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Associations Between Childhood Sexual Abuse, Adult Sexual Assault Experiences, Psychological Distress, and Substance Use

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Associations Between Childhood Sexual Abuse, Adult Sexual Assault Experiences, Psychological Distress, and Substance Use

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ABSTRACT: This study evaluates the potential mechanisms underlying the association between childhood sexual abuse (CSA) and substance use among adult women. Moreover, CSA, adult sexual assault (ASA), and psychological distress (including symptoms of depression and perceived stress) was evaluated to determine how it contributes to substance misuse. Past research shows that individuals who experience CSA are more likely to experience ASA, which results in psychological distress. Individuals may use substances to cope with psychological distress from CSA and ASA, consistent with the self-medication hypothesis. Women (N = 225) were recruited from Mechanical Turk (Mturk) and completed an online survey. Results indicate positive correlations between CSA, ASA, psychological distress, problematic drinking, and drug use. Further, there was an indirect effect of CSA on substance use through ASA, but not psychological distress. These results highlight the importance of trauma-informed care for women's psychological distress and problematic substance use.

KEYWORDS: childhood sexual abuse, adult sexual assault, psychological distress, substance use

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INTRODUCTION

In the United States, one in seven adult women have experienced childhood sexual abuse (CSA) (Scoglio et al., 2021). Women with histories of CSA exhibit a higher likelihood of alcohol and other substance use than those without a history of CSA (Messman-Moore & Long, 2000; Classen et al., 2005). CSA is defined as any unwanted sexual contact perpetrated by an adult or by a child five years or older (Hornor, 2010 & Hudson et al., 2017). The necessity to continue research into underlying associations between CSA and problematic substance use is evident as we observe that there are factors (e.g., adult sexual assault (ASA), psychological distress) that influence this relationship.

Previous research on CSA suggests that ASA and psychological distress could be underlying mechanisms for problematic substance use during adulthood (Messman-Moore, 2015; Scoglio et al., 2021). Women who experienced CSA have a 2-13 fold increased risk of experiencing ASA, defined as unwanted sexual experiences, sexual contact, sexual coercion, and forcible rape experienced after the age of 14 (Pinchevsky et al., 2019). Additionally, CSA and ASA may contribute to psychological distress, defined as the individual experience of either singular or cumulative instances of an emotional and or discomforting state. This definition also includes perceived stress and symptoms of depression (Pittenger et al., 2019; Ridner, 2004). Women may use substances to cope with psychological distress, CSA, and ASA experiences. This coping mechanism is consistent with the self-medication model of substance use, in which people engage in substance use to numb, reduce, or escape from psychological pain (Khantzian,1997; Ullman, 2009; Broman et al., 2019).

This study evaluates associations between women's experiences of CSA, ASA, psychological distress, and substance use. Specifically hypothesizing that CSA correlates with increased psychological distress (i.e., depression symptoms and perceived stress,) and ASA. Furthermore, that psychological distress and ASA are associable with increased substance use (see Figure 1 for conceptual model). Research that identifies the mechanisms underlying the relationship between CSA and adult substance use may promote recovery and well-being following CSA and reduce the likelihood of problem substance use.

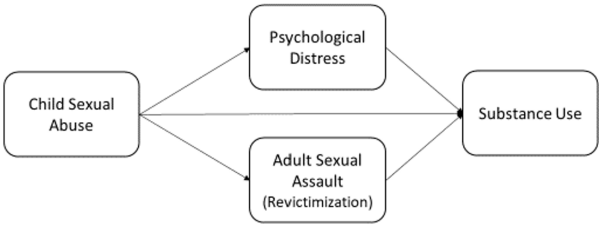

Figure 1. Conceptual model.

