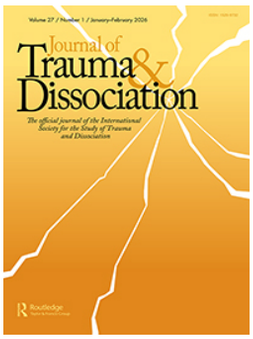

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RESEARCH ARTICLE

Contextual Factors Associated with Posttraumatic Stress Among Campus Sexual Assault Survivors

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ABSTRACT

Sexual assault has been repeatedly associated with multiple types of psychological distress, including posttraumatic stress. Post-assault outcomes are frequently linked to individual psychological processes (e.g. cognitions, behaviors) that are targeted in common psychotherapies, yet contextual factors (e.g. relationships, institutional factors) also play important roles in distress. Using a socioecological approach, this study examined how contextual factors such as institutional betrayal cross-sectionally predict posttraumatic stress in a sample of campus sexual assault survivors who enrolled at a large, public university in the Pacific Northwest of the United States and who disclosed their assault to another person ($N = 245$). Results indicated that multiple contextual factors outside of the individual (e.g. relationship with perpetrator, reactions to disclosure, institutional betrayal) were significantly associated with posttraumatic stress ($r's = .27$-$.51$) and explained significant unique variance in posttraumatic stress in regression analyses. These associations remained even after controlling for self-blame cognitions and avoidance coping behaviors – two individual-level factors frequently addressed by evidence-based treatments for posttraumatic stress. Such results highlight a need for psychological and public health interventions that target higher levels of the social ecology, such as relational or institutional interventions.

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Sexual violence; campus sexual assault; posttraumatic stress; institutional betrayal; disclosure

Sexual assault remains widespread across college campuses in the United States, particularly among women and gender nonconforming students (Mellins et al., 2017). These rates are significant, given the preponderance of evidence linking sexual assault to multiple types of psychological distress, including posttraumatic stress (Dworkin et al., 2017). To identify and aid survivors most at risk, research has investigated factors that influence associations between sexual violence and posttraumatic stress. Common targets of this research are factors *within* the individual survivor that can be readily addressed by cognitive-behavioral interventions, such as cognitions (e.g.,

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inaccurate self-blame) and behaviors (e.g., engagement in avoidance). A substantial body of literature has documented that survivors who attribute their assault to controllable, past behaviors report higher levels of distress (Kline et al., 2021; Najdowski & Ullman, 2009; Ullman et al., 2007). In addition, multiple studies have found that coping strategies involving avoidance (e.g., substance use, distraction) exacerbate posttraumatic stress after sexual assault (Batchelder et al., 2021; Najdowski & Ullman, 2009; Ullman et al., 2007, 2013).

Although extensive research has identified the role of individual factors, less is known about how these processes interact with survivors' broader social and institutional environments. Prior research has often neglected to examine how contextual factors *outside* of the survivor (e.g., experiences in interpersonal relationships) and those unique to campus sexual assault (e.g., interactions with university institutions) operate in tandem with individual characteristics. Drawing from socioecological theory and betrayal trauma frameworks, this study investigates how multiple relational and institutional contextual variables, including institutional betrayal, are associated with survivors' posttraumatic stress symptoms, above and beyond individual factors. Specifically, we assess self-blame and avoidance, which are conceptualized as cognitive and behavioral responses that may maintain or exacerbate posttraumatic stress, within the context of victim-perpetrator relationship, perceived social support, social reactions to disclosure, and institutional betrayal.

Contextual approach to campus sexual assault

A socioecological approach to sexual violence emphasizes the crucial role of context in understanding distress after victimization. The application of Bronfenbrenner's ecological systems theory (Bronfenbrenner, 1979) to sexual assault (Campbell et al., 2009; Neville & Heppner, 1999) illustrates how mental health outcomes are a product of the complex and intricate web of relationships that exist between the characteristics of the individual survivor (e.g., use of coping strategies, cognitions) and the multiple levels of their surrounding environment. These levels (Campbell et al., 2009) include the *microsystem* (e.g., direct relational/interpersonal interactions, including social support and reactions to disclosure), *meso/exosystem* (e.g., interactions between individuals and systems, including medical or legal institutions), and *macrosystem* (e.g., sociocultural values and practices, including cultural beliefs about rape). Therefore, a socioecological approach specific to campus sexual assault would acknowledge the unique context of college settings. In the current study, we take a first step in this approach by focusing specifically on three levels of nested influence – individual, *microsystem*, and *meso/exosystem* – within the college context. Although consideration of the macrosystem is crucial, we limit our discussion to factors at lower levels of the social ecology,

as our sample is drawn from one, predominantly white university in the United States. The lack of literature examining *macrosystem* factors (Dworkin & Weaver, 2021) suggests that this should be an area of future investigation.

