eating disorder risk. Results indicate participants who experienced sexual trauma had significantly higher disordered eating, social anxiety, and body dissatisfaction but the age of first experience did not relate to increased risk above and beyond the risk from the sexual trauma history. These results suggest age of occurrence of a traumatic event was not related to eating disorder risk, but if the traumatic event involves a sexual component, participants are more likely to have higher disordered eating behaviors, social anxiety, and body dissatisfaction.

Regardless of age of first experience, sexual trauma is significantly related to all three eating disorder risk indices which means that clients who experienced sexual trauma are at risk for developing an eating disorder later in life. Given our results and previous literature, clinicians should take into consideration social anxiety and body dissatisfaction when working with clients with a history of trauma. Further, clinicians who are working with clients with sexual trauma should be aware of the risk for those clients developing an eating disorder and should examine

for high levels of social anxiety, body dissatisfaction, and disordered eating behaviors. Also, if a client is presenting with high levels of these factors then clinicians should closely examine their trauma history and look for a history of sexual trauma.

Limitations

Although there are several unique strengths of the current study, it is important to discuss the limitations. One limitation is that, although we had a large community sample ($N = 904$), the majority of the sample were women (62.7%). The current findings may not generalize to men who have experienced trauma and further research should target men to investigate these associations between trauma history and eating disorder risk. Also, the sample was comprised primarily of Caucasian individuals (74.8%) and it is unclear if current findings generalize to individuals who identify as other races or ethnicities. Future research should include more representative samples consisting of other ethnic minorities (i.e., African American, Hispanic, and Asian). Another limitation is to the decision to combine physical trauma and neglect into one category when conducting analyses on age of first traumatic incident. Future research should look closely to investigate whether eating disorder risk differs between individuals with experiences of physical abuse or history of neglect. Further, we limited our study to disordered eating, social anxiety symptoms, and body dissatisfaction and did not collect detailed information on the specific nature of traumas experienced by our participants. Given that trauma is multifaceted and there are several factors related to the trauma (e.g., perpetrator relationship, severity, treatment) that may affect eating disorder risk, future research may benefit from collecting more detailed information about the trauma experiences of the participants.

Strengths

Although we note limitations above, there are unique strengths in the current study. The sample included a large number of individuals from across the United States who were of differing ages and backgrounds. This adds to the literature, as many studies rely on samples of convenience, such as college students. Using a community sample may increase the generalizability of findings, with caveats noted in the limitations section above. Another strength is we examined the association between age of first trauma experience and eating disorder risk. Previous research had not explored the association between different age of traumatic event (child, adolescent, and adult) and body shape concern, social anxiety, and disordered eating. We were able to examine impact of age of trauma and contribute to the literature with more nuanced understanding of the relationship between trauma history and eating disorder risk.

Conclusion

The purpose of this study was to examine the group differences between trauma and eating disorder risk, as measured by social anxiety symptoms, disordered eating, and body shape dissatisfaction. We found individuals with a history of trauma had higher levels of body shape dissatisfaction and social anxiety symptoms than those without a history of trauma. Also, we found participants with history of sexual trauma had more eating disorder risk than those without a history of sexual trauma. Further, age at which the traumatic event first occurred did not relate to eating disorder risk above and beyond trauma type. Future research should further explore the differences between the different types of trauma (i.e., neglect and physical) and have a more representative sample (i.e., ethnic minorities and men).

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APPENDIX A

MEASURES

Trauma Questionnaire

Instructions: Please answer the following questions.

Question 1:

Sexual trauma is defined by the CDC (2016) and the DSM-5 as any forced and unwanted completed, attempted, or coerced sexual act, sexual contact with, or exploitation of a person.

Sexual acts for this study will include forced and unwanted penetration (of any type), fondling, and exposure to sexual activity such as pornography, filming sexual act without consent, and forced or coerced prostitution.

Please indicate how often you have experienced anything included in the definition of sexual trauma above. Choose only one response.

Never Once Twice Three times or more

(If a participant answers Once, Twice, or three times or more, they move to question 2. If participant answers never, they skip to question 3.)

Question 2:

- a. Please indicate which age(s) you first experienced sexual trauma noted in the previous question:

Never 0-12 years of age 13-17 years of age 18 years of age or older

- b. Please state age of first experience of sexual trauma: _____ years of age

- c. Please indicate the perpetrator of your first experience of sexual trauma:

Biological/adoptive parent Stepparent Sibling Other family member Other

Question 3:

Physical trauma is defined as the intentional or non-accidental acts of physical force (such as kicking, biting, punching, stabbing, throwing, pulling, shaking, restraining, slapping, hitting with fist or object, poisoning, burning, or using a weapon) that result in, or have the reasonable potential to result in physical injury ranging from minor bruises to permanent disfigurement (CDC, 2016).