Childhood Sexual Abuse and Problem Substance Use

CSA includes a range of behaviors toward children, like unwanted intercourse, fondling, touching genitals, and either exposure to, or forced participation in pornography (Johnson, 2004; Scoglio et al., 2021). A child might not report CSA because they do not recognize an inappropriate action conducted by an adult. Likewise, a young child may not be able to communicate what they are experiencing due to their age (Johnson, 2004 & Scoglio et al., 2021). CSA is more prevalent in girls than boys, and the risk of experiencing sexual violence continues to increase as individuals age (Gray & Rarick, 2018). The average duration of childhood sexual abuse ranges between two and six years (Polusny & Follette, 1995; Arata, 2000). CSA experienced for a long duration through threat or force, sexual penetration, and involvement with a parental figure is more strongly associated with problem substance use in adulthood (Polusny & Follette, 1995; Scoglio et al., 2021).

CSA may lead to increased substance use, particularly when CSA is chronic or severe (Wamser-Nanney & Campbell, 2019). Research has found women who have experienced CSA are more likely to engage in problematic alcohol use compared to women who have not experienced CSA (Simpson & Miller, 2002; Wamser-Nanney & Campbell, 2019). Furthermore, between 14–31% of women diagnosed with substance use disorders have experienced CSA (Polusny & Follette, 1995). This number is compared to the 3–12% of women who were diagnosed with a substance use disorder but were not sexually abused in childhood (Polusny & Follette, 1995). Substance use may be self-medicated to cope with CSA and escape psychological distress (Broman et al., 2021; Khantzian, 1997; Whiffen & Macintosh, 2005). To better understand these pathways, it is important to evaluate potential variables that underlie these associations.

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Sexual Assault Experiences in Adulthood

CSA and ASA have been associated with increased trauma symptoms compared to a single incident of sexual assault during adulthood (Classen et al., 2005; Fortier et al., 2009). A recent meta-analysis of 80 studies, containing more than 12,000 CSA survivors, reported that 47.9% of CSA survivors would experience sexual assault again in the future (Walker et al., 2017). Moreover, women who experience CSA and ASA report being younger (prior to the age of 10) at the time of their initial sexual assault experience compared to individuals who are only sexually assaulted during adulthood (Matta Oshima et al., 2014; Papalia et al., 2020).

Research has found that women who survived both CSA and ASA experienced the greatest frequency and duration of sexual assault in childhood when compared to sole CSA survivors (Classen et al., 2005; Papalia et al., 2020). CSA survivors who experience ASA in adulthood were more likely to have experienced penetration or intercourse during their childhood sexual assault experience (Arata, 2000). Nearly 50% of repeat survivors reported intercourse or penetration compared to 25% of childhood-only survivors (Arata, 2000). Moreover, research has found that CSA perpetrated by family members, is most likely to increase the risk for ASA followed by sexual abuse from peers, and then non-family members (Arata, 2000; Classen et al., 2005). Women who have experienced CSA may be less likely to report experiences of ASA if they believe the behavior is normal due to their childhood experiences, highlighting the need to address CSA early on to reduce experiencing sexual assault in adulthood (Messman-Moore & Long, 2000).

Psychological Distress

CSA and ASA are also associated with psychological distress, including perceived stress and depression symptoms (Classen et al., 2005; Fletcher, 2020; Messman-Moore et al., 2000). Depression symptoms resulting from CSA are also related to the frequency and duration of sexual abuse (Maniglio, 2010). CSA is also more strongly associated with perceived stress for more severe and traumatic forms of sexual violence and multiple perpetrators (Browne & Finkelhor, 1996; Maniglio, 2012; Pittenger et al., 2019).

Research has shown that 97% of women who have experienced both ASA and CSA reported greater symptoms of perceived stress or depression, compared to 86% of women who experienced CSA only (Messman-Moore et al., 2000). Further, more severe CSA sexual violence is associated with increased various other psychological distress symptoms, such as PTSD symptoms in adulthood (Fletcher, 2020 & Maniglio, 2012). Experiences of ASA could trigger associations with experiences of earlier sexual assault, in turn increasing PTSD symptoms due to cumulative impact of multiple experiences (Ullman et al., 2009).