Microsystem factors

Examining campus sexual assault through a socioecological lens reveals important contextual factors at the *microsystem* level. For college students, these microsystem-level relationships often span both on-campus and off-campus contexts, as their social networks typically include family, hometown friends, romantic partners, and peers within the university. In the current study, we focus on three key relational factors: 1) perceived social support, (2) victim – perpetrator relationship closeness, and 3) harmful reactions to disclosure.

Although campuses vary, college enrollment in the United States frequently involves separation from family and established support networks. This shift in social organization may leave a gap in general perceptions of social support, which is a critical buffer against negative mental health outcomes among survivors (Bryant-Davis et al., 2011; Howe & Dworkin, 2024; Ullman et al., 2007). Such disruptions in social support, either due to distance from existing relationships or challenges forming new connections on campus, may increase vulnerability to higher levels of posttraumatic stress among student survivors.

Furthermore, college life often involves a close social dependence on and frequent contact with fellow students, with whom one regularly attends class. Because of the close-knit and interconnected social and relationship structure of campus environments, survivors are usually acquainted with perpetrators, with many survivors reporting additional interactions after the assault occurred (Rosenthal & Freyd, 2022). Relational closeness with one's perpetrator is important to note given predictions made by *betrayal trauma theory* (Freyd, 1996), which suggest that a close relationship with a perpetrator, particularly one that involves trust or dependence, is related to higher levels of posttraumatic stress symptoms (Tang & Freyd, 2012). Thus, victim-perpetrator relationship, operationalized as the degree of familiarity between the student survivor and perpetrator, may play an important role in campus sexual violence outcomes, such that a closer relationship with the perpetrator may be related to higher levels of posttraumatic stress.

Finally, many survivors disclose their assault to someone else, with the most common recipients being family or friends (Orchowski & Gidycz, 2015). These recipients, in turn, will express a range of *social reactions* that affect survivors' mental health and that are central to the survivor's relational environment. Extensive research suggests that negative responses to disclosure, such as Turning Against (e.g., stigmatizing, infantilizing, blaming) and

Unsupportive Acknowledgment (e.g., distracting, controlling, or egocentric responses) are robust predictors of distress after victimization (Ullman, 2023). Thus, the potency of negative responses may be influential for campus sexual assault survivors, given that most survivors report receiving both helpful and unhelpful responses (Filipas & Ullman, 2001; Salim et al., 2022), many college student peers may not know how to respond to disclosures effectively, and normalized "hookup" culture is prevalent on college campuses. Specifically, student survivors may be more likely to receive Unsupportive Acknowledgment or Turning Against responses from either their family or friends that relate to higher levels of posttraumatic stress.

Meso/Exosystem: institutional betrayal

Survivors' experiences of campus sexual assault can also be profoundly influenced by harmful interactions with larger university institutions within their *meso/exosystem*. Within this level, we focus specifically on *institutional betrayal* (Smith & Freyd, 2014). Institutional betrayal occurs when a trusted institution fails to protect its members from violence (when there is a reasonable expectation to do so) or responds inadequately to it (when there is a reasonable expectation of justice; Smith & Freyd, 2014). As college students frequently depend upon universities for vital resources (e.g., education, work, health, safety), survivors of campus sexual assault may be vulnerable to institutional betrayal. Indeed, some of the most frequently cited examples of institutional betrayal include universities' perpetuations of "rape culture" that create environments where sexual violence is more likely to occur, as well as complicity in covering up reports of sexual violence (Smith & Freyd, 2014). Experiencing institutional betrayal has been associated with sexual violence-related sequalae, including higher levels of posttraumatic stress (Smith & Freyd, 2014, 2017). Because these experiences extend beyond the interpersonal domain and involve dynamics of power, trust, and dependence, institutional betrayal represents a distinct yet complementary dimension of survivors' social ecology.