Please indicate how often you have experienced anything included in the definition of physical trauma above.

Never Once Twice Three times or more

(If a participant answers Once, Twice, or three times or more, they move to question 4. If participant answers never, they skip to question 5.)

Question 4:

- a. Please indicate which age(s) you first experienced physical trauma noted in the previous question.

Never 0-12 years of age 13-17 years of age 18 years of age or older

- b. Please state age of first experience of physical trauma: _____ years of age

- c. Please indicate the perpetrator of your first experience of physical trauma:

Biological/adoptive parent Stepparent Sibling Other family member Other

Question 5:

Neglect is defined for the purpose of this study as failure by a person to provide a dependent of basic needs (e.g., nutrition, hygiene, shelter, clean clothing, food, emotional needs, medical care,

dental care, vision care, mediation, education) that results or has a reasonable potential to result in physical or psychological harm (CDC, 2016).

Please indicate how often you have experienced anything included in the definition of neglect above.

Never Once Twice Three times or more

(If a participant answers Once, Twice, or three times or more, they move to question 6. If participant answers never, they move to the next survey.)

Question 6:

- a. Please indicate which age(s) you first experienced neglect noted in the previous question.

Never 0-12 years of age 13-17 years of age 18 years of age or older

- b. Please state age of first experience of neglect: _____ years of age

- c. Please indicate the perpetrator of your first experience of neglect:

Biological/adoptive parent Stepparent Sibling Other family member Other

Demographics Questionnaire:

Year of Birth: _____

Age: _____ years of age

Gender:

Male ___ Female ___ Other ___

Race:

Caucasian ___ African American ___ Hispanic ___ Asian ___

Pacific Islander _____ Native American _____

Bi/ Multi racial: _____ Other: _____

Employment Status:

Full time employment _____ Part-time employment _____ Unemployed _____

Student _____ Retired _____ Other _____

Please indicate the highest education achieved:

Grade school ___ High school ___ Some college ___ Associate degree ___

Bachelor degree ___ Master's Degree ___ Doctoral Degree ___

Please state any current or previous mental health diagnosis _____

Table 1.

Demographic Information

	Mean	Standard Deviation
Age	37.42	12.86
Gender	Frequency	Percentage
Women	567	62.7
Men	324	35.8
Ethnicity		
Caucasian	676	74.8
African American	75	8.3
Hispanic	45	5.0
Other	100	11.1
Trauma Type		
No Trauma	357	39.5
Sexual Trauma	339	37.5
Other Trauma	206	22.8

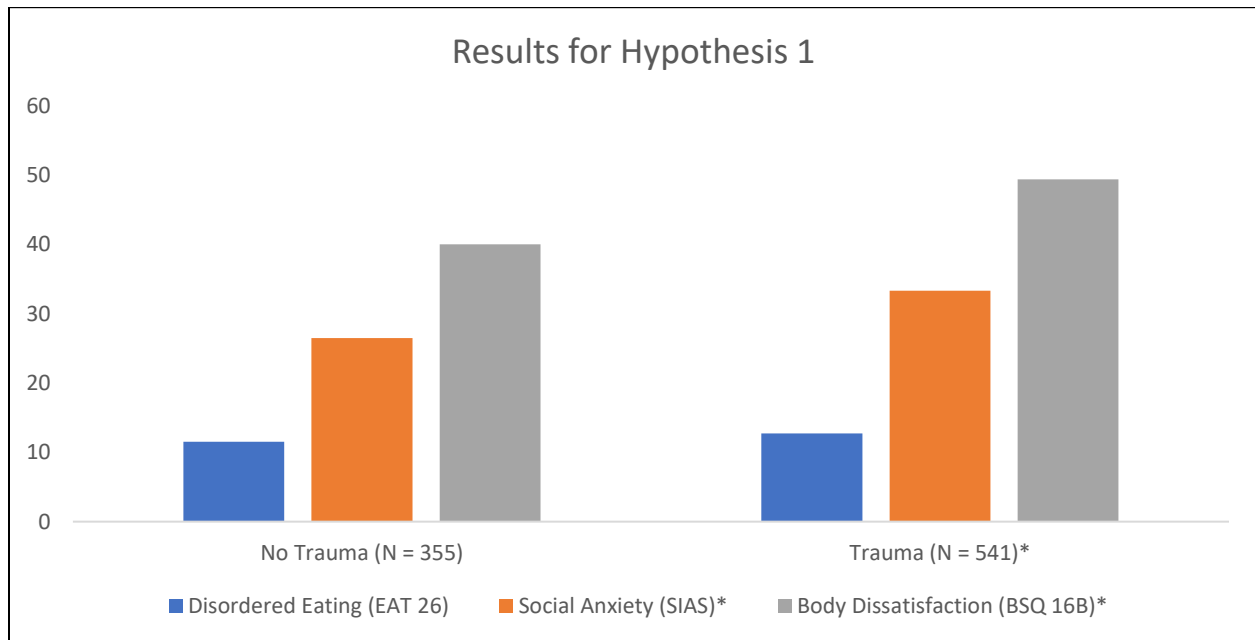
Table 2.