Psychological distress increases risk for engagement in substance use according to previous research (Filipas & Ullman, 2006). This process can be explained by the self-medication model (Broman et al., 2019; Jarvis et al., 1998; Khantizian,1997). This suggests that CSA and ASA survivors engage in substance use to cope with psychological distress and trauma symptoms (Broman et al., 2019; Hall & Queener, 2007; Jarvis et al; 1998; Khantizian, 1996; Ullman, 2016). However, other studies have found that self-medication through repeated and increased use of alcohol to temporarily alleviate psychological distress increases the likelihood of engaging in problematic alcohol use (Hawn et al., 2020; Ullman, 2016). Individuals experiencing PTSD symptoms may engage in drinking because they believe it will reduce distress; other research indicates that drinking can actually result in more PTSD symptoms instead (Fletcher, 2020 & Ullman et al., 2013). Alcohol use to avoid trauma responses may exacerbate or prolong PTSD symptoms by preventing natural emotional responses (Hawn et al., 2020). In other words, individuals may enact substance use to reduce psychological distress in the short-term, which is an unlikely effective long-term solution.

Substance Use and the Current Study

CSA and ASA are associated with high psychological distress, resulting in increased risk for engaging alcohol and other substances to cope with symptoms of depression and perceived stress and reduce psychological distress (Khantizian, 1996; Filipas & Ullman, 2006; Ullman et al., 2008; Ullman et al., 2013). This observation of substance use is consistent with the self-medication model of substance use mentioned above. The substances which individuals choose often depend on the individuals' expectancies about each substance's effects. For example, whether

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they believe utilizing the substance will reduce distress (Broman et al., 2019). Some studies have shown that individuals who use depressants are often motivated to inhibit negative emotions (Broman et al., 2019). Likewise, those who use opiates aim to relieve depression associated with either trauma or painful emotions (Broman et al., 2019). Comparatively, women who experienced CSA may be more prone to use depressants and opiates to inhibit or reduce psychological distress from trauma than non-CSA survivors (Jarvis, 1998; Broman et al., 2019). Further, individuals who engage in substance use due to CSA may feel uncomfortable discussing their emotions and experiences with others, potentially increasing their reliance on substance use (Ullman et al., 2013).
This study hypothesizes that CSA is associable with increased psychological distress (i.e., depression symptoms and perceived stress) and ASA. Furthermore, this study hypothesized that psychological distress and ASA associate with increased substance use.

METHODS

Participants and Procedures

This study recruited 225 women in February, 2021. Eligible participants were required to speak English, reside in the U.S., have an active Amazon Mechanical Turk (MTurk) account, and identify as a woman who was 18 years or older. All women, regardless of their sexual orientation or relationship status, were eligible to participate in the study. Participants were recruited from MTurk and completed the survey hosted on the Qualtrics survey platform. Participants were presented with an explanation-of-research form and their participation consent was indicated by continuing with the study. There was an option where participants could skip questions at any time or withdraw from the study without penalty. At the end of the study, participants were provided with a survey completion code which, when entered into MTurk, compensated them $2.00 USD for their time and participation. The participants were informed that they were participating in a research study about stressful experiences and health behaviors.

Our survey notified the participants about questions containing sensitive content throughout the study and were provided with resources both in the consent forms and at the end of the study. These resources included the national sexual assault, general crisis, mental health, and substance use recovery hotlines. Participants completed the study on any device that had internet service.

Measures

Demographics

Participants were asked to self-report their age, relationship status, race, ethnicity, and sexual orientation.