Current study

Building on prior research explicitly taking socioecological approaches (Bhochhibhoya et al., 2021; Herres et al., 2021; Walsh et al., 2021), the current study investigates how contextual factors at multiple levels of the social ecology are uniquely associated with posttraumatic stress among undergraduate campus sexual assault survivors. Our primary goal was to clarify how microsystem and meso/exosystem variables simultaneously contribute to survivors' posttraumatic stress after accounting for individual-level processes. Contextual variables examined in this study include three relational factors

within the microsystem (social support, victim-perpetrator relationship, harmful reactions to disclosure) and one institutional factor in the meso/exosystem (institutional betrayal). We also included two individual factors (avoidance, self-blame) to serve as covariates and points of comparison. Although prior research has provided evidence that each contextual variable plays a significant role in posttraumatic stress, it has often examined each variable in isolation and/or without reference to individual-level factors that are common targets of clinical intervention. There are a handful of studies that have examined individual coping, social support, disclosure reactions, and posttraumatic stress symptoms in tandem (Littleton, 2010; Ullman & Peter-Hagene, 2014; Ullman & Relyea, 2016; Ullman et al., 2007). However, no study of our knowledge has examined these factors together in the context of both the victim-perpetrator relationship and institutional betrayal from a betrayal trauma perspective and in which factors from three levels of the social ecology (individual, microsystem, and mesosystem) are included in the same analysis. However, research has previously examined institutional betrayal in the context of identity characteristics (Gómez, 2022; Smidt et al., 2021), individual mental health outcomes (Hannan et al., 2021; Pinciotti & Orcutt, 2021), and interpersonal violence (Smith & Freyd, 2017). It remains unclear if institutional betrayal within the meso/exosystem explains unique variance in posttraumatic stress after accounting for both lower-level microsystem and individual factors. Thus, additional examination and replication are needed.

In the current study, we had two primary hypotheses:

Hypothesis 1: Each contextual factor (i.e., victim-perpetrator relationship, social support, negative reactions to disclosure, and institutional betrayal) will have significant bivariate associations with posttraumatic stress.

Hypothesis 2: Each contextual factor (i.e., victim-perpetrator relationship, social support, negative reactions to disclosure, and institutional betrayal) will be associated with variance in posttraumatic stress in regression analyses, while controlling for covariates, including assault history, demographic characteristics, and individual factors (i.e., avoidance, self-blame).

Method

Participants

Participants were recruited from the Human Subjects Pool at a large, public university in the Pacific Northwest of the United States and received course credit for completion. The university's pool is designed to minimize self-selection bias, such that students sign up for studies

Table 1. Sample demographics ($N = 245$).

Age	*n*(%)	Race/Ethnicity^	*n*(%)
18	55(22.4)	Alaskan Native/Native American	2(0.8)
19	84(34.3)	Asian/Asian American	33(13.5)
20	53(21.6)	Black/African American	19(7.8)
21	36(14.9)	Hispanic/Latino	38(15.5)
22	12(4.9)	Middle Eastern/North African	4(1.6)
23	2(0.8)	Native Hawaiian/Pacific Islander	7(3.9)
24	1(0.4)	White/European American	188(76.7)
25+	1(0.4)	Not Listed/Self-Describe	3(1.2)
No Answer	1(0.4)	No Answer	0(0.0)
Student Year		**Relationship Status**	
First-year	98(40.0)	Single	161(65.7)
Second-year	69(28.2)	In a relationship	84(34.3)
Third-year	49(20.0)	**Sexual Orientation**	
Fourth-year	27(11.0)	Asexual	1(0.4)
Other/Describe	2(0.8)	Bisexual	56(22.9)
Gender		Gay	2(0.8)
Woman	196(80.0)	Heterosexual	159(64.9)
Man	34(13.9)	Lesbian	5(2.0)
Non-Binary	5(2.0)	Queer	7(2.9)
Not Listed/Other	5(2.0)	Pansexual	10(4.1)
No Answer	5(2.0)	Not listed/Other	5(2.0)
Sex		No Answer	0(0.0)
Matches Birth	232(94.7)		
Does Not Match	12(4.9)		
No Answer	1(0.4)		

Note. Percentages may not add up to 100 due to rounding. ^Frequencies will not add up to 245, as participants were able to select all identities that applied to them.

without knowing the topic beforehand (but are informed during the consent process). In the initial survey, 1921 students completed the informed consent form. Of those who consented ($N = 1917$), 1873 (97.7%) completed at least 90% of the survey. Among survey completers, (3.4%; $n = 64$) individuals incorrectly answered more than one of six attention check questions (e.g., "Please choose agree if you are paying attention") and were excluded from data analysis. Only a subsample of survivors of sexual violence (as assessed by the SES-LFV; Koss et al., 2006) who disclosed this experience to a friend or family member ($n = 245$; 63.5% of survivors) were included in final analyses. Overall, these participants endorsed an average of 2.97 instances of sexual assault during college ($SD = 2.98$), and 68.2% ($n = 167$) also endorsed experiencing at least one instance of nonconsensual sexual contact prior to college. See Table 1 for demographic characteristics.