Correlations among Eating Disorder Risk Variables

	EAT-26	SIAS
SIAS	.23**	—
BSQ-16B	.46**	.49**

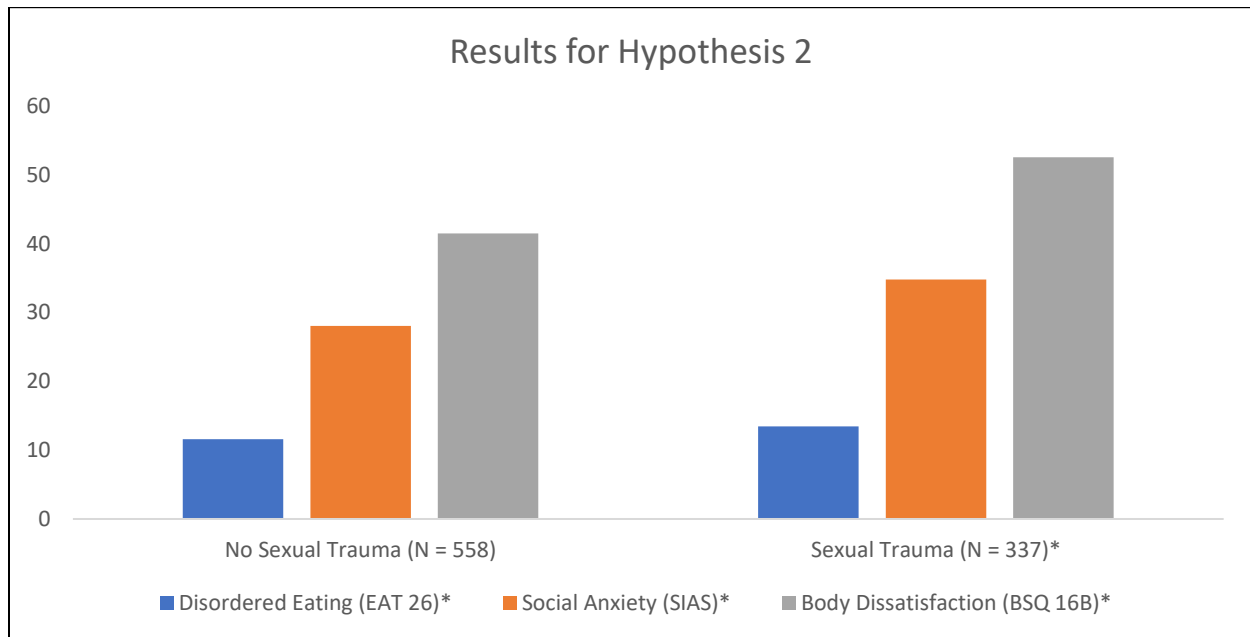
** $p < .01$

Figure 1.