Childhood Sexual Abuse Survivors

Participants' experiences of childhood abuse were assessed with the 28 item Childhood Trauma Questionnaire (CTQ; Bernstein et al., 1994), which includes subscales for frequency of five different types of childhood trauma: emotional abuse, physical abuse, sexual abuse, emotional neglect, and physical neglect. Only the sexual abuse subscale was used for the current study analyses, which consisted of five items. A five-point Likert scale was used to assess the frequency of each item "when you were growing up" with response options ranging from "never" = 1 to "very often" = 5. Items were averaged such that higher scores indicate more frequent CSA. Reliability and validity have been established for this measure in previous research. Sample items include: "someone touched me in a sexual way/made me touch them" and "I believed that I was sexually abused."

Adult Sexual Assault

The Sexual Experiences Survey (SES-SFV) is a 7-item scale used to measure severity of sexual violence across various tactics (e.g., intoxication, physical force) since the age of 14 (Koss et al., 2007). Responses are coded as an ordinal scale reflecting ASA severity: unwanted sexual contact, sexual coercion, attempted rape and rape. Sample items include: "Someone fondled, kissed, or rubbed up against the private areas of my body or removed some of my clothes without my consent" and "Someone had oral sex with me or made me have oral sex with them without my consent."

Symptoms of Depression

The Center for Epidemiologic Studies Depression Scale (CES-D) is a 20-item self-report scale that assesses depression symptoms over the past month

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(Radlof, 1977). There are four response options which ranged from "rarely or none of the time" (0) to "most or all of the time" (3). Items were averaged such that higher scores indicated more frequent depression symptoms. Sample items include: "I was bothered by things that usually don't bother me." And "I felt that I could not shake off the blues even with help from my family or friends."

Perceived Stress

The Perceived Stress Scale (PSS) is a 10-item scale that measures perception of stress in the past month. The questionnaire included a four-point scale with response options ranging from "0-Never" to "4-Very often" (Cohen et al., 1988). Reverse scored items were recoded such that higher scores indicate more frequent perceived stress, and items were averaged to create a composite score for perceived stress. Sample items on this scale include: "In the last month, how often have you been upset because of something that happened unexpectedly?" and "In the last month, how often have you found that you could not cope with all the things that you had to do?".

Substance Use

Problematic Alcohol Use

Participants' problematic alcohol use was assessed with the Alcohol Use Disorders Identification Test (AUDIT), which is a ten-item screening used by the World Health Organization that assessed frequency and quantity of alcohol consumption, and alcohol related problems (Saunders et al., 1993). A score of 8 or more is considered hazardous and or harmful alcohol use. The AUDIT has been validated across different gender identities and ethnic/racial groups. For question one, individuals chose how often they have a drink containing alcohol from 0 (never) to 4 (four or more times a week). Frequency of alcohol use and problems resulting from alcohol use were assessed on a scale from 0 (never) to 4 (daily or almost daily). Question 2 asked about quantity, and questions 3 through 8 asked a variety of questions measuring the frequency of alcohol related problems. Question 9 assessed if someone had been injured due to a respondent's drinking, and question 10 assessed if the individual has been warned by a doctor, family member, or friend due to their problematic drinking, with yes or no selections. A total score was created in accordance with the original scale specifications. Items on this measure included: "How often do you have a drink containing alcohol?" and "How many drinks containing alcohol do you have on a typical day when you are drinking?"

Drug Use

The Drug History Questionnaire (DHQ; Sobell et al., 1995) was used to assess the use of sixteen different substances that were not prescribed in the past month besides alcohol, such as cannabis, heroin, and sedatives, including an option for "other." Participants were provided with a checklist in which participants were instructed to select all substances they used in the last month. Follow-up questions assessed the frequency of use over the past month, with options including multiple times per day, once per day, once every 2-3 days, once every 4-6 days, once per week and just once in the past month. Given low rates of endorsement, a count of the number of drugs they used in the past month was created to be used in analyses.