Procedure

All survey procedures were approved by the university's Office of Research Compliance. After consenting, participants completed a series of questionnaires via Qualtrics survey software on a personal electronic device. After completing, they were provided with a debriefing form, which contained

community resources for sexual violence. Procedures for this study have been previously reported on in (Adams-Clark et al., 2024).

Measures

Sexual assault history

Sexual assault victimization history was measured using the 17-item Sexual Experiences Questionnaire – Long Form Version (SES-LFV; Koss et al., 2006). On the SES, participants report the frequency with which they have been exposed to 17 types of events that constitute harassment, nonconsensual sexual contact (non-penetrative), and/or rape. Response options range from 0 ("Never") to 3 ("3 or more times"). Items on the SES use behaviorally specific language, instead of the labels "sexual assault" or "rape." Because this scale involves retrospective reporting on life events, an index of internal consistency is inappropriate. In this study, participants rated items both prior to and during college. Ratings of items corresponding to any form of attempted/completed nonconsensual sexual contact or rape (seven items total) were summed to create indices of sexual assault (Koss et al., 2006; see; Davis et al., 2014, for scoring instructions). Separate indices were created for college and pre-college sexual assault.

Avoidance

Avoidance coping was measured using the Avoidance subscale of the 28-item Coping Orientation to Problems Experienced Inventory (Brief-COPE; Carver, 1997). On the Brief-COPE, participants rate the frequency that they use specific avoidant coping strategies (e.g., distraction, substance use) from 1 ("I haven't been doing this at all") to 4 ("I've been doing this a lot"). This scale measures general avoidance (i.e., not specific to sexual assault). Item ratings were averaged to create a score for each participant. The Brief-COPE has demonstrated satisfactory reliability and validity in prior research (Carver, 1997) and in the present study ($\alpha = .75$).

Self-blame

Self-blame was measured using the three-item Self-Blame subscale of the Posttraumatic Cognitions Inventory – Brief (PTCI-B; Wells et al., 2019). On the PTCI-B, participants rate their agreement with statements about a traumatic event from 1 ("Totally disagree") to 7 ("Totally agree"). Participants answered the items in relation to the most distressing sexual assault experience during college. Ratings on each item were averaged to create a score for each participant. The PTCI-B has demonstrated satisfactory reliability and validity in prior studies (Wells et al., 2019) and in this study ($\alpha = .78$).

Social support

Social support was measured using the 12-item Multidimensional Scale of Perceived Social Support (MSPSS; Zimet et al., 1988). On the MSPSS, participants rate their general agreement with 12 statements related to general social support (i.e., not specific to sexual assault; e.g., "I get the emotional help and support I need from my family") on a scale of 1 ("Very strongly disagree") to 7 ("Very strongly agree"). Participants' ratings were summed to create a total score. The MSPSS has demonstrated satisfactory validity and reliability in prior research (Zimet et al., 1988) and in the present study ($\alpha = .88$).

Reactions to disclosures

Reactions to disclosure of sexual assault were measured using the 16-item Social Reactions Questionnaire – Short (SRS-S; Ullman et al., 2017). Participants completed the SRQ-S in relation to their most distressing campus sexual assault event. Participants rated the degree to which they have received specific responses from family and/or friends during disclosure from 0 ("Never") to 4 ("Always"). The SRQ-S contains three subscales, which include Turning Against, Unsupportive Acknowledgment and Positive Reactions. Only the Turning Against (six items) and Unsupportive Acknowledgment (six items) subscales were used in analyses. The Turning Against and Unsupportive Acknowledgment subscales have demonstrated satisfactory reliability and validity in prior research (Ullman et al., 2017) and in the present study (α's = .85 and .74, respectively).