MANOVA Results for Hypothesis 1

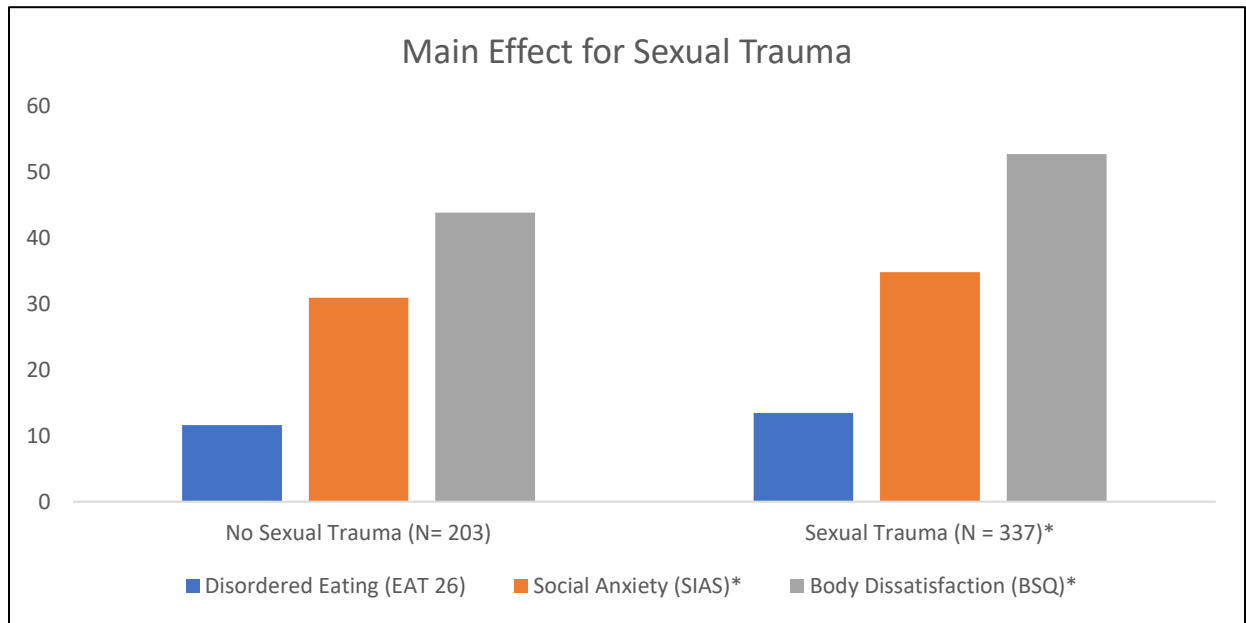
Note: $N = 896$. Scores with * are significant at the $p < .05$ level. $F(3,892) = .943, p < .001$

Figure 2.

MANOVA Results for Hypothesis 2

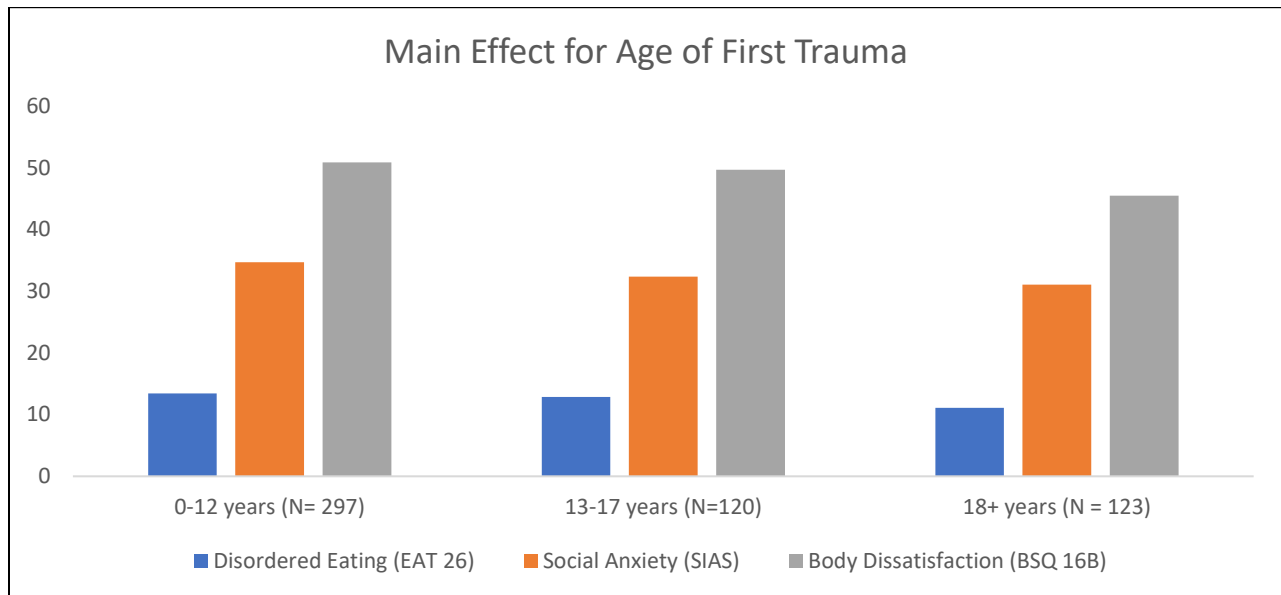
Note: $N = 895$. Scores with * are significant at the $p < .05$ level. $F(3,891) = 21.43, p < .001$

Figure 3.

MANOVA Results for Main Effect of Sexual Trauma

Note: $N = 540$. Scores with * are significant at the $p < .05$ level. $F(3,532) = 6.10, p < .05$

Figure 4.

MANOVA Results for Main Effect of Age of First Trauma

Note: $N = 540$. $F(6,1064) = .89$, $p > .05$