Data Analysis Plan

The current study aims to examine the association between CSA, ASA, psychological distress, and substance use. First, descriptive statistics including frequencies, means, and standard deviations were assessed. Then, bivariate correlations were evaluated to determine if CSA was associated with psychological distress (i.e., depression symptoms and perceived stress) and ASA. Then, to test the hypotheses that psychological distress and ASA are two potential underlying mechanisms associated with CSA and substance use, two indirect effects analyses were conducted. The first model assessed CSA as the independent variable, depression symptoms, perceived stress and ASA as parallel mediators, and problematic drinking as the outcome. The second model assessed CSA as the independent variable, depression symptoms, perceived stress and ASA as parallel mediators, and drug use as the outcome. Indirect, direct, and total effects were assessed.

RESULTS

Descriptive Analysis

Participants included n = 225 women between the ages of 19 and 77 years (M = 41.83, SD = 12.87). Participants could select multiple racial identities such

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	M (Sd)	N (%)
Age	41.75 (13.2)	
Gender Identity		225 (100%)
Women		
Race		
White		181 (80.4%)
Black/African American		26 (11.6%)
Asian		19 (8.4%)
Native Hawaiin/Pacific Islander		1 (0.4%)
American Indian or Alaskan Native		4 (1.8%)
Another Identity		5 (0.20%)
Ethnicity		
Hispanic or Latino/a/x		19 (8.4%)
Sexual Orientation		
Heterosexual or straight		197 (87.6%)
Gay or Lesbian		3 (1.3%)
Bisexual		18 (8.0%)
Asexual		5 (2.2%)
Questioning		1 (0.4%)
Another Identity		1 (0.4%)
Primary Relationship Status		
Single		48 (21.3%)
Casually dating or hooking up		7 (3.1%)
Exclusive dating relationship		26 (11.6%)
Married, civil union, or domestic partnership		124 (55.1%)
Employment Status		
Employed full time		119 (52.9%)
Employed part time		51 (22.7%)
Unemployed looking for work		20 (8.9%)
Unemployed not looking for work		24 (10.7%)
Retired		11 (4.9%)

Table 1. Demographic information (N = 225)

that percentages add up to over 100%. The races of the participants were as follows: 80.4% White, 11.6% African American / Black, 8.4% Asian, 0.4% Native Hawaiian or other Pacific Islander, 1.5% American Indian or Alaskan Native, Another Identity 0.20% (Table 1). 8.1% of participants self-identified their ethnicity as Hispanic or Latino/a/x. The participants were 87.6% heterosexual or straight, 55.1% were in a marriage, civil union or domestic partnership, and 52.9% were employed full time. Further information on sexual orientation, relationship status and employment prevalence can also be viewed in Table 1. Sixty-six (29.3%) women reported at least one form of CSA and 100 (44.5%) women reported at least one experience of ASA. Further, 69 (30.7%) women reported drug use within the past month and 140 (62.2%) women reported alcohol use in the past year. Bivariate correlations were also assessed (Table 2.) Results from bivariate correlations indicate that CSA is significantly positively associated to ASA and problematic alcohol use and drug use. CSA and ASA are also positively correlated with current perceived stress and depression symptoms (Table 2).

Hypothesis Testing

To test the hypotheses that psychological distress and ASA are two potential mechanisms underlying the association between CSA and substance use, two indirect effects models were examined, with problematic drinking and drug use as outcomes, respectively. First, a model was examined CSA as the independent variable, depression symptoms, perceived stress and ASA as parallel mediators, and problematic drinking as the outcome. As shown in Table 3, CSA was significantly associated with ASA, depression symptoms, and perceived stress. In turn, ASA was associated with problematic drinking; the effects of depression symptoms and perceived stress on problematic drinking were not significant. The total effect of CSA on problematic drinking was significant: b = .94, SE = .44, p = .034, 95% CI: 0.07, 1.81; the direct effect after accounting for other variables in the model was not significant b = .28, SE = .44, p = .527, 95% CI: -0.59, 1.15. The indirect effect of CSA on problematic drinking through ASA was significant (effect = .44, SE = .17; 95% CI [0.16, 0.84]) but the indirect effects through depression (effect = .32, SE = .32; 95% CI [-0.20, 1.07]) and perceived stress (effect = -.10, SE = .19; 95% CI [-0.56, 0.22]) were not significant. Finally, the total indirect effect of CSA on problematic drinking through ASA, symptoms of depression, and perceived stress was significant, based on a confidence interval that does not include zero