Institutional betrayal

Institutional betrayal was measured using the Institutional Betrayal Questionnaire (IBQ; Smith & Freyd, 2017). The IBQ is a 12-item measure that is answered in relation to a traumatic event that occurs within an institutional context. In this study, the IBQ measured the degree to which the university either 1) failed to prevent a sexual assault event(s) from occurring (e.g., "Did the university play a role by creating an environment in which this type of experience seemed more likely to occur?"), or 2) did not adequately address the sexual assault event(s) after it occurred (e.g., "Did the university play a role by making it difficult to report the experience?"). Participants select from three response options: "Yes," "No," and "Not Applicable." Items endorsed as "Yes" by each participant were summed to create a total index of institutional betrayal. Because this scale involves retrospective reporting on life events, an index of internal consistency is inappropriate.

Post-traumatic stress

Posttraumatic stress was measured using the 20-item Post-Traumatic Stress Disorder Checklist for DSM-5 (PCL-5; Weathers et al., 2013). On the PCL-5, participants rate the frequency with which they have experienced

posttraumatic stress symptoms (e.g., "Repeated, disturbing, and unwanted memories") in the past month. Response options range from 0 ("Never") to 4 ("Extremely"). Participants completed this survey in relation to their most distressing experience of sexual assault during college. Participants' ratings on each item were summed to create a total score. The PCL-5 has demonstrated reliability in past research and in the current study ($\alpha = .96$).

Demographic and assault characteristics

Participants answered questions regarding demographic characteristics, including their gender ("What is your gender?" with answer options "man," "woman," "nonbinary," and "a gender not listed here"), age ("What is your age?" with answer options 18 through 26+ years), sex ("Does your gender identity match the sex that you were assigned at birth? [People who answer no to this question may identify as transgender] with answer options "yes" or "no"), sexual orientation/identity ("What term best describes your sexual orientation?" with answer options "Asexual," "Bisexual," "Gay," "Heterosexual/straight," "Lesbian," "Pansexual," "Queer," and "A sexual orientation not listed here"), race/ethnicity ("What is your race/ethnicity? Select all that apply" with answer options "Native American/Alaskan Native," "Asian/Asian American," "Black/African American," "Hispanic/Latino," "Middle Eastern," "Native Hawaiian/Pacific Islander," "White/European," and "A race/ethnicity not listed here"), relationship status ("What is your current relationship status?" with answer options "single" or "in a relationship") and academic/student statuses ("What is your student status?" with answer options "first year," "second-year [sophomore]," "third year [junior]," "fourth-year [senior]," and "other"). Three variables were derived to serve as covariates based on their association with posttraumatic stress in past literature (e.g., Gómez, 2021; Marchi et al., 2023; Mekawi et al., 2021) and in the current study (see preliminary analyses): gender (0 = woman, 1 = man, 2 = nonbinary/other gender), nonwhite racial/ethnic identity (0 = white; 1 = nonwhite), and non-heterosexual sexual identity (0 = heterosexual; 1 = non-heterosexual).[1] Participants were also asked about characteristics of the most distressing sexual assault event(s) during college, but only victim-perpetrator relationship was examined in the current study, given prior research linking victim-perpetrator relationship to posttraumatic outcomes (Tang & Freyd, 2012, 0 = stranger, 1 = acquaintance, 2 = close other/friend/partner, which were transformed into dummy coding during regression analyses).

[1]Re recognize that a single variable representing race/ethnicity and sexual orientation (with the majority group as a reference group) is an over-simplified practice. We resorted to this practice due to low cell sizes for each racial or ethnic identity group.

Data analysis plan

Preliminary analyses were conducted to guide inclusion of covariates. To evaluate Hypothesis 1, descriptive statistics and Pearson's *r* correlation coefficients were calculated for continuous variables. T-tests were used to examine differences in posttraumatic stress based on victim-perpetrator relationship. To evaluate Hypothesis 2, a regression model predicting posttraumatic stress was estimated with multiple steps corresponding to the individual, microsystem, and meso/exosystem levels of the social ecology.[2] The first step of each model contained the sexual assault history variables (i.e., pre-college sexual assault, college sexual assault), demographic characteristics, and individual factors (i.e., avoidance coping, self-blame cognitions) that served as covariates. In the second step, the relational factors (i.e., relationship with perpetrator, social support, negative reactions to disclosure) were added. In the third step, the institutional variable (i.e., institutional betrayal) was added.

For analyses, we used *R* (Version 4.3.0; R Core Team, 2018). Model assumptions were evaluated using the *performance* (Version 0.7.3; Lüdecke et al., 2021) package. The primary model was found to be consistent with standard assumptions, but with mild heteroscedasticity problems. Robust standard errors were applied to model parameters and confidence intervals using the *sandwich* package (Version 3.0.1; Zeileis & Hothorn, 2002).

Missing data & outliers

Rates of missing data on the item-level were low (<5%). For participants who completed >80% of the items on appropriate measures (e.g., scoring that involves calculating a mean), average scores were calculated (Parent, 2013). This resulted in the following rates of missing data at the scale level: pre-college SES (2.4%; $n = 6$); college SES (2.0%; $n = 5$); Brief-COPE Avoidance (0.0%; $n = 0$); PTCI Self-Blame (0.3%; $n = 1$); MSPSS (0.0%; $n = 0$); SRQ-S Turning Against (4.1%; $n = 10$); SRQ-S Unsupportive Acknowledgment (2.9%; $n = 7$); IBQ (0.0%; $n = 0$); and PCL (3.4%; $n = 9$). Correlational analyses were conducted using pairwise deletion, and regression analyses were conducted using listwise deletion. We examined continuous scores for univariate outliers (1.5 × the interquartile range) and also assessed outlier influence using the Cook's *d* statistic. Although not reported in detail, analyses were re-conducted after winsorizing outliers, with no significant differences in conclusions.

[2]We also examined a similar model among *all* survivors, regardless of disclosure status ($n = 386$) without the variables relating to responses to disclosure. Patterns of results were similar (see Supplementary Table S1).

Results

Preliminary analyses

Preliminary analyses evaluated differences in posttraumatic stress and sexual violence by gender, minoritized sexual identity, and minoritized racial/ethnic identity. There were no significant differences in posttraumatic stress, pre-college sexual assault, or college sexual assault between women and men or between women and nonbinary/gender nonconforming individuals. Men reported lower levels of posttraumatic stress ($t[228] = -2.68$, $p = .007$), but not sexual assault, than nonbinary/gender nonconforming individuals ($t[228] = -2.68$, $p = .007$). Participants with a non-white /European racial/ethnic identity ($n = 97$) reported higher posttraumatic stress ($t[234] = 2.72$, $p = .007$), but not sexual assault, than white participants ($n = 148$). Non-heterosexual participants ($n = 86$) reported higher levels of pre-college sexual assault ($t[237] = 3.34$, $p < .001$), but not college sexual assault or posttraumatic stress, than heterosexual participants ($n = 159$). There were no other significant demographic differences in posttraumatic stress. To account for demographic differences in posttraumatic stress and/or violence exposure, gender, sexual identity, and race/ethnicity were included as covariates in regression models.

Table 2. Means, standard deviations, and correlations with confidence intervals ($N = 245$).

	M	*SD*	1	2	3	4	5	6	7	8
1.	2.97	2.98								
2.	3.62	4.67	.36*** [.25, .47]							
3.	1.40	0.66	.31*** [.19, .42]	.26*** [.14, .38]						
4.	3.10	1.51	.26*** [.13, .37]	.15* [.03, .28]	.31*** [.19, .42]					
5.	5.66	0.95	−.23*** [−.34, −.10]	−.14* [−.26, −.01]	−.20** [−.32, −.08]	−.21** [−.32, −.08]				
6.	1.10	1.99	.27*** [.15, .38]	.06 [−.07, .18]	.21** [.09, .33]	.11 [−.01, .24]	−.16* [−.28, −.04]			
7.	19.94	18.36	.44*** [.33, .54]	.35*** [.24, .46]	.53*** [.43, .62]	.31*** [.19, .42]	−.27*** [−.38, −.15]	.35*** [.23, .46]		
8.	0.60	0.76	.31*** [.19, .43]	.36*** [.25, .47]	.36*** [.24, .46]	.28*** [.16, .39]	−.29*** [−.40, −.16]	.29*** [.17, .41]	.51*** [.41, .60]	
9.	0.83	0.73	.31*** [.19, .42]	.27*** [.15, .39]	.35*** [.23, .45]	.15* [.02, .27]	−.16* [−.28, −.03]	.26*** [.14, .38]	.50*** [.40, .59]	.68*** [.60, .74]

Note. *M* and *SD* are used to represent mean and standard deviation, respectively. Values in square brackets indicate the 95% confidence interval for each correlation. *$p < .05$, **$p < .01$, ***$p < .01$.1 = college sexual assault history, as assessed by the SES; 2 = pre-college sexual assault history, as assessed by the SES; 3 = avoidance coping behaviors, as assessed by the Brief-COPE; 4 = self-blame cognitions, as assessed by PTCI-B; 5 = social support, as assessed by the MSPSS; 6 = institutional betrayal, as assessed by the IBQ; 7 = posttraumatic stress, as assessed by the PCL-5; 8 = Turning Against social reactions, as assessed by the SRQ-S; 9 = Unsupportive Acknowledgment social reactions, as assessed by the SRQ-S.

Hypothesis 1

There were small to moderate correlations between posttraumatic stress and all contextual predictors of interest, $|r$'s$|$ = .27-.53, p's < .001 (see Table 2). Participants whose perpetrator was a stranger (n = 69, 28.2%) reported lower posttraumatic stress than those whose perpetrator was an acquaintance (n = 73, 29.8%; $t[233] = 2.27$, p = .02) or a close other (n = 103, 42.0%; $t[233] = 3.35$, $p < .001$).

Hypothesis 2

In the regression model, the first step (sexual assault history, demographics, and individual factors) explained 39.6% of variance in posttraumatic stress,

Table 3. Parameter estimates for regression model predicting posttraumatic stress (N = 245).

Predictor	*B [95% CI]*	*SE*	*β*	*t*	*p*	Fit
Step 1						
Intercept	−5.39 [−10.44, −0.34]	–	–	–	–	
College SA	1.38 [0.55,2.22]	0.42	0.22	3.27**	.001	
Pre-College SA	0.59 [0.02, 1.17]	0.29	0.15	2.04*	.043	
Man	−2.05 [−6.94, 2.84]	2.48	−0.04	−0.83	.409	
Non-Binary/Non-Conforming	3.76 [−6.85, 14.37]	5.38	0.04	0.70	.485	
Racial/Ethnic Identity	3.34 [−0.75, 7.44]	2.08	0.09	1.61	.109	
Sexual Identity	1.61 [−2.74, 5.96]	2.21	0.04	0.73	.467	
Avoidance Coping	9.61 [5.79, 13.42]	1.94	0.34	4.96***	< .001	
Self-Blame Cognitions	1.34 [−0.03, 2.70]	0.69	0.11	1.92^	.056	R^2 = .396***
Step 2						
Intercept	−1.58 [−16.76, 13.59]	–	–	–		
College SA	1.06 [0.19, 1.92]	0.44	0.17	2.42*	.016	
Pre-College SA	0.27 [−0.32, 0.86]	0.30	0.07	0.89	.376	
Man	−3.05 [−7.94, 1.84]	2.48	−0.06	−1.23	.220	
Non-Binary/Non-Conforming	1.66 [−7.90, 11.23]	4.85	0.02	0.34	.732	
Racial/Ethnic Identity	1.54 [−2.58, 5.65]	2.09	0.04	0.74	.463	
Sexual Identity	2.33 [−1.96, 6.62]	2.17	0.06	1.07	.285	
Avoidance Coping	7.60 [4.04, 11.15]	1.80	0.27	4.21***	< .001	
Self-Blame Cognitions	0.74 [−0.58, 2.06]	0.67	0.06	1.10	.272	
Relationship – Acquaintance	4.11 [−0.90, 9.13]	2.54	0.10	1.62	.107	
Relationship – Close Other	4.37 [0.11, 8.64]	2.16	0.12	2.02*	.045	
Social Support	−1.00 [−3.12, 1.12]	1.07	−0.05	−0.93	.352	
Turning Against	3.29 [−0.32, 6.91]	1.83	0.13	1.80^	.074	
Unsupportive Acknowledgment	4.98 [0.48, 9.47]	2.27	0.19	2.18*	.030	R^2 = .483***
Step 3						
Intercept	−3.71 [−18.73, 11.32]	–	–	–		
College SA	0.98 [0.16, 1.79]	0.41	0.15	2.37*	.019	
Pre-College SA	0.34 [−0.26, 0.94]	0.31	0.08	1.10	.274	
Man	−2.73 [−7.69, 2.22]	2.51	−0.05	−1.09	.278	
Non-Binary/Non-Conforming	−0.68 [−10.55, 9.18]	5.00	−0.01	−0.14	.892	
Racial/Ethnic Identity	1.16 [−2.79, 5.10]	2.00	0.03	0.58	.564	
Sexual Identity	2.58 [−1.66, 6.82]	2.15	0.07	1.20	.232	
Avoidance Coping	6.97 [3.43, 10.51]	1.80	0.25	3.88***	< .001	
Self-Blame Cognitions	0.77 [−0.55, 2.09]	0.67	0.06	1.15	.251	
Relationship – Acquaintance	4.58 [−0.18, 9.33]	2.41	0.11	1.90^	.059	
Relationship – Close Other	5.21 [0.97, 9.45]	2.15	0.14	2.42*	.016	
Social Support	−0.74 [−2.85, 1.37]	1.07	−0.04	−0.69	.490	
Turning Against	2.56 [−1.04, 6.16]	1.83	0.11	1.40	.162	
Unsupportive Acknowledgment	4.70 [0.45, 8.95]	2.16	0.18	2.18*	.031	
Institutional Betrayal	1.66 [0.65, 2.67]	0.51	0.17	3.23**	.001	R^2 = .507***

$F(8, 213) = 17.42$, $p < .001$ (see Table 3). Both college and pre-college sexual assault history, as well as avoidance coping, were significant predictors. The second step (relational factors) explained an additional 8.7% of variance, $p < .001$. Perpetration by a close other was related to higher levels of posttraumatic stress than perpetration by a stranger. Although Unsupportive Acknowledgment, but not Turning Against, responses were uniquely related to posttraumatic stress, general social support was not a significant predictor. In the third step, institutional betrayal was a significant predictor and explained an additional 2.4% of variance, $p = .001$.

Discussion

Using a socioecological approach to sexual violence (Campbell et al., 2009), this analysis clarified how factors at relational and institutional levels of the social ecology are related to, and explain unique variance in, posttraumatic stress among campus sexual assault survivors. This study is novel in that it simultaneously examined factors at three levels of the social ecology and incorporated a betrayal trauma/institutional betrayal theoretical framework. Consistent with prior literature (e.g., Littleton, 2010; Smith & Freyd, 2017; Ullman, 2023), posttraumatic stress was correlated with hypothesized contextual variables (victim-perpetrator relationship, social support, reactions to disclosure, and institutional betrayal).

The regression model accounted for 50.7% of the variance in posttraumatic stress. The proportion of variance explained is compelling and suggests that a socioecological approach to understanding posttraumatic stress among campus sexual assault survivors that incorporates institutional betrayal is appropriate, effective, and useful. When examining the contributions of each predictor, study hypotheses were largely supported. Even after accounting for a large set of variables at lower levels of the social ecology, institutional betrayal and victim-perpetrator relationship remained significant predictors of posttraumatic stress, suggesting the importance of *betrayal trauma* and *institutional betrayal* frameworks for future studies examining variation in campus sexual assault outcomes. General social support was not a significant predictor, which may suggest that social support on its own does not adequately influence posttraumatic stress in the context of a close victim-perpetrator relationship or institutional factors. The association between posttraumatic stress and Unsupportive Acknowledgment, but not Turning Against, responses is inconsistent with prior literature suggesting that Turning Against responses may be the most harmful (Ullman, 2023). It is possible that unsupportive acknowledgment, which can involve positive and negative elements simultaneously (e.g., the assault

is acknowledged as a problem, but the survivor does not receive the desired support; Relyea & Ullman, 2015), may be particularly confusing or disruptive. However, it should be noted that avoidance coping, which was included in the model as an individual-level covariate, remained the strongest unique predictor of posttraumatic stress, which is consistent with behavioral and cognitive theories of posttraumatic stress (Foa & Rothbaum, 1998).

Implications

These results provide evidence that contextual factors such as institutional betrayal are important to consider when explaining variability in posttraumatic stress after campus sexual assault. These results validate what many survivors and theorists have been voicing for years – namely, that posttraumatic reactions are intertwined with aspects of the surrounding environment (Freyd & Birrell, 2013; Herman, 1997). Even as levels of self-blame and avoidance were held constant, negative reactions to disclosure, victim-perpetrator relationship, and institutional betrayal were each associated with increased distress. Thus, sexual assault survivors may benefit from acknowledgment of contextual factors within existing clinical interventions, including discussions of how thoughts, behaviors, or emotions are situated within interpersonal relