Differential Disclosure Experiences Amongst Sexual Victimization Survivors: Exploration of Alcohol Use, Sexual Risk Behaviors, and Mental Health Outcomes

Ange Vittone

A thesis
submitted in partial fulfillment of the
requirements for the degree of

Masters of Clinical Psychology

University of Washington
2025

Committee:
William George
Mary Larimer

Program Authorized to Offer Degree:
Psychology

University of Washington

Abstract

Differential Disclosure Experiences Amongst Sexual Victimization Survivors: Exploration of Alcohol Use, Sexual Risk Behaviors, and Mental Health Outcomes

Ange Vittone

Chair of the Supervisory Committee:

William George

Department of Psychology

Sexual victimization is a pervasive issue that significantly impacts the physical, mental, and emotional well-being of survivors. This study investigates how disclosure experience differences influence variability in negative post-victimization outcomes - specifically alcohol use, sexual risk behaviors, and mental health symptoms- amongst cisgender women survivors of sexual victimization (N=347), aged 21-30. Through secondary data analysis, we assessed disclosure characteristics, including disclosure status (completed or non-disclosure), recipient type (informal vs. formal), and perceived helpfulness across assault types - and their relationship to post-victimization negative outcomes. Findings reveal that, contrary to prior literature, survivors who do not disclose their victimization exhibited lower levels of sexual risk-taking in comparison to survivors who did disclose their victimization. Notably, when examining only the type of disclosure recipient, survivors of adult/adolescent sexual assault (ASA) who disclosed

exclusively to formal recipients (e.g., medical professionals, law enforcement) exhibited significantly higher mental health symptoms, compared to those who experienced other assault types or disclosed to different recipient types. However, when factoring in perceived helpfulness of their disclosure, survivors from all assault types who felt their disclosure was helpful reported significantly lower alcohol use and risk, particularly when disclosing exclusively to formal recipients. These findings highlight the nuanced impact of disclosure on recovery experiences and underscore the need for improved support mechanisms for survivors. Insights gained are essential for future research and tailored interventions targeting victimization populations.

Keywords: Sexual victimization, disclosure, childhood sexual abuse (CSA), adult/adolescent sexual assault (ASA), post-victimization outcomes, mental health, stigma, social reactions, alcohol consumption, sexual risk behaviors, survivor experiences, recovery strategies

Introduction

Sexual victimization (SV) is a deeply traumatic event that at minimum violates an individual's consent, body and safety. A concerning issue, with about one in five cisgender women experiencing an attempted or completed sexual victimization (Smith et al., 2018), SV encompasses a wide range of acts, including unwanted sexual contact, forced touching, and attempted or completed rape, involving oral, vaginal, or anal penetration (National Sexual Violence Resource Center, 2021). Research has consistently shown that SV can result in various negative outcomes, including increased alcohol consumption, engagement in sexual risk behaviors, and psychological distress symptoms (Lorenz & Ullman, 2018; Zinzow et al., 2010; Dworkin, 2020). Amongst these outcomes, the impact of SV on mental health has been well-documented. SV survivors are at an elevated risk for developing post-traumatic stress disorder (PTSD), depression, and anxiety (Ullman et al., 2013; Dworkin et al., 2023). These psychopathologies are often compounded by a range of coping strategies, including maladaptive behaviors such as alcohol consumption/misuse (Ullman et al., 2013). Findings suggest that post-assault, a portion of survivors may use alcohol as a way to cope with the emotional pain and distress associated with their victimization (Ullman et al., 2013; Fossos et al., 2011). Although alcohol consumption may provide short-term relief from negative mood and intrusive thoughts, over time, this maladaptive coping strategy can escalate into hazardous drinking, overall exacerbating the survivor's mental health symptoms and increasing risk/vulnerability to additional harm (Ehlke & Kelley, 2019).

Sexual risk behaviors such as engaging in unprotected/condomless sex, having multiple sexual partners, having a prior/current STI, and other risky sexual practices have also been found to be prevalent amongst SV survivors (Mosack et al., 2010; Thompson et al., 2016). Research

suggests that both childhood sexual abuse (CSA) and adult/adolescent sexual assault (ASA) are significantly linked to the increased likelihood of engaging in sexual risk behaviors, including early sexual initiation, inconsistent use of protection, and the adoption of high-risk sexual practices (Thomspon et al., 2016; Mosack et al., 2010; Mimiaga et al., 2009). Survivors may experience difficulties in the formation of healthy sexual relationships, influenced by a combination of trauma-related factors, diminished self-worth, and distorted views of safety and intimacy (O'Callaghan et al., 2020; Gewirtz-Meydan & Godbout, 2023). Differences exist amongst CSA and ASA survivors regarding sexual risk behaviors post-assault. For CSA survivors, an early exposure to trauma can significantly alter sexual development and contribute to maladaptive coping strategies in adolescence and adulthood (Walsh et al., 2010; Noll, 2021). Studies have shown CSA survivors are at an increased risk for engaging in sex under coercion, without protection, and with multiple partners – behaviors often driven by attempts to gain control or increase validation (Testa et al., 2005; Wekerle et al., 2017; Lemieux & Byers, 2008). Additionally, depending on severity, frequency, and length of the victimization, CSA survivors may experience a distorted understanding of sexual boundaries, and increased vulnerability to revictimization across their lifetime (Krause-Utz et al., 2021; Motley, 2016). Similarly, for ASA survivors, victimization may disrupt one's sense of control, and safety, both contributing to heightened vulnerability for sexual risk behaviors (Rowland et al., 2024). ASA survivors, particularly those who do not receive adequate psychological support or treatment, may engage in sexual risk behaviors as a form of "coping" or as an attempt to reclaim control and power over their bodies (Dworkin et al., 2017; Strauss Swanson & Szymanski, 2020; Cunniff Gilson, 2016). Additionally, both CSA and ASA victimization can exacerbate feelings of shame, guilt, and low self-esteem, all of which are driving factors of sexual risk behaviors and revictimization (Fereidooni, 2023). The complex interplay between psychological distress, coping strategies, and

sexual risk-taking behaviors highlights the need for comprehensive, trauma-informed interventions that address both the mental health needs of survivors and risk behaviors that may arise post-assault.

Sexual Assault Disclosure

One of the most significant and complex aspects of the survivor's post-assault experience is the act of disclosure; the process of revealing one's victimization to another, regardless of whether that event was reported to authorities (Bogen et al., 2021). Disclosure is a multifaceted experience, influenced by a variety of psychological, social, cultural, and contextual factors. The impact of four important facets considered in previous research include: reasons for non-disclosure, completed disclosure, recipient type, and social reactions vs perceived helpfulness. The timing of disclosure, number of times one has disclosed, recipient type (informal vs. formal), recipient's reaction, believability and the perceived helpfulness of the disclosure all play a role in shaping the survivor's post-assault recovery. A comprehensive understanding of the factors influencing SV survivor's mental health, alcohol consumption, sexual risk behaviors, and disclosure experience is crucial for developing effective interventions and enhancing support systems. While research has made significant strides in identifying the importance of these factors, they have been primarily researched as singular influences. Gaps remain in an examination of their combined and potentially synergistic effects on the survivor's disclosure and post-assault experience.

Reasons for Non-Disclosure

Research suggests that about one-third to one-half of cisgender female SV survivors do not disclose their victimization (Carson et al., 2020; Dworkin et al., 2019; Jacques-Tiura et al., 2010), with about 40-60% of survivors not reporting their victimization formally (Morgan &

Oudekerk 2019). Non-disclosure is a complex response to sexual victimization and has significant implications for a survivor's psychological well-being, and recovery trajectory. While disclosure can facilitate healing and is often considered pivotal for recovery, decisions around non-disclosure are multifaceted, influenced by factors such as the presence of alcohol during victimization, anticipation of negative social reactions, and societal factors (Richardson et al., 2015; Ahrens et al., 2010). Commonly, survivors often anticipate negative social reactions, including blame, minimization of their victimization, and lack of believability (Kennedy & Prock, 2018; Randall, 2010). Consequently, survivors may choose to delay or avoid disclosing to prevent additional harm (Ahrens et al., 2007; Smith et al., 2000), often referred to as secondary victimization. Notably, research has shown that non-disclosure is linked to higher rates of depression, with specific reasons for non-disclosure, such as shame or embarrassment, correlating to increased PTSD symptoms (Ahrens et al., 2010; Carson et al., 2020). Overall, it is crucial to understand that non-disclosure is not always a clear and deliberate decision but rather a response to a complex set of emotional, relational, and societal barriers. Without disclosure, survivors may lack accessibility to emotional or physical support systems, prolonging suffering and exacerbating negative post-assault outcomes (Starzynski et al., 2017). Based on existing literature, we hypothesize that participants who do not disclose will report higher levels of negative post-assault outcomes in comparison to those who do disclose their victimization (H1). Overall, this project examines the impact of non-disclosure on commonly seen negative post-assault outcomes amongst SV survivors in order to improve our understanding of non-disclosure experiences and to foster more effective support strategies.

Completed Disclosure

Research has indicated that about two-thirds to three-fourths of survivors disclose their victimization, consisting of both informal and formal recipient types (Carson et al., 2020; Carson et al., 2021). While a large portion of survivors do disclose, the process is often more complex and prolonged than expected. The decision to disclose is rarely straightforward, often influenced by a myriad of factors, including survivor characteristics (e.g., age, gender, survivor x perpetrator relationship) and contextual elements (e.g., privacy of disclosure setting) (Ullman, 2011). Additionally, disclosure rates vary by the type of victimization, CSA, and/or ASA. Studies show that CSA survivors are less likely to disclose their victimization until adulthood, whereas survivors of ASA are more likely to disclose their experiences earlier on. Research finds that CSA survivors often delay disclosure due to a variety of factors, including the relationship with the perpetrator, the age at which the victimization occurred, and the severity of the abuse (Schaeffer et al., 2011; Münzer et al., 2016). In this case, younger children and those who experience more severe abuse are less likely to disclose, particularly during childhood (Schaeffer et al., 2011).

In contrast, approximately two-thirds of ASA survivors disclose their victimization; although, similar to CSA survivors, they still face significant barriers to immediate disclosure (Carson et al., 2020; Carson et al., 2021). Barriers present across assault types include fear of not being believed, shame, denial or lack of understanding, perceived responsibility for the victimization, and overall lack of opportunities to report/disclose their experience (Schaeffer et a., 2011; Murphy-Oikonen et al., 2020). While completed, the process may still not be immediate, sometimes spanning over weeks or even years to disclose (Lanthier et al., 2018). Research suggests that disclosure is generally correlated with positive long-term outcomes,

including reduced subjective distress and overall improved immune functioning (Pennebaker et al., 1988; Carson et al., 2023). However, the act of disclosing often entails emotional and physical distress during and shortly after the act itself (Ullman et al., 2011; Carson et al., 2021). Disclosure factors, including recipient type (informal vs formal) as well as recipient reaction (positive vs negative) have been shown to influence the degree of emotional/physical distress a survivor experiences upon disclosing (Ullman et al., 2011). For example, disclosing to close friends has been associated with positive mental health outcomes post-disclosure. Whereas negative reactions to a disclosure, such as blame or dismissal, exacerbate mental health symptoms (e.g., anxiety, depression, PTSD, alcohol consumption) (Ullman et al., 2011; Dardi et al., 2021). These factors indicate that the act of disclosing may be therapeutic in some situations, though specific disclosure characteristics contribute to the overall experience and post-assault outcomes amongst survivors.

Recipient Type

The type of recipient to whom a survivor discloses plays a crucial role in their disclosure experience and recovery process. Disclosure may be made to formal recipients (e.g., police officers, health professionals, individuals with authority) and/or informal recipients (e.g., friends, family, partners). Research consistently shows that survivors are often more hesitant to disclose to formal recipients due to fear of negative reactions, such as blame, lack of believability, or not being taken seriously (Ullman & Filipas, 2001; Koon-Magnin & Schulze, 2019). Formal recipients may minimize the emotional or personal components of the survivor's post-assault experience, ultimately leading to a more detached or less empathetic response. In contrast, disclosures to informal recipients are generally associated with more emotional and social support, which have been linked to improved mental health outcomes (Ahrens et al., 2007).

However, research has identified that both types of recipient disclosures may result in negative responses. Survivors may still encounter dismissive reactions, victim-blaming, stigmatization, or lack of empathy (Ahrens et al., 2009). Due to extensive literature supporting the positive impact when disclosing to informal recipients, we hypothesize participants who disclose to informal recipients will report lower levels of alcohol use, sexual risk behaviors, and mental health symptoms in comparison to those who disclose to formal recipients (H2).

Recipients' Social Reactions vs. Survivor's Perceived Helpfulness Reactions

Another impacting factor to consider when looking at the disclosure experience, are social reactions, how recipients respond to the survivor's disclosure of their victimization. Research has shown that survivor's often experience a wide range of social reactions from disclosure recipients, experiencing both positive and negative responses (Ullman, 2010; Orchowski et al., 2013). Positive reactions, such as validation and emotional support, have been linked to enhanced self-worth, lower levels of PTSD symptoms, and decreased psychological distress (Dworkin et al., 2019). Conversely, negative reactions, often including victim-blaming, minimization, and emotional withdrawal, exacerbate feelings of shame, guilt, and isolation, all of which hinder survivor's recovery journeys (Campbell et al., 2001; Dworkin et al., 2019; Walshe, 2020). Additionally, negative reactions have been associated with greater depressive and PTSD symptoms, increased alcohol consumption, and the use of avoidance and maladaptive coping strategies (Read et al., 2014; Littleton, 2010; Forkus et al., 2024). According to the literature, about 75% of survivor's receive negative reactions, influencing their likelihood for disclosing in the future, perpetuating a cycle of silence, emotional distress, and self-blame (Ahrens et al., 2007; Walshe, 2020).

While much of the SV literature focuses on the external reactions from disclosure recipients, an often overlooked but crucial aspect is survivor's perception of whether their disclosure was helpful or unhelpful. Social reactions are often assessed objectively, whereas perceived helpfulness is a subjective evaluation from the survivors themselves. Perceived helpfulness can vary significantly even when a social reaction from a disclosure recipient appears objectively to be positive. For example, a survivor may receive emotional support or tangible aid from a disclosure recipient, though still feel invalidated or experience shame depending on what was said and how the experience was received by the survivor (Scoglio et al., 2022; Driessen et al., 2024). The sentence "I'm sorry this happened to you, but you shouldn't have drank," may have been intended to offer comfort, but also appears to be invalidating and/or victim-blaming. Moreover, survivors may report their disclosure as unhelpful if they feel as if their disclosure was insufficient, dismissive, or resulted in changes across their interpersonal relationships (Catton et al., 2023). Perceived helpfulness is not solely dependent on the type of recipient; research has found that survivors who disclose to informal recipients are more likely to report their disclosure as helpful than those who disclose to formal recipients (Ahrens et al., 2007; Münzer et al., 2016; Lorenz et al., 2018). Survivors who perceive their disclosure as helpful have increased likelihood for help seeking, increased positive affect, and overall report less psychological distress (Weber & Herr, 2019; Catton et al., 2023). Conversely, those who perceived their disclosure as unhelpful are less likely in the future to disclose, often contributing to increased self-blame and doubts about the legitimacy of their victimization (Ullman & Najdowski, 2011; Dworkin & Allen, 2018). Despite these findings, gaps remain in understanding the impact of perceived helpfulness amongst commonly seen negative post-assault outcomes, particularly alcohol use/misuse, and sexual risk behaviors. To date, research has largely focused on the impact of social reactions within the disclosure experience, often underscoring the need

for research to explore survivors' own perceptions of helpfulness. Based on existing literature focusing on perceived helpfulness, we hypothesize participants who disclose but feel their disclosure was not helpful will report higher levels of alcohol use, sexual risk behaviors, and mental health symptoms in comparison to those who report their disclosure was helpful (H3). Additionally, we hypothesize participants who disclose to informal recipients and feel their disclosure was helpful will report the lowest levels of alcohol use, sexual risk behaviors, and mental health symptoms (H4). Understanding how survivors view their disclosure is imperative and informative towards shaping more effective interventions, and support strategies that prioritize survivors throughout their recovery journey.

Current Study

The present study investigated the individual and combined impact of disclosure status, recipient type, and perceived helpfulness on negative post-assault outcomes. Secondary data analyses were conducted using data from a prior experiment, FRESH Phase 2. Both CSA and ASA have been included as types of victimization. While definition of CSA and ASA can vary in the literature, this study adheres to the definitions used in FRESH Phase 2. Thus, CSA is defined as any sexual act (completed or attempt) that occurred to an individual when they were 13 years old or younger, by someone who was their age or older, while ASA is defined as any unwanted sexual experiences (e.g., fondling, oral, anal, vaginal) that happened to an individual when they were 14 years old or older. For this study, participants who experienced CSA, ASA, or both were identified and analyzed in relation to the broader research questions. Our findings will present an overall discussion of victimization, as well as analyses separated by assault type.

To evaluate the influence of disclosure status, recipient type, and disclosure helpfulness, participants were categorized into seven conceptual disclosure groups. Group 1 includes survivors who did not disclose their victimization(s). Group 2 consists of survivors who

disclosed their victimization(s) to only informal recipient(s) and perceived their disclosure as helpful. Group 3 includes survivors who disclosed their victimization(s) to only informal recipient(s) and perceived their disclosure as unhelpful. Group 4 consists of survivors who disclosed their victimization(s) to only formal recipient(s) and perceived their disclosure as helpful. Group 5 includes survivors who disclosed their victimization(s) to only formal recipient(s) and perceived their disclosure as unhelpful. Group 6 consists of survivors who disclosed their victimization(s) to both an informal and formal recipient(s) and perceived their disclosure as helpful. Group 7 includes survivors who disclosed their victimization(s) to both an informal and formal recipient(s) and perceived their disclosure as unhelpful.

In line with existing literature, we hypothesize that survivors who do not disclose their victimization will report higher levels of negative post-assault outcomes, compared to those who do disclose their experiences (H1). Moreover, based on research supporting the positive impact of informal disclosures, we predict that survivors who disclose to informal recipients will report lower levels of alcohol use, sexual risk behaviors, and mental health symptoms compared to those who disclose to formal recipients (H2). We further hypothesize that survivors who disclose but feel their disclosure was unhelpful will report higher levels of alcohol use, sexual risk behaviors, and mental health symptoms compared to those who perceive their disclosure as helpful (H3). Finally, we anticipate that survivors who disclose to informal recipients and feel their disclosure was helpful will report the lowest levels of alcohol use, sexual risk behaviors, and mental health symptoms (H4). This study aims to contribute to the understanding of how disclosure characteristics impact post-assault outcomes and provide insights into the role of disclosure in survivor recovery.

Methods

Recruitment/Demographics: Fresh Phase 2

Participants (n =440) were recruited as part of a larger study examining the synergistic dynamics between intoxication and sexual risk behavior amongst a high-risk sample of binge-drinking cisgender women with varied victimization histories. Recruitment occurred from a western urban community and university via newspaper, flyers, and other types of advertisement. This study aimed to ensure a racially diverse sample by utilizing multiple recruitment sites, reflecting a broad spectrum of community members. The sample included 35% women of color, and varied in terms of race, income, and engagement in both alcohol consumption and unprotected sex. These factors were specifically targeted to align with the objectives and broader study goals of FRESH Phase 2.

Strict inclusion and exclusion criteria were implemented to ensure the recruitment of participants at elevated risk for HIV/STI. Eligibility required participants to be between the ages of 21 and 30, have consumed alcohol within the past month, with at least one instance of heavy episodic drinking (a minimum of four drinks consumed within two hours) in the past six months. Additionally, participants must not have had a history of alcohol dependence, as determined by the Brief Michigan Alcoholism Screening Test (Pokorny, 1972), nor any medical conditions or medications contraindicating alcohol use. Furthermore, participants had to report engaging in unprotected intercourse at least once in the previous six months and meet at least one of the following risk criteria: (1) having had a current or past sexually transmitted infection (STI), (2) having had sexual relations with two or more different men in the last six months, (3) having had sexual relations with a new male partner, or (4) having had sexual relations with a man who tested positive for HIV, had a current STI, had multiple sexual partners in the past six months,

had ever used intravenous drugs, or had been incarcerated within the previous year. Women who used condoms 100% of the time were excluded, regardless of meeting all other inclusion criteria.

Recruitments/Demographics: Current Study

For the current study, participants who denied a history of sexual victimization were excluded, resulting in a final sample of 347 (*M*age*=24.78, SD= 2.8)* eligible participants. The sample was diverse in terms of racial and ethnic backgrounds. Participants identified as White (66.86%), Black/African American (7.92%), Asian/South Asian (6.16%), Multi-Racial (15.83%), Native Hawaiian/Pacific Islander (0.59%), and Indigenous/Alaska Native (1.17%) participants. Additionally, 1.47% of participants did not report their racial background. Concerning other demographics, about 61% of the sample were non-students, while the other 39% were students, attending community, university, or graduate institutions.

Procedure

The present study has used information gathered in pre-experiment questionnaires as part of the larger FRESH Phase 2 study. In the context of FRESH Phase 2, upon arriving at the laboratory, participants were greeted by a woman-identifying experimenter, who checked participants' IDs and verified the pre-experiment guidelines regarding alcohol and food consumption. Additionally, the experimenter checked that their blood alcohol levels (BAL) was 0.00 with an Alco-Sensor IV breath test prior to advancing to the study. If participants failed the pre-experiment tests, they were asked to reschedule. Once pre-experiment tests were passed, the experimenter obtained informed consent for the questionnaire aspect of this study. The questionnaires were conducted via computer, gathering information regarding demographics, personality/attitudes, HIV risk, sexual victimization histories, and alcohol use and expectancies.

Measures

Disclosure

To assess the impact of disclosure status, recipient type, and the helpfulness of disclosures, participants were categorized into seven disclosure groups as identified prior. When evaluating disclosure status, participants were asked two questions: "Have you told any of the following about any of these sexual experiences that happened to you when you were 13 or younger?" and "Have you told any of the following about these unwanted sexual experiences that happened to you after you turned 14?" These questions allowed participants to indicate who, if anyone, they had disclosed their victimization(s) to. If participants indicated, they had disclosed to anyone – regardless of the person or type of assault – they were assigned to the disclosure group. If participants responded with "I have never disclosed," they were assigned to the non-disclosure group. These groups, disclosure and non-disclosure, allow us to examine the impact of disclosure status on alcohol use/risk, sexual risk behaviors, and mental health symptoms.

Recipient Type

Recipient type was categorized into two groups, informal and formal. In FRESH 2, disclosure recipient data were collected via the "tell" measure, where participants were asked to select from a list of potential disclosure recipients. The informal group included parent(s), step/foster parent(s), sibling(s), other family member(s), partner, and friend/peer(s), while the formal group consisted of health care provider(s), teacher/school administer(s), counselor/therapist(s), and religious leader(s). Participants could also select "other" and specify who fit into this category. Upon reviewing the data, only one participant selected this option, identifying "police", which was classified under the formal recipient category. For coding purposes, participants were separated into three groups – informal only, formal only, and both

informal and formal. This classification allowed us to assess the impact of disclosure to each type of recipient, as well as the combined effect of disclosing to both informal and formal individuals.

Helpfulness

To assess whether survivors found their disclosure experience helpful, we used the helpfulness scale administered in FRESH 2. The scale ranges from 1 (not at all helpful) to 7 (extremely helpful) scale. For coding purposes, participants who rated their experience as 4 or lower were classified into the "not helpful" group, while those who rated it as 5 or higher were classified into the "helpful" group.

Victimization History

Regarding victimization history, measures identifying both CSA and ASA were administered. For survivors of CSA, an adapted version of the Hulme Questionnaire of Child Sexual Abuse (Hulme, 2000) was administered. Questions were presented on whether/how often/with whom various sex acts with an older individual occurred when the participant was 13 years old or younger. Additional questions were added to account for other abuse-related variables.

For survivors of ASA, the 11-item Revised Sexual Experiences Survey (R-SES; Testa et al., 2004) was presented, assessing previous experiences with acquaintance and stranger sexual victimizations since the age of 14. Participants were asked how many times they have had unwanted sexual experiences, from assault to attempted assault. Additional questions were incorporated to account for victimization-related variables.

After categorizing participants based on their disclosure status, recipient type, and perceived helpfulness, we also classified them by the type of assault they experienced – CSA

only, ASA only, or both CSA and ASA. While this classification does not account for the frequency of victimization(s), it does consider the different assault types by age group and the potential for revictimization. Each disclosure group was further separated by assault type. Prior studies on disclosure have primarily focused on individual disclosure factors, leaving a gap in understanding how the combination of these characteristics impacts negative post-assault outcomes.

Alcohol-Related Measures

Five alcohol-related measures were administered to assess overall alcohol use, and risk amongst participants. The Daily Drinking Questionnaire examined participants' drinking habits regarding both quantity and frequency (Collins et al., 1985). Additionally, the 13-item Sex-Related Alcohol Expectancies Scale was utilized to measure participants' beliefs and expectations about the effects of alcohol on their sexual behavior, risk, and performance (α's = .70-.83; Dermen & Cooper, 1994). The Revised Alcohol Expectancy Questionnaire was used to assess general thoughts, feelings and beliefs about alcohol, while demonstrating excellent reliability and providing subscale scores for positive and negative beliefs (α's = .83-.93; George et al., 1995). The Abbey Alcohol Expectancy Scale was administered to evaluate violence and sexual vulnerability expectancies, and exhibits excellent internal consistency, test-retest reliability, discriminant validity, and convergent validity (Abbey et al., 1999). The Drinking Motives Measure examined motives for alcohol consumption, with its three subscales (Social, Coping, and Enhancement) (α's = .77-.85; Cooper et al., 1992).

For coding purposes, we created a composite score for the alcohol related measures by combining responses from each of these measures – with higher scores indicating higher alcohol-

related risk. The scoring was reversed where necessary to ensure that higher scores always reflected greater risk. Specifically, for each measure, we either summed and/or averaged the responses, depending on the scale's structure, and then transformed the scores so that a higher total score indicated more severe alcohol use and associated risk.

Sexual Risk Behavior Measures

We have included six measures to properly capture the multifaceted nature of sexual risk behavior, accounting for attitudes, motivations, self-efficacy, and behaviors. The Sexual History & Experiences (National Center for Health Statistics, 2011), examined participants' sexual histories, focusing on behaviors, attitudes, health outcomes, and contextual factors. It specifically identified patterns of sexual risk behavior, including sexual activity (e.g., number of partners, age of first intimacy), condom/safe sex practices, and sexual health history. The Sexual Sensation Seeking Questionnaire (α's= .79, p.86, .81; Kalichman & Rompa, 1995) measures sexual sensation-seeking, compulsivity and nonsexual sensation-seeking. For this project, we only accounted for sexual sensation seeking, and sexual compulsivity. The Condom Use Self-Efficacy Scale (α's = .91; Bradford & Beck, 1991) was used to examine participants' feelings/attitudes about using condoms in specific situations. The Multidimensional Condom Attitudes Scale (Helweg-Larsen & Collins, 1994) was used to examine participants' feelings/attitudes about condom reliability, effectiveness, and sexual pleasure. The 7-item Sociosexual Orientation Inventory (Simpson & Gangestad, 1991) examined participants' attitudes and behaviors towards casual sexual relationships.

For coding purposes, we created a composite score for the sexual risk behavior measures by combining responses from each of these measures – with higher scores indicating higher sexual risk. Scoring was reversed where necessary to ensure that higher scores always reflected

greater risk or more risky behaviors. These scores were then summed and/or averaged to produce an overall score for each sexual risk behavior.

Mental Health Measures

For this project, the BSI, TSI, and SES were administered to capture post-assault mental health outcomes. The Trauma Symptom Inventory (TSI) was used to measure the presence and severity of trauma-related symptoms in individuals who have experienced traumatic events (Briere, 1995). The Brief Symptom Inventory (BSI) was used to examine a wide range of psychological symptoms and mental health disparities (Derogatis, 2000). This study utilized three major subscales, measuring somatization, anxiety, and depression. The 10-item Rosenberg Self-Esteem Scale was used to assess participants' positive and negative feelings/evaluation about themselves, all of which aim to capture their sense of self-worth and overall sense of identity (Rosenberg, 1979). The 16-item Traumatic Sexualization Survey (α's = .80-.93; Matorin & Lynn, 1998) was used to investigate the long-term impact of CSA on participants, examining their overall sexual avoidance and fear of sexual and physical intimacy.

For coding purposes, we created a composite score for the mental health measures by combining responses across these three measures – with higher scores indicating greater mental health distress/symptomology. Similar to the other variables, scoring was adjusted as needed to ensure that higher scores always reflected more severe mental health outcomes. The individual subscales were either summed and/or averaged, and a final composite score was computed to reflect overall mental health outcome severity.

Data Analysis

To initiate our analysis, we first examined the data for potential statistical outliers, assessing for skewness, kurtosis, and normality for each variable. For variables identified with outliers, we attempted transformations (e.g., log transformation, mean centering) to reduce their impact. To ensure consistency, any decisions regarding outlier removal or transformation were made collectively by the research team, considering the context of the research and specific data point in question. Overall, no outliers were removed. Due to the complexity of the research, our analyses were divided into four primary research questions with corresponding statistical models.

Logistic Regression Analysis

We first employed a logistical regression model to compare disclosure groups - those who did disclose vs. those who did not disclose, on various negative post-assault outcomes (alcohol risk, sexual risk behaviors, and mental health outcomes).

Recipient Type Analysis

Recipient type was classified based on the type of individual(s) to whom participants disclosed their victimization. Participants were grouped into one of three categories: formal only, informal only, both. Formal only consisted of participants who disclosed exclusively to formal recipients (e.g., law enforcement, mental health counselors, legal authorities). Informal only consisted of participants who disclosed exclusively to informal recipients (e.g., family members, friends, partner). Both consisted of participants who disclosed to both an informal and formal recipient(s). Linear regression analyses were conducted to evaluate the influence of recipient type on negative post-assault outcomes.

Helpfulness Analysis

Helpfulness was measured on a 7-point scale, with participants rating their perceived helpfulness of individuals they disclosed their victimization to, ranging from 1=not helpful to 7=very helpful. For analysis, helpfulness was dichotomized into two categories: “Non-helpful”

(ratings 4 or lower) and "Helpful" (ratings 5 or higher). Linear regression analyses were performed to examine the effect of perceived helpfulness on negative post-assault outcomes.

Combination of Recipient Type and Helpfulness

We also analyzed the combined effect of recipient type and perceived helpfulness on negative post-assault outcomes, followed by further linear regression models examining the interactions between disclosure recipient, perceived helpfulness, and assault type (CSA, ASA, both CSA and ASA).

Disaggregated Outcome Measures

In addition to analyzing composite scores for alcohol use/risk, sexual risk behaviors, and mental health symptoms, we also examined disaggregated subscale scores across all three domains. This allowed for a more granular understanding of how specific aspects of each post-assault outcome was influenced by disclosure characteristics. These subscale analyses were conducted in parallel with each main regression model and are visualized in Figure 1 to provide additional context for the composite-level findings.

Power Analysis

Predicted power and effect size of this study is relatively low despite the large sample size and credible measures/items. Due to the statistical analysis proposed, this low power/effect size can be attributed to the fact the explored groups are very specified, with strict criterion for participants in FRESH Phase 2 samples initially, as well as specific representation of each disclosure group. While there is low power, this study has gone through the process of pre-registering, as well as being amongst the new perspective in the SV literature to explore differences in victimization disclosure and their role in negative post-assault outcomes in later life. This study also highlights the importance of exploration for the validation, recognition and

future awareness that can be discovered for victims. This study and future research aim to increase support, protection and comfort for survivors following victimization.

Results

Disclosure Status

In the logistic regression comparing disclosure groups, we found that contrary to the literature and our hypothesis (H1), participants who did not disclose their victimization reported significantly lower sexual risk behaviors (*p=0.028)* compared to those who did disclose. However, no significant differences were found between disclosure groups for alcohol use/risk or mental health outcomes.

Recipient Type Analysis

Regression analyses revealed that, contrary to the literature and our hypothesis (H2), recipient type (formal only, informal only, and both) did not significantly influence any of the three negative post-assault outcomes. All models returned non-significant p-values ($p > .05$), suggesting no meaningful differences based on type of disclosure recipient.

Helpfulness Analysis

Regression analyses indicated that participants who perceived their disclosure as helpful reported significantly lower sexual risk behaviors than those who found their disclosure as non-helpful (*p=0.0244)*. However, no significant differences were observed for alcohol use/risk or mental health symptoms based on perceived helpfulness. Overall, H3 was partially supported – perceived helpfulness was associated with reduced sexual risk behaviors but not with the other negative post-assault outcomes.

Combination of Recipient Type and Helpfulness

We examined the interaction between recipient type and perceived helpfulness. Contrary to our hypothesis (H4), the lowest levels of alcohol use/risk were observed in participants who

disclosed to formal recipients and perceived their disclosure as helpful. However, while this group showed the lowest scores, the overall interaction between recipient type and perceived helpfulness was not statistically significant. Only the main effects of recipient type (informal and both vs. formal) reached statistical significance. No significant effects were observed for this combination on sexual risk behaviors or mental health symptoms, nor for any other combinations across the three negative post-assault outcomes.

Additional and Exploratory Findings

Recipient Type and Assault Type Interaction

An interaction effect between recipient type and assault type (CSA, ASA, both CSA and ASA) was examined. While no significant effects were found for alcohol use/risk or sexual behaviors, a significant interaction emerged for mental health symptoms (*p=0.000205)*. Specifically, survivors of ASA who disclosed exclusively to formal recipients reported significantly higher mental health symptoms than other assault type and disclosure combinations.

Helpfulness and Assault Type Interaction

When examining the interaction between perceived helpfulness and assault type, no significant interactions were found in relation to any of the three negative post-assault outcomes. However, assault type alone significantly predicted mental health symptoms – with survivors who experienced both ASA and CSA reporting significantly higher levels of mental health symptoms compared to those who experienced only one form of victimization (*p=0.000228)*.

Comprehensive Regression Analysis

In the final model, which examined the combined effects of recipient type, perceived helpfulness, and assault type, assault type remained the only significant predictor of mental health symptoms (*p=0.02*). Additionally, there was a marginal trend for an interaction between

perceived helpfulness and recipient type (*p=0.052 & p=0.099)* indicating potential avenues for future investigation.

Disaggregated Subscale Findings

Although many subscale analyses were non-significant, several notable patterns emerged. Perceived helpfulness was significantly associated with lower scores on the Sexual History and Experiences (SHE) scale (*p= 0.015)* and the Sociosexual Orientation Inventory (SOI) (*p= 0.029),* suggesting reduced sexual risk amongst participants who perceived their disclosure experience as helpful. Additionally, interaction effects between perceived helpfulness and recipient type were significant for the Revised Alcohol Expectancy Questionnaire (AEQ-3) (*p= 0.010 - 0.024)* and marginally significant for the Sex-Related Alcohol Expectancies (SEXAEQ) scale (*p= 0.049 - 0.084),* indicating these outcomes may vary depending on the type of disclosure recipient. Assault type alone significantly predicted higher risk scores on both the Traumatic Symptom Inventory (TSI) *(p< .001)* and the Abbey Alcohol Expectancies – Sex & Aggression (AEQSA) scale *(p= 0.005)*, with the highest scores observed amongst participants reporting both childhood and adult sexual assault. For all disaggregated measure findings, please refer to Figure 1.

Discussion

Purpose of Study

The purpose of this study is to explore how the complex nuance of sexual victimization disclosure can impact survivor's post-assault outcomes, specifically focusing on alcohol use, sexual risk behaviors, and mental health symptoms. This study aims to investigate how disclosure status, recipient type, and perceived helpfulness – both individually and when combined – affect these outcomes. By examining a range of disclosure scenarios, the goal is to

contribute to a more nuanced understanding of how different aspects of disclosure influence survivor recovery. Finding are intended to inform the development of survivor-centered, trauma-informed interventions that improve post-assault support and mental/health outcomes.

Main Findings & Interpretation

Hypothesis 1 (Disclosure Vs. Non-Disclosure)

We hypothesized that participants who disclosed their victimization(s) would report lower levels of negative post-assault outcomes – alcohol use/risk, sexual risk behaviors, and mental health symptoms – in comparison to those who did not disclose their victimization(s). Contrary to this hypothesis, we found that participants who did not disclose their victimization(s) reported significantly fewer sexual risk behaviors than those who did disclose. No significant group differences emerged for alcohol use/risk or mental health symptoms. This finding runs counter to the existing literature, which often suggests that disclosure is protective, associated with increased psychological processing and support-seeking that may buffer against long-term harm. Our result may indicate that the act of disclosing, particularly when followed by negative or invalidating responses, could be associated with increased risk-taking behaviors. This overall points to the need to critically examine not just whether survivors disclose, but the quality and context of the disclosure experiences. In doing so, findings can inform disclosure recipients on how to respond more effectively, ultimately improving survivor recovery outcomes, the quality of interactions, and support provided.

Hypothesis 2 (Recipient Type)

We hypothesized that survivors who disclose to informal recipient will report lower levels of negative post-assault outcomes compared to those who disclose to formal recipients. However, this hypothesis was not supported. Recipient type has no significant effect on alcohol use/risk,

sexual risk behaviors, or mental health symptoms. This null finding challenges the literature in that the nature of the recipient alone (e.g., formal vs. informal) plays a meaningful role in recovery outcomes. Our findings suggest that recipient type alone may be insufficient to predict negative post-assault outcomes, and that other elements, such as response quality, timing of disclosure, or survivor readiness, may be more influential in shaping recovery trajectories.

Hypothesis 3 (Perceived Helpfulness)

We hypothesized that participants who perceived their disclosure as unhelpful would report more severe negative post-assault outcomes in comparison to those who found their disclosure as helpful. This hypothesis was partially supported. Participants who found their disclosure as helpful reported significantly lower levels of sexual risk behaviors than those who did not find their disclosure as helpful. However, perceived helpfulness did not significantly impact alcohol use/risk or mental health symptoms. These results suggest that the subjective perception of support may reduce sexual risk behaviors, potentially by reinforcing self-worth or encoring adaptive coping mechanisms. With this in mind, the lack of effect on mental health and substance use indicated that perceived support alone may not mitigate all dimensions of post-assault harm.

Hypothesis 4 (Interaction of Recipient Type and Helpfulness)

We hypothesized that those who disclosed to informal recipients and perceived their disclosure as helpful would show the lowest levels of negative post-assault outcomes. This hypothesis was not supported. Contrary to the literature, the lowest levels of alcohol use/risk were observed amongst participants who disclosed to formal recipient and found their disclosure experience as helpful. No significant effects were found for this interaction on sexual risk behaviors or mental health symptoms. This finding suggests that when formal disclosures are experienced as helpful, they may be particularly beneficial for reducing substance-related risk, perhaps due to access to

professional support, health care, or intervention. However, the absence of effect across other outcomes indicates a need to better understand the conditions under which formal disclosures are experienced as beneficial.

Additional and Exploratory Findings

Beyond the hypothesis-driven analyses, we explored interactions between disclosure characteristics and assault type (ASA, CSA, and both). A significant interaction emerged between assault type and recipient type such that survivors of ASA who disclosed only to formal recipients reported higher mental health symptoms than other disclosure combinations. Additionally, assault type alone was found to significantly impact mental health symptoms, with survivors of both CSA and ASA reporting the highest levels of mental health symptoms. These findings align with the sexual victimization and trauma literature indicating cumulative trauma exposure is associated with more severe psychological symptoms. In the full regression model including all key variables, assault type remained the only consistent predictor of mental health symptoms. A marginal interaction between recipient type and perceived helpfulness also emerged, suggesting this may be a valuable direction to explore further in future research.

Disaggregated Subscale Findings

While composite-level findings offered a broad view of negative post-assault outcomes, disaggregated subscale analyses reveal more nuanced relationships between disclosure experiences and specific dimensions of risk and mental health symptomology. Notably, participants who perceived their disclosure experiences as helpful reported significantly lower scores on the SHE and SOI scales. These findings further support the idea that that supportive disclosure contexts may play a protective role against higher-risk sexual behavior, potentially by fostering a strong sense of emotional regulation, sexual agency, and/or boundary setting following trauma (Ullman & Peter-Hagene, 2014). Significant interactions between perceived

helpfulness and recipient type were also observed on two alcohol expectancy measures, the AEQ-3 and SEXAEQ. These interactions may indicate that survivors' beliefs about alcohol's effects, particularly in sexual or social contexts, are shaped in part by the social response to their disclosures. Further, assault type along emerged as a significant predictor of trauma symptoms and alcohol-related aggression expectancies, with participants who experienced both childhood and adult sexual assault showing significantly elevated scores on the TSI and AEQSA scales. These results align with the composite scores and prior research linking cumulative trauma exposure to heightened psychological distress and substance and sexual risk behaviors. All together, these findings emphasize how disaggregated measures can reveal additional effects stemming from the different characteristics involved in a single disclosure event.

Implications

Overall, our findings challenge some widely held positions about the role of disclosure, offering important implications for both research and clinical practice. These results highlight the need for more nuanced investigation into the context and content of disclosure experiences, particularly how they contribute to healing or, conversely, exacerbate negative post-assault outcomes. Future work should explore more granular disclosure characteristics, such as response content (e.g., blame), disclosure timing, frequency, and survivor-perceived control. Additionally, victimization-specific factors (e.g., severity, coercion, intoxication) and intersecting identities may better account for the variability observed in outcomes. Given that assault type consistently predicted mental health symptomology, it is critical to identify and support survivors with complex and/or cumulative trauma histories through tailored, trauma-informed interventions.

Limitations

Strengths

This study has several notable strengths that contribute to both the development and representation of survivor's post-assault journeys. According to the US Centers for Disease Control and Prevention one in four girls' experiences CSA, and one in four cisgender women faces sexual victimization (CDC, 2022; Finkelhor et al., 2014; Basile et al., 2016). While individuals of all gender identities experience sexual victimization, this study's sample focuses solely on cisgender women, resulting in 347 participants. Despite the limitation in gender representation, the sample remains diverse, with participants from various backgrounds and different victimization histories. The study's strengths also lie in its comprehensive and nuanced methodology. By utilizing secondary data from the (fresh) Phase 2 experiment, it draws on a robust dataset that includes a racially and ethnically diverse sample. Participants are categorized into seven disclosure groups, offering valuable insights into how different combinations of disclosure factors influence post-assault outcomes. The inclusion of perceived helpfulness as a variable enhances the analysis, moving beyond the simple occurrence of disclosure to examine its impact. Additionally, the study employs a range of well-documented, reliable, and valid standardized measures to assess alcohol use, sexual risk behaviors, and mental health symptoms. The measures also consider the variation in survivors' self-reports without forcing them into rigid categories, acknowledging the complexity of individual experiences. Finally, the study explores the interaction effects between disclosure characteristics and assault type, offering a thorough understanding of the dynamics surrounding sexual victimization and recovery.

Weaknesses

Despite the widespread prevalence of sexual victimization, it remains a relatively underexplored topic within research. Even with its inherent limitations, any effort to raise awareness of sexual victimization contributes significantly to advancing the recovery from such traumatic events. This study, however, is not without its own limitations, many which should be addressed in

future research to provide a more comprehensive understanding of the issue. The first limitation pertains to the sample size and the restrictive eligibility criteria. These criteria were designed to target individuals at elevated risk for HIV/STI's, unprotected sex, and alcohol use. However, this focused sample may introduce biases that could result in skewed outcomes on certain measures, such as traumatic sexualization, which may manifest at lower levels, or drinking motives, which may be disproportionately elevated. Consequently, future research would benefit from broader, more diverse sampling to ensure generalizability across a wider spectrum of experiences. Another sample-related limitation is the exclusive inclusion of cisgender women. Future studies should seek to extend this research to individuals of various gender identities, sexual orientations, and racial/ethnic backgrounds, particularly considering the importance of intersectionality in understanding the nuanced experiences of sexual victimization.

Additionally, while this study examines the impact sexual assault type (CSA, ASA, or both), it does not account for the frequency or severity of victimization experiences. These factors could reveal important variations in outcomes – all of which future studies should measure to provide a fuller picture of victimization complexity and consequences they hold on survivors. Furthermore, exploring the relationship between these factors and the nature of disclosure could offer valuable insights into the processes by which individuals navigate recovery and coping.

The evaluation of disclosure, a key aspect of this study, also presents several limitations. For instance, the study did not consider the age at the time of victimization or the temporal gap between the victimization and disclosure. Future research should incorporate these factors to facilitate more accurate inferences regarding the long-term impact of victimization and the outcomes of disclosure. Moreover, it is crucial to explore the frequency and nature of disclosures, as survivors may conceptualize or refer to difference disclosure experiences when

completing studies. Understanding the form of disclosure (e.g., verbal, written, online platforms) and the specific details surrounding these disclosures will provide richer insights into the disclosure process and its effects.

Additionally, the context and characteristics of the victimization itself should be considered when exploring disclosure journeys. Future studies should examine variables such as the relationship between the survivor and perpetrator, the presence of alcohol or substances at the time of the victimization, and other specific event-related factors. These elements may significantly influence the survivor's experience, subsequent negative outcomes, and the experience of disclosure or in some cases, non-disclosure. Finally, while some research has explored the outcomes in various aspects of disclosure, a substantial gap remains in understanding the differential impact of forced (e.g., involuntary) versus self-chosen (e.g., voluntary) disclosure. Future studies should explore this gap, as the autonomy of the disclosure process may play a crucial role in the survivor's psychological and emotional recovery.

CONCLUSION

This study is a steppingstone for the recognition of the combination effect of disclosure characteristics for survivors of sexual victimization. While there is literature regarding individual factors of disclosure, including disclosure recipient and social reactions, there remains a gap in how differences of disclosure could potentially result in different negative post-assault outcomes, processing, and paths of recovery for survivors. Moving forward, future disclosure research should involve samples with specific criteria aimed at answering other disclosure considerations, while representing other marginalized populations (e.g., sexual and gender minorities), victimization types, and specified ages. Essentially, with any recognition and progress in this research topic, there is hope to increase safety, support and comfort for survivors as a means of

recovery. Society still holds a position in victim-blaming and judgment when it comes to direct and societal perceptions of survivors of sexual victimization. This work aims to decrease present stigma and erasure of existing survivors, while providing validation for any individual who is subjected to such traumatic events.

References

Abbey, A., McAuslan, P., Ross, L. T., Zawacki, T. (1999). Alcohol expectancies regarding sex, aggression, and sexual vulnerability: Reliability and validity assessment. *Psychology of Addictive Behaviors. 13*(3):174–182.

Ahrens, C. E., Cabral, G., & Abeling, S. (2009). Healing or hurtful: Sexual assault survivors' interpretations of social reactions from support providers. *Psychology of Women Quarterly*, *33*(1), 81-94.

Ahrens, C. E., Campbell, R., Ternier-Thames, N. K., Wasco, S. M., & Sefl, T. (2007). Deciding whom to tell: Expectations and outcomes of rape survivors' first disclosures. *Psychology of Women Quarterly*, *31*(1), 38–49. https://doi.org/10.1111/j.1471-6402.2007.00329.x

Ahrens, C. E., Stansell, J., & Jennings, A. (2010). To tell or not to tell: the impact of disclosure on sexual assault survivors' recovery. *Violence and victims*, *25*(5), 631–648. https://doi.org/10.1891/0886-6708.25.5.631

Bachman, R. (1993). Predicting the reporting of rape victimizations: Have rape reforms made a difference? *Criminal Justice and Behavior, 20,* 254–269.

Bachman, R. (1998). The factors related to rape reporting behavior and arrest: New evidence from the national crime victimization survey. *Criminal Justice and Behavior, 25*, 829

Basile KC, Smith SG, Kresnow M, Khatiwada S, & Leemis RW. (2022). The National Intimate Partner and Sexual Violence Survey: 2016/2017 Report on Sexual Violence. Atlanta, GA: National Center for Injury Prevention and Control, Centers for Disease Control and Prevention.

Bogen, K. W., Orchowski, L. M., & Ullman, S. E. (2021). Online disclosure of sexual victimization and social reactions: What do we know? *Women & Therapy, 44*(3-4), 358–373. https://doi.org/10.1080/02703149.2021.1961448

Brafford, L. J., & Beck, K. H. (1991). Development and validation of a condom self-efficacy scale for college students. Journal of College Health, 39, 219-225. doi:10.1080/07448481.1991.9936238

Briere, J. (1995). Trauma Symptom Inventory: Profession Manual. PAR: Psychological Assessment Resources, Inc. Lutz, FL.

Brown, A. L., Testa, M., & Messman-Moore, T. L. (2009). Psychological consequences of sexual victimization resulting from force, incapacitation, or verbal coercion. *Violence Against Women, 15*(8), 898–919. https://doi.org/10.1177/1077801209335491

Campbell, R., Wasco, S. M., Ahrens, C. E., Sefl, T., & Barnes, H. E. (2001). Preventing the "second rape": Rape survivor's experiences with community service providers. *Journal of Interpersonal Violence, 16*(12), 1239–1259. https://doi.org/10.1177/088626001016012002

Carson, K. (2023). "Understanding the Experiences and Associated Symptomology of Disclosers and Non-disclosers of Sexual Victimization". *CUNY Academic Works.* https://academicworks.cuny.edu/gc_etds/5438

Carson, K. W., Babad, S., Brown, E. J., Brumbaugh, C. C., Castillo, B. K., & Nikulina, V. (2020). Why Women Are Not Talking About It: Reasons for Nondisclosure of Sexual Victimization and Associated Symptoms of Posttraumatic Stress Disorder and Depression. *Violence against women*, *26*(3-4), 271–295. https://doi.org/10.1177/1077801219832913

Carson, K. W., Babad, S., Brown, E. J., & Nikulina, V. (2021). Why do women talk about it? Reasons for disclosure of sexual victimization and associated symptomology. *Violence against women*, *27*(15-16), 3114-3135.

Catton, A. K. H., Dorahy, M. J., & Yogeeswaran, K. (2023). Disclosure of Sexual Victimization: Effects of Invalidation and Shame on Re-Disclosure. *Journal of interpersonal violence*, *38*(13-14), 8332–8356. https://doi.org/10.1177/08862605231155122

Collins, R. L., Parks, G. A., & Marlatt, G. A. (1985). *Daily Drinking Questionnaire (DDQ)* [Database record]. APA PsycTests. https://doi.org/10.1037/t02146-000

Cooper, M. L., Russell, M., Skinner, J. B., & Windle, M. (1992). Development and validation of a three-dimensional measure of drinking motives. *Psychological Assessment, 4*(2), 123–132. https://doi.org/10.1037/1040-3590.4.2.123

Cunniff Gilson, E. (2016). Vulnerability and victimization: Rethinking key concepts in feminist discourses on sexual violence. *Signs: Journal of Women in Culture and Society*, *42*(1), 71-98.

Dermen, K. H., Cooper, M. L. (1994). Sex-related alcohol expectancies among adolescents: I. Scale development. *Psychology of Addictive Behaviors.* 8:152–160. https://doi.org/10.1037/0893-164X.8.3.152.

Derogatis, L. R. (2000). The Brief Symptom Inventory–18 (BSI-18): Administration, Scoring and Procedures Manual. Minneapolis, MN: National Computer Systems.

Driessen, M. C., Bhuptani, P. H., Kiefer, R., Peterson, R., Mayer, E., Cruz-Sanchez, M., ... & Orchowski, L. M. (2024). Reactions to and Impact of Survivor Online Disclosures: A Qualitative Analysis. *Journal of Child Sexual Abuse*, *33*(8), 951-969.

Dworkin E. R. (2020). Risk for Mental Disorders Associated with Sexual Assault: A Meta-Analysis. Trauma Violence Abuse. Dec; 21 (5):1011-1028.

Dworkin, E. R., & Allen, N. (2018). Correlates of disclosure cessation after sexual assault. *Violence Against Women, 24*(1), 85–100. https://doi.org/10.1177/1077801216675743

Dworkin, E. R., Brill, C. D., & Ullman, S. E. (2019). Social reactions to disclosure of interpersonal violence and psychopathology: A systematic review and meta-analysis. *Clinical psychology review*, *72*, 101750. https://doi.org/10.1016/j.cpr.2019.101750

Dworkin, E. R., Jaffe, A. E., Bedard-Gilligan, M., & Fitzpatrick, S. (2023). PTSD in the year following sexual assault: A meta-analysis of prospective studies. *Trauma, Violence, & Abuse*, *24*(2), 497-514.

Dworkin, E. R., Menon, S. V., Bystrynski, J., Allen, N. E. (2017). Sexual assault victimization and psychopathology: A review and meta-analysis. *Clin Psychol Rev*. 56:65-81. doi: 10.1016/j.cpr.2017.06.002. Epub 2017 Jun 30. PMID: 28689071; PMCID: PMC5576571.

Ehlke, S. J., & Kelley, M. L. (2019). Drinking to cope motivations as a mediator of the relationship between sexual coercion victimization and alcohol use among college women: The role of depressive symptoms. *Violence Against Women, 25*(6), 721–742. https://doi.org/10.1177/1077801218796334

Fereidooni, F., Daniels, J. K., D Krause-Utz, A., Hagenaars, M. A., Smeets, T., Heins, J., Dorahy, M. J., Emmerik, A. A. P. V., de Jong, P. J., Hoekstra, S., Warrens, M. J., & Lommen, M. J. J. (2023). Childhood maltreatment and adulthood victimization: An evidence-based model. *Journal of psychiatric research*, *167*, 46–62. https://doi.org/10.1016/j.jpsychires.2023.10.007

Fisher, B., Daigle, L., Cullen, F., & Turner, M. (2003). Reporting sexual victimization to the police and others: Results from a national-level study of college women. Criminal Justice and Behavior, 30, 6–38.

Forkus, S. R., Raudales, A. M., Kiefer, R., Contractor, A. A., & Weiss, N. H. (2024). Posttraumatic stress symptoms and risky alcohol use: The roles of negative social reactions to sexual assault disclosure and trauma-related shame. *Psychological trauma: theory, research, practice, and policy*, *16*(4), 596.

Fossos, N., Kaysen, D., Neighbors, C., Lindgren, K. P., & Hove, M. C. (2011). Coping motives as a mediator of the relationship between sexual coercion and problem drinking in college students. *Addictive behaviors*, *36*(10), 1001-1007.

George, W. H., Frone, M. R., Cooper, M. L., Russell, M., Skinner, J. B., Windle, M. (1995). A revised alcohol expectancy questionnaire: factor structure confirmation, and invariance in a general population sample. *J Stud Alcohol. 56*(2):177-85. http://doi.org/10.15288/jsa.1995.56.177

Gewirtz-Meydan, A., & Godbout, N. (2023). Between pleasure, guilt, and dissociation: How trauma unfolds in the sexuality of childhood sexual abuse survivors. *Child Abuse & Neglect, 141,* 1–16. https://doi.org/10.1016/j.chiabu.2023.106195

Helweg-Larsen, M. & Collins, B.E. (1994). The UCLA multidimensional condom attitudes scale: Documenting the complex determinants of condom use in college students. Health Psychology, 13, 224-237.

Hulme, P.A. (2000). Symptomatology and health care utilization of women primary care patients who experienced childhood sexual abuse. Child Abuse & Neglect, 24 (11), 1471-1484. doi:10.1016/S0145-2134(00)00200-3.

Jonzon, E., & Lindblad, F. (2004). Disclosure, reactions, and social support: findings from a sample of adult victims of child sexual abuse. *Child Maltreatment, 9*(2), 190–200. https://doi.org/10.1177/1077559504264263

Kalichman, S. C., & Rompa, D. (1995). Sexual sensation seeking and sexual compulsivity scales: reliability, validity, and predicting HIV risk behavior. *Journal of Personality Assessment, 65*(3), 586–601. https://doi.org/10.1207/s15327752jpa6503_16

Kaysen, D., Neighbors, C., Martell, J., Fossos, N., & Larimer, M. E. (2006). Incapacitated rape and alcohol use: A prospective analysis. *Addictive Behaviors, 31*(10), 1820–1832. https://doi.org/10.1016/j.addbeh.2005.12.025

Kennedy, A. C., & Prock, K. A. (2018). "I Still Feel Like I Am Not Normal": A review of the role of stigma and stigmatization among female survivors of child sexual abuse, sexual assault, and intimate partner violence. *Trauma, Violence, & Abuse*, *19*(5), 512–527. https://doi.org/10.1177/1524838016673601

Kilpatrick, D. G., Acierno, R., Resnick, H. S., Saunders, B. E., & Best, C. L. (1997). A 2-year longitudinal analysis of the relationships between violent assault and substance use in women. *Journal of Consulting and Clinical Psychology, 65*(5), 834–847. https://doi.org/10.1037/0022-006X.65.5.834

Krause-Utz, A., Dierick, T., Josef, T., Chatzaki, E., Willem, A., Hoogenboom, J., & Elzinga, B. (2021). Linking experiences of child sexual abuse to adult sexual intimate partner violence: the role of borderline personality features, maladaptive cognitive emotion regulation, and dissociation. *Borderline personality disorder and emotion dysregulation*, *8*(1), 10. https://doi.org/10.1186/s40479-021-00150-0

Kruse, M.,I, Corbin, W.,R & Fromme, K. (2005). Improving accuracy of QF measures of alcohol use: Disaggregating quantity and frequency.

Finkelhor, D., Shattuck, A., Turner, H. A., & Hamby S. L. (2014). The lifetime prevalence of child sexual abuse and sexual assault assessed in late adolescence. *Journal of Adolescent Health, 55*(3):329-33. doi: 10.1016/j.jadohealth.2013.12.026.

Fontes, L. A., & Plummer, C. (2010). Cultural issues in disclosures of child sexual abuse. *Journal of Child Sexual Abuse*, *19*(5), 491–518. https://doi.org/10.1080/10538712.2010.512520

Jacques-Tiura, A. J., Tkatch, R., Abbey, A., & Wegner, R. (2010). Disclosure of sexual assault: characteristics and implications for posttraumatic stress symptoms among African American and caucasian survivors. *Journal of trauma & dissociation : the official journal of the International Society for the Study of Dissociation (ISSD)*, *11*(2), 174–192. https://doi.org/10.1080/15299730903502938

Landberg, Å., Svedin, C. G., & Jonsson, L. S. (2022). Patterns of disclosure and perceived societal responses after child sexual abuse. *Child Abuse & Neglect*, *134*, 105914. https://doi.org/10.1016/j.chiabu.2022.105914

Lemieux, S. R., & Byers, E. S. (2008). The sexual well-being of women who have experienced child sexual abuse. *Psychology of Women Quarterly, 32*(2), 126–144. https://doi.org/10.1111/j.1471-6402.2008.00418.x

Littleton, H. L. (2010). The Impact of Social Support and Negative Disclosure Reactions on Sexual Assault Victims: A Cross-Sectional and Longitudinal Investigation. *Journal of Trauma & Dissociation*, *11*(2), 210–227. https://doi.org/10.1080/15299730903502946

Lorenz, K., Ullman, S. E., Kirkner, A., Mandala, R., Vasquez, A. L., & Sigurvinsdottir, R. (2018). Social reactions to sexual assault disclosure: A qualitative study of informal support dyads. *Violence against women*, *24*(12), 1497-1520.

Macy, R. J., Nurius, P. S., & Norris, J. (2006). Responding in their best interests: Contextualizing women's coping with acquaintance sexual aggression. *Violence Against Women, 12*(5), 478–500. https://doi.org/10.1177/1077801206288104

Matorin, A. I., & Lynn, S. J. (1998). The development of a measure of correlates of child sexual abuse: The traumatic sexualization survey. *Journal of Traumatic Stress, 11*(2), 261–280. https://doi.org/10.1023/A:1024499019860

McAuslan, P. (1998). After sexual assault: The relationship between women's disclosure, the reactions of others, and health. Unpublished doctoral dissertation, Wayne State University, Detroit, M

McElvaney, R., Moore, K., O'Reilly, K., Turner, R., Walsh, B., & Guerin, S. (2020). Child sexual abuse disclosures: Does age make a difference? *Child Abuse & Neglect*, *99*, 104121. https://doi.org/10.1016/j.chiabu.2019.104121

Mimiaga, M. J., Noonan, E., Donnell, D., Safren, S. A., Koenen, K. C., Gortmaker, S., ... & Mayer, K. H. (2009). Childhood sexual abuse is highly associated with HIV risk-taking

behavior and infection among MSM in the EXPLORE Study. *JAIDS Journal of Acquired Immune Deficiency Syndromes*, *51*(3), 340-348.

Morgan R. E., Oudekerk B. A. (2019). *Criminal victimization, 2017*. Report Submitted to the U.S. Department of Justice, Office of Justice Programs, Bureau of Justice Statistics (NCJ 253043U). https://www.bjs.gov/content/pub/pdf/cv18.pdf

Morokoff, P. J., Quina, K., Harlow, L. L., Whitmire, L., Grimley, D. M., Gibson, P. R & Burkholder, G. J. (1997). Sexual assertiveness scale (SAS) for women: development and validation. *J Pers Soc Psychol. 73*(4): 790-804. doi: 10.1037//0022-3514.73.4.790. PMID: 9325594.

Mosack, K. E., Randolph, M. E., Dickson-Gomez, J., Abbott, M., Smith, E., & Weeks, M. R. (2010). Sexual risk-taking among high-risk urban women with and without histories of childhood sexual abuse: mediating effects of contextual factors. *Journal of child sexual abuse*, *19*(1), 43-61.

Motley, L. S. (2016). Childhood sexual assault, schemas, and revictimization: The role of early maladaptive schemas on revictimization.

Münzer, A., Fegert, J. M., Ganser, H. G., Loos, S., Witt, A., & Goldbeck, L. (2016). Please Tell! Barriers to Disclosing Sexual Victimization and Subsequent Social Support Perceived by Children and Adolescents. *Journal of interpersonal violence*, *31*(2), 355–377. https://doi.org/10.1177/0886260514555371

Murphy-Oikonen, J., McQueen, K., Miller, A., Chambers, L., & Hiebert, A. (2022). Unfounded Sexual Assault: Women's Experiences of Not Being Believed by the Police. *Journal of interpersonal violence*, *37*(11-12), NP8916–NP8940. https://doi.org/10.1177/0886260520978190

Najdowski, C. J., & Ullman, S. E. (2009). PTSD symptoms and self-rated recovery among adult sexual assault survivors: The effects of traumatic life events and psychosocial variables. *Psychology of Women Quarterly, 33*(1), 43–53. https://doi.org/10.1111/j.1471-6402.2008.01473.x

National Center for Health Statistics (2011). National Health Interview Survey, 2010. National Center for Health Statistics, Centers for Disease Control and Prevention, Hyattsville, Maryland.

National Sexual Violence Resource Center (2021). About Sexual Assault.

Noll, J. G. (2021). Child Sexual Abuse as a Unique Risk Factor for the Development of Psychopathology: The Compounded Convergence of Mechanisms. *Annu Rev Clin Psychol*. 17:439-464. doi: 10.1146/annurev-clinpsy-081219-112621. Epub 2021 Jan 20. PMID: 33472010; PMCID: PMC9301660.

O'Callaghan, E., Shepp, V., Ullman, S. E., & Kirkner, A. (2019). Navigating sex and sexuality after sexual assault: A qualitative study of survivors and informal support providers. *The Journal of Sex Research*, *56*(8), 1045-1057.

Orchowski, L. M., Untied, A. S., & Gidycz, C. A. (2013). Social reactions to disclosure of sexual victimization and adjustment among survivors of sexual assault. *Journal of Interpersonal Violence*, *28*(10), 2005–2023. https://doi.org/10.1177/0886260512471085

Pokorny, A. D., Miller, B. A., & Kaplan, H. B. (1972). The brief MAST: A shortened version of the michigan alcoholism screening test. *The American Journal of Psychiatry, 129*(3), 342–345. https://doi.org/10.1176/ajp.129.3.342

Randall, M. (2010). Sexual assault law, credibility, and "ideal victims": Consent, resistance, and victim blaming. *Canadian journal of women and the law*, *22*(2), 397-433.

Read, J. P., Griffin, M. J., Wardell, J. D., & Ouimette, P. (2014). Coping, PTSD symptoms, and alcohol involvement in trauma-exposed college students in the first three years of college. *Psychology of addictive behaviors: journal of the Society of Psychologists in Addictive Behaviors*, *28*(4), 1052–1064. https://doi.org/10.1037/a0038348

Richardson, H. B., Armstrong, J. L., Hines, D. A., Reed, K. M. P. (2015). Sexual Violence and Help-Seeking Among LGBQ and Heterosexual College Students. Partner Abuse, 6(1).

Rosenberg, Morris. Society and the Adolescent Self-image. Princeton, JF, Princeton University Press.

Rowland, G. E., Purcell, J. B., Lebois, L. M., Kaufman, M. L., & Harnett, N. G. (2024). Child sexual abuse versus adult sexual assault: A review of psychological and neurobiological sequelae. *Mental health science*, *2*(2), e51. https://doi.org/10.1002/mhs2.51

Schacht, R. L., George, W. H., Davis, K. C., Heiman, J. R., Norris, J., Stoner, S. A., & Kajumulo, K. F. (2010). Sexual abuse history, alcohol intoxication, and women's sexual risk behavior. *Archives of sexual behavior*, *39*(4), 898–906. https://doi.org/10.1007/s10508-009-9544-0

Schaeffer, P., Leventhal, J. M., & Asnes, A. G. (2011). Children's disclosures of sexual abuse: Learning from direct inquiry. *Child Abuse & Neglect, 35*(5), 343–352. https://doi.org/10.1016/j.chiabu.2011.01.014

Scoglio, A. A., Lincoln, A., Kraus, S. W., & Molnar, B. E. (2022). Chipped or whole? Listening to survivors' experiences with disclosure following sexual violence. *Journal of interpersonal violence*, *37*(9-10), NP6903-NP6928.

Simpson, J. A. (1998). Sociosexual orientation inventory. In C. M. Davis & W. L. Yarber & R. Bauserman & G. Schreer & S. L. Davis (Eds.), Handbook of Sexuality-Related Measures (pp. 565-567). Thousands Oaks, Calif.: Sage Publications.

Smith, D. W., Letourneau, E. J., Saunders, B. E., Kilpatrick, D. G., Resnick, H. S., Best, C. L. (2000). Delay in disclosure of childhood rape: results from a national survey. *Child Abuse Negl. 24*(2):273-87. doi: 10.1016/s0145-2134(99)00130-1. PMID: 10695522.

Smith, S. G., Zhang, X., Basile, K. C., Merrick, M. T., Wang, J., Kresnow, M., & Chen, J. (2018). *The National Intimate Partner and Sexual Violence Survey: 2015 data brief – updated release.* Centers for Disease Control and Prevention.

Starzynski, L. L., Ullman, S. E., & Vasquez, A. L. (2017). Sexual Assault Survivors' Experiences with Mental Health Professionals: A Qualitative Study. *Women & therapy*, *40*(1-2), 228–246. https://doi.org/10.1080/02703149.2016.1213609

Strauss Swanson, C., & Szymanski, D. M. (2020). From pain to power: An exploration of activism, the #Metoo movement, and healing from sexual assault trauma. *Journal of Counseling Psychology, 67*(6), 653–668. https://doi.org/10.1037/cou0000429

Testa, M., VanZile-Tamsen, C., & Livingston, J. A. (2005). Childhood sexual abuse, relationship satisfaction, and sexual risk taking in a community sample of women. *Journal of consulting and clinical psychology*, *73*(6), 1116–1124. https://doi.org/10.1037/0022-006X.73.6.1116

Testa, M., VanZile-Tamsen, C., Livingston, J. A., & Koss, M. P. (2004). Assessing women's experiences of sexual aggression using the sexual experiences survey: Evidence for validity and implications for research. *Psychology of Women Quarterly*, *28*(3), 256–265. https://doi.org/10.1111/j.1471-6402.2004.00143.x

Thompson, C., Wood, M., Rose, E. (2016). *Viral justice: Survivor-selfies, internet virality and justice for victims of intimate partner violence* [Conference session]. Presented at the British Society of Criminology Conference: "Inequalities in a Diverse World." Retrieved March 10, 2020 from https://d1wqtxts1xzle7.cloudfront.net/46808771/Viral%20Justice_-_paper-with-cover-page-v2.pdf?Expires=1630916201&Signature=a3uxUBaOHFCa02LpQt6KFXFgenF7xIiJVhNprd5zAkANVR410u05tIGbRKDDoHZb6F4LqnMGz3b0e6YF1UeQa5BtEjpcJgR7la~uQn7ZNW1gigzl9VPyXt0BWLH1cqGVseTMRTc~SxDCsrcxRUqbvtIFnXSSJNx~MWC7cFvu~7OkME6WIfJdPULJWW73YovcqIQNn0wofR3WVgEEcTSQS-OarI3nfVpjT6SRR30Q1G-PJ2co-5dStjgVQQEc0Z-IYp1UkHCvDcyQEnOVJPHSvZ4U~vTU~5dQDpV-pPDn2OXo-QIqchKYziDVMRc8cSKlsrgs6jimr3I94mQ8qMFeFQ__&Key-Pair-Id=APKAJLOHF5GGSLRBV4ZA

Ullman, S. E. (2011). Is disclosure of sexual traumas helpful? Comparing experimental laboratory versus field study results. Journal of Aggression, Maltreatment, & Trauma, 20, 148–162. doi: 10.1080/10926771.2011.546751

Ullman, S. E. (2010). Social reactions and their effects on survivors. In S. E. Ullman, *Talking about sexual assault: Society's response to survivors* (pp. 59–82). American Psychological Association. https://doi.org/10.1037/12083-004

Ullman, S. E., Filipas, H. H. (2001). Correlates of formal and informal support seeking in sexual assault victims. *Journal of Interpersonal Violence, 16(*10). 1028-1047.

Ullman, S. E., & Najdowski, C. J. (2011). Prospective changes in attributions of self-blame and social reactions to women's disclosures of adult sexual assault. *Journal of Interpersonal Violence, 26*(10), 1934–1962. https://doi.org/10.1177/0886260510372940

Ullman, S.E. and Peter-Hagene, L. (2014). Social reactions to sexual assault disclosure, coping, perceived control, and PTSD symptoms in sexual assault victims. *J. Community Psychol., 42*: 495-508. https://doi.org/10.1002/jcop.21624

Ullman, S. E., Relyea, M., Peter-Hagene, L., Vasquez, A. L. (2013). Trauma histories, substance use coping, PTSD, and problem substance use among sexual assault victims. *Addict Behav. 38*(6):2219-23. doi: 10.1016/j.addbeh.2013.01.027. Epub 2013 Feb 13. PMID: 23501138; PMCID: PMC3622163.

US Centers for Disease Control and Prevention. (2022). Fast Facts: Preventing Child Sexual Abuse.

Washington, P. (2001). Disclosure patterns of black female sexual assault survivors. *Violence Against Women, 7*, 1254–1283.

Walsh, W. A., Banyard, V. L., Moynihan, M. M., Ward, S., Cohn, E. S. (2010). Disclosure and service use on a college campus after an unwanted sexual experience. *J Trauma Dissociation. 11*(2):134-51. doi: 10.1080/15299730903502912. PMID: 20373203.

Walshe, C. (2020). *Breaking the Silence of Sexual Violence: Identifying the Factors that Affect Help Seeking for Victim/Survivors of Sexual Violence* (Doctoral dissertation, Ulster University).

Weber, D. M., & Herr, N. R. (2017). The Messenger Matters: Invalidating Remarks From Men Provoke a More Negative Emotional Reaction Than Do Remarks From Women.

Psychological Reports, 122(1), 180-200. https://doi.org/10.1177/0033294117748618 (Original work published 2019)

Wekerle, C., Goldstein, A. L., Tanaka, M., Tonmyr, L. (2017). Childhood sexual abuse, sexual motives, and adolescent sexual risk-taking among males and females receiving child welfare services. *Child Abuse Negl.* 66:101-111. doi: 10.1016/j.chiabu.2017.01.013. Epub 2017 Jan 27. PMID: 28139252.

Wilsnack, S. C., Vogeltanz, N. D., Klassen, A. D., & Harris, T. R. (1997). Childhood sexual abuse and women's substance abuse: National survey findings. *Journal of Studies on Alcohol, 58*(3), 264–271. https://doi.org/10.15288/jsa.1997.58.264

Zinzow, H. M., Resnick, H. S., Amstadter, A. B., McCauley, J. L., Ruggiero, K. J., & Kilpatrick, D. G. (2010). Drug- or alcohol-facilitated, incapacitated, and forcible rape in relationship to mental health among a national sample of women. Journal of interpersonal violence, 25(12), 2217–2236.

Figure 1

outcome	Disclosure Status	Perceived Helpfulness	Recipient Type	Assault Type	Perceived Helpfulness × Recipient Type	Perceived Helpfulness × Recipient × Assault Type
DRNK_sum	β = -0.274 p = 0.789	β = 2.706 p = 0.505	β = 17.454; 15.726 p = 0.293; 0.35	β = 3.077 p = 0.342	β = -10; 10.612; 11.431; 15.388; 8.205 p = 0.761; 0.651; 0.63; 0.644; 0.808	β = 10; 16.599; 15.465; -2; -46.702; -91.349; -8; -3.026; -1.871; 26.736; 39.91 p = 0.952; 0.888; 0.896; 0.965; 0.78; 0.588; 0.902; 0.948; 0.968; 0.683; 0.546
SEXAEQ_sum	β = 0.356 p = 0.413	β = 1.473 p = 0.394	β = 7.148; 8.405 p = 0.311; 0.24	β = 1.134 p = 0.411	β = 24; 19.527; 18.02; -25.109; -17.929 p = 0.084; 0.049; 0.072; 0.074; 0.208 *	β = -11; 15.914; 19.453; 0; 12.109; 11.352; 14; 1.653; -0.614; -15.038; -11.682 p = 0.877; 0.754; 0.702; 1; 0.866; 0.876; 0.617; 0.934; 0.975; 0.594; 0.682
DRUG_sum	β = -0.02 p = 0.908	β = 0.672 p = 0.318	β = 1.633; 1.381 p = 0.553; 0.62	β = 0.241 p = 0.653	β = -6.5; -2.093; -1.686; 7.892; 6.035 p = 0.232; 0.589; 0.667; 0.152; 0.279	β = -24; -3.82; -0.053; 0; 27.513; 19.059; 7; 0.79; -0.7; -7.964; -5.17 p = 0.39; 0.847; 0.998; 1; 0.327; 0.502; 0.522; 0.919; 0.929; 0.47; 0.642
AEQ_sum	β = -0.361 p = 0.74	β = -1.634 p = 0.705	β = 20.585; 19.727 p = 0.243; 0.27	β = 1.544 p = 0.654	β = 88.732; 67.73; 60.621; -96.863; -79.895 p = 0.01; 0.006; 0.015; 0.006; 0.024 *	β = 19.459; -62.474; -26.134; -43.558; -18.296; -12.181; 27.709; 53.306; 34.069; -32.161; -26.403 p = 0.912; 0.616; 0.835; 0.37; 0.917; 0.946; 0.687; 0.276; 0.488; 0.643; 0.706
AEQSA_sum	β = 0.198 p = 0.266	β = -0.533 p = 0.453	β = 1.163; 2.202 p = 0.688; 0.453	β = 1.59 p = 0.005 *	β = 8.5; 6.039; 5.765; -10.33; -6.75 p = 0.135; 0.136; 0.159; 0.072; 0.246	β = 6; -15.103; -13.635; -6; -1.53; -1.137; 1; 8.809; 7.886; -3.879; -2.374 p = 0.833; 0.456; 0.503; 0.448; 0.958; 0.969; 0.929; 0.269; 0.324; 0.731; 0.835
DM_sum	β = -0.142 p = 0.624	β = 0.076 p = 0.948	β = 3.577; 2.976 p = 0.448; 0.533	β = -0.133 p = 0.885	β = 13.5; 10.566; 9.216; -14.2; -12.201 p = 0.149; 0.113; 0.172; 0.134; 0.203	β = -9; 8.773; 13.382; 0; 11.137; 3.618; 9; 0.82; -1.786; -10.28; -6.214 p = 0.851; 0.797; 0.696; 1; 0.818; 0.941; 0.633; 0.951; 0.894; 0.588; 0.746
SHE_sum	β = -0.647 p = 0.819	β = 27.142 p = 0.015 *	β = 53.694; 43.988 p = 0.241; 0.343	β = 11.306 p = 0.206	β = -23; 32.965; 19.461; 49.998; 56.16 p = 0.798; 0.607; 0.764; 0.583; 0.542	β = -513; -516.684; -502.606; -205; 567.079; 476.425; 196; 221.994; 209.1; -208.556; -168.57 p = 0.264; 0.114; 0.126; 0.108; 0.221; 0.308; 0.277; 0.084; 0.105; 0.251; 0.358
TSS_sum	β = 0.491 p = 0.313	β = 1.272 p = 0.511	β = -3.796; -2.036 p = 0.631; 0.799	β = 4.024 p = 0.009 *	β = 30.5; 11.364; 12.549; -30.237; -28.807 p = 0.052; 0.308; 0.266; 0.056; 0.073	β = 118; 0.623; -0.618; 0; -109.856; -113.669; -35; 4.914; 5.643; 31.347; 33.544 p = 0.136; 0.991; 0.991; 1; 0.168; 0.158; 0.259; 0.824; 0.799; 0.316; 0.288
SSQ_sum	β = 0.738 p = 0.016 *	β = 0.078 p = 0.949	β = 1.612; 4.869 p = 0.745; 0.333	β = 1.719 p = 0.078	β = 2.5; 3.221; 5.324; -3.549; -0.475 p = 0.8; 0.646; 0.453; 0.722; 0.962	β = -40; -5.289; 4.424; -1; 47.313; 24.568; 17; 3.749; 0.314; -20.786; -10.01 p = 0.423; 0.881; 0.901; 0.942; 0.347; 0.629; 0.386; 0.788; 0.982; 0.293; 0.616
TSI_sum	β = 0.531 p = 0.378	β = 1.747 p = 0.465	β = -8.138; -6.393 p = 0.406; 0.519	β = 7.955 p = 0 *	β = 6.5; -5.64; -3.167; -4.301; -6.439 p = 0.738; 0.684; 0.821; 0.827; 0.747	β = 154; 46.714; 47.6; 29; -136.967; -166.905; -59; -19.784; -19.686; 52.126; 63.482 p = 0.11; 0.494; 0.488; 0.277; 0.158; 0.089; 0.119; 0.461; 0.465; 0.171; 0.099
BSI_sum	β = 0.088 p = 0.756	β = 0.835 p = 0.458	β = -2.444; -2.321 p = 0.595; 0.618	β = 0.649 p = 0.469	β = 10.5; 2.298; 3.382; -9.015; -11.655 p = 0.25; 0.723; 0.607; 0.328; 0.212	β = 63; 16.158; 20.882; 7; -55.972; -69.223; -21; -5.335; -7; 18.496; 23.015 p = 0.178; 0.626; 0.531; 0.589; 0.234; 0.145; 0.252; 0.682; 0.593; 0.316; 0.217
SES_sum	β = -0.113 p = 0.527	β = -0.352 p = 0.622	β = 1.724; 1.345 p = 0.555; 0.649	β = -0.623 p = 0.274	β = 4; 3.857; 3.5; -4.386; -4.394 p = 0.491; 0.351; 0.403; 0.455; 0.46	β = -16; 9.429; 4.5; 1; 12.042; 23.32; 8; -2.405; -0.357; -6.375; -11.113 p = 0.589; 0.654; 0.831; 0.903; 0.686; 0.439; 0.491; 0.771; 0.966; 0.586; 0.347
SOI_sum	β = 0.574 p = 0.232	β = 4.165 p = 0.029 *	β = 6.189; 7.643 p = 0.428; 0.334	β = 1.053 p = 0.49	β = 0.5; 4.864; 6.559; 4.106; 2.896 p = 0.974; 0.657; 0.554; 0.792; 0.854	β = -72; -52.76; -49.941; -23; 68.208; 76.784; 29; 23.057; 22.571; -25.3; -29.521 p = 0.362; 0.347; 0.376; 0.294; 0.391; 0.339; 0.349; 0.296; 0.308; 0.418; 0.349
CUSES_sum	β = 0.178 p = 0.084	β = -0.245 p = 0.552	β = -1.77; -0.94 p = 0.289; 0.578	β = 0.702 p = 0.032 *	β = 2; -0.605; 0.059; -2.485; -1.998 p = 0.546; 0.798; 0.98; 0.459; 0.556	β = 22; 6.824; 8.759; 4; -19.337; -23.146; -8; -2.824; -3.443; 6.57; 8.416 p = 0.192; 0.568; 0.466; 0.392; 0.254; 0.177; 0.226; 0.548; 0.466; 0.324; 0.211
MCAS_sum	β = 0.224 p = 0.461	β = -0.272 p = 0.822	β = 1.745; 2.833 p = 0.724; 0.571	β = -0.622 p = 0.519	β = -6.5; -1.717; 0.382; 7.12; 4.466 p = 0.507; 0.806; 0.957; 0.473; 0.656	β = -54; -60.335; -56.218; -23; 60.809; 53.626; 19; 23.511; 22.614; -21.747; -19.632 p = 0.282; 0.091; 0.117; 0.099; 0.229; 0.293; 0.334; 0.094; 0.108; 0.273; 0.327

Note: Each cell presents the estimated regression coefficient (β) and the corresponding p-value(s) for the predictor indicated in the column header, with the outcome variables listed in rows. For predictors with multiple levels (e.g., categorical variables) or interaction terms, multiple coefficient estimates and p-values are in a single cell, separated by semicolons. An asterisk (*) and highlight indicates that at least one of the p-values in that cell is statistically significant ($p < 0.05$). For detailed results including individual coefficients and corresponding significance, please refer to the supplementary materials.