	1	2	3	4	5	6	7
1. CSA	—						
2. ASA	0.27**	—					
3. PTSD	0.30**	0.32**	—				
4. Depression	0.27**	0.32**	0.79**	—			
5. Perceived Stress	0.21**	0.19	0.67**	0.85**	—		
6. Drug Use	0.19**	0.40**	0.26**	0.18**	0.13**	—	
7. Alcohol Use	0.16**	0.35**	0.27	0.25**	0.17**	0.36**	—
Mean	0.45	1.87	1.87	1.85	1.53	0.54	3.61
SD	0.93	2.24	0.84	0.61	0.87	0.88	5.43

Table 2. Bivariate correlations and descriptive statistics (N = 225) Note. *p < .05, **p < .01

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	B (SE)	*p*	95% CI: [LL, UL]
Outcome: ASA			
Intercept	1.82 (0.19)	< .001**	[1.45, 2.19]
CSA	0.65 (0.18)	< .001**	[0.29, 1.01]
Outcome: Depression symptoms			
Intercept	1.77 (0.05)	< .001**	[1.67, 1.87]
CSA	0.18 (0.05)	< .001**	[0.08, 0.28]
Outcome: Perceived stress			
Intercept	1.44 (0.07)	< .001**	[1.29, 1.58]
CSA	0.19 (0.07)	< .008**	[0.05, 0.33]
Outcome: Problematic drinking			
Intercept	-0.49 (1.40)	.728	[-3.26, 2.28]
CSA	0.28 (0.44)	.537	[-0.59, 1.15]
ASA	0.67 (0.19)	< .001**	[0.30, 1.05]
Depression symptoms	1.81 (1.34)	.177	[-0.83, 4.45]
Perceived Stress	-0.52 (0.90)	.566	[-2.29, 1.26]
Total effect of CSA on problematic drinking	0.94 (0.44)	<.05*	[0.07,1.81]
Direct effect of CSA on problem drinking	0.28 (0.44)	*n.s.*	[-0.59, 1.15]
Indirect effect of CSA on problem drinking via ASA	0.44 (0.17)	<.05*	[0.16, 0.84]
Indirect effect of CSA on problem drinking via depression	0.32 (0.32)	*n.s.*	[-0.20, 1.07]
Indirect effect of CSA on problem drinking via perceived stress	-0.10 (0.19)	*n.s.*	[-0.56, 0.22]
Total indirect effect of CSA on problem drinking (via ASA, depression, and perceived stress)	0.66 (0.25)		[0.24, 1.23]

Table 3. Indirect effects analysis predicting problematic drinking ($N = 225$) Note. $^{*}p < .05$, $^{**}p < .01$.

(effect = .66, SE = .25; 95% CI [0.24, 1.23]).

Finally, a model was examined with CSA as the independent variable, depression symptoms, perceived stress and ASA as parallel mediators, and drug use as the outcome. As shown in Table 4, CSA was significantly associated with ASA, depression symptoms, and perceived stress. In turn, ASA was associated with drug use; however, the effects of depression symptoms and perceived stress on drug use were not significant. The total effect of CSA on drug use was significant, b = .17, SE = .07, p = .009, 95% CI: 0.04, 0.30; and the direct effect after accounting for other variables in the model was not significant b = .08, SE = .06, p = .246, 95% CI: -0.05, 0.20. The indirect effect of CSA on drug use through ASA was significant (effect = .09, SE = .03; 95% CI [0.04,

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	B (SE)	*p*	95% CI: [LL, UL]
Outcome: ASA			
Intercept	1.71 (0.17)	< .001**	[1.37, 2.05]
CSA	0.63 (0.17)	< .001**	[0.30, 0.95]
Outcome: Depression symptoms			
Intercept	1.77 (0.05)	< .001**	[1.68, 1.87]
CSA	0.17 (0.04)	< .001**	[0.08, 0.26]
Outcome: Perceived stress			
Intercept	1.44 (0.07)	< .001**	[1.31, 1.57]
CSA	0.20 (0.06)	.003**	[0.07, 0.32]
Outcome: Drug Use			
Intercept	0.16 (0.21)	.454	[-0.25, 0.57]
CSA	0.08 (0.06)	.246	[-0.05, 0.20]
ASA	0.14 (0.03)	< .001**	[0.09, 0.20]
Depression symptoms	0.01 (0.19)	.974	[-0.37, 0.38]
Perceived Stress	0.04 (0.13)	.769	[-0.22, 0.29]
Total effect of CSA on drug use	0.17 (0.07)	<.05*	[0.04, 0.30]
Direct effect of CSA on drug use	0.08 (0.06)	*n.s.*	[-0.05, 0.20]
Indirect effect of CSA on drug use via ASA	0.09 (0.03)	<.05*	[0.04, 0.17]
Indirect effect of CSA on drug use via depression	0.001 (0.03)	*n.s.*	[-0.07, 0.07]
Indirect effect of CSA on drug use via perceived stress	0.01 (0.03)	*n.s.*	[-0.05, 0.06]
Total indirect effect of CSA on drug use (via ASA, depression, and perceived stress)	0.10 (0.03)		[0.03, 0.17]

Table 4. Indirect effects analysis predicting drug use ($N = 225$) Note. *$p < .05$, **$p < .01$.

0.17]) but the indirect effects through depression (effect = .001, SE = .03; 95% CI [-0.07, 0.07]) and perceived stress (effect = .01, SE = .03; 95% CI [-0.05, 0.06]) were not significant. Finally, the total indirect effect of CSA on drug use through ASA, symptoms of depression, and perceived stress was significant, based on a confidence interval that does not include zero (effect = .10, SE = .03; 95% CI [0.03, 0.17]), suggesting that more women's experiences of CSA is associated with their drug use through its effects on ASA and psychological distress.

DISCUSSION

The results indicated that CSA, ASA, depression symptoms, perceived stress, problematic drinking, and drug use are all positively correlated. However,

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the results in the full model indicated that CSA has and indirect effect on substance use through ASA, but not through depression or perceived stress. This indicates that while both perceived stress indicators are associated with substance use in bivariate analyses, their impact on substance use is not significant after accounting for the effects of ASA. In other words, symptoms of depression and perceived stress were not significant predictors of substance use in the full model. This may be due to symptoms of depression and perceived stress being positively correlated with ASA and potentially explaining shared variance in substance use. These findings indicated that additional research is needed to clarify the role of psychological distress in substance use within the context of women's experiences of assault. Therefore, the results provide partial support for the selfmedication hypothesis, consistent with previous findings (Broman et al., 2019; Khantizian 1996; Ullman et al., 2013). Current findings indicate that CSA and ASA are positively correlated with current perceived stress and depression symptoms align with previous research (Maniglio, 2010 & Pittenger et al., 2019). The severity of experiences were positively related to PTSD symptoms among individuals who reported experiencingsome form of sexual assault during either childhood, adulthood, or during both. This conclusion is also consistent with existing research (Jarvis et al., 1998; Ullman et al., 2013; Ullman, 2016). This study contributes to existing research by providing results that evaluate women's experiences of both CSA and ASA while most literature only examines CSA or ASA, without accounting for the potential effect of the other and their association with substance use.

Strengths, limitations, and suggestions for future research

There are several notable strengths of this study. This study included women of all ages, which builds upon past research that often focuses primarily on college-age women. Including women of all ages in the current study, provides the ability to assess sexual assault experiences from women in young adulthood compared to women who are older and demonstrate that associations between CSA, ASA, psychological distress and substance use exist across the adult lifespan. Also, this study assessed several psychological and behavioral outcomes of CSA, which provides a more comprehensive examination of the experiences of CSA survivors. Moreover, this study replicated several established findings regarding the associations between CSA, ASA, and psychological distress (Browne & Finkelhor,1996; Papalia et al., 2020; Polusny & Follette, 1995; Ullman et al., 2009; Whiffen & Macintosh, 2005) like CSA and ASA being positively associated with symptoms of perceived stress and depression. Further research is needed to address specifically how severity and duration of sexual assault during childhood and or adulthood may influence levels of perceived stress and symptoms of depression.

There are limitations of this study. This study focused only on women because research has shown that sexual violence occurs more frequently among women compared to men. However, this does not mean that men's CSA experiences are less important. Therefore, further research is needed on the impact of CSA and ASA on men, including potential experiences of psychological distress and substance use in adulthood. Men may potentially be less likely to label their experiences of sexual violence as sexual assault due to societal norms that suggest men should be assertive and in control of their emotions (Petersson & Plantin, 2019). Also, most of the women who participated in the study were white, thus further research is needed on the unique impact of CSA and ASA in racial and ethnic minority communities. Furthermore, this study required participants to report experiences from childhood, which could result in recall bias. Furthermore, this study was completed in February, 2021, during the COVID-19 pandemic. This factor may reflect instances of heightened psychological distress due to quarantine regulations and lacking social interaction. The final notable limitation to this study considers how it only assessed problematic substance use.

Additional health risk behaviors resulting from CSA and ASA should be considered in future research such as risky sexual behavior and suicidal behavior. Research has suggested that CSA and ASA survivors are more likely to engage in risky sexual behaviors than individuals who have not experienced such forms of abuse, these actions are potentially used as a means to cope (Littleton et al., 2014). Moreover, CSA and ASA are associated with suicidal behavior and other self-harm behaviors (Sigurvinsdottir et al., 2020), but these relations are underexplored and may provide an important extension of the findings on psychological distress reported in the current study. Exploring how CSA and ASA are associated with a broader range of

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health risk behaviors could provide an opportunity to examine potential relationships between risk behaviors and establish intervention and prevention methods to reduce engagement in these behaviors or to encourage alternative coping behaviors. Additional research on the specific coping strategies an individual uses following an assault may also provide more insight into these processes. For example, substance use may be considered a type of avoidance coping strategy that assists with ones effort to minimize the effects of a traumatic event (Asberg & Renk, 2012; Berg et al., 2017). The cross-sectional design of the study proved inconclusive regarding either causal or temporal relationships to CSA's impacts between childhood and early adulthood. Future research should instead implement longitudinal methods when assessing and identifying risky behaviors exhibited during adolescence, to reduce these behaviors in adulthood.

Implications and Conclusions

CSA impacts many women. Practical intervention and prevention methods may help reduce the impacts CSA could have on subsequent assault in adulthood, psychological distress, and health risk behaviors. This study highlights the importance of trauma-informed services for individuals who misuse substances (Hall & Queener, 2007; Ullman et al.,2013). Trauma-informed services would provide individuals with trauma-specific assistance. Individuals seeking help for problematic substance-use should be screened for trauma, given previous research portraying their co-occurance. Given ASA prevalence among college students, campuses should make sexual assault screening services more readily available. Further, initiatives toward reducing the stigma against mental health care would be helpful to better support individuals experiencing trauma and psychological distress.

Overall, CSA, ASA, and substance use in adulthood consistently co-occur. The proposed model to assess the underlying mechanisms between CSA and substance use revealed a significantly indirect effect through ASA. The results emphasize the combined impact of multiple trauma forms on substance use among adult women. In addition to preventing CSA and ASA, it is important for interventions to focus on psychological distress and health risk behaviors for individuals when these forms of trauma have already occurred.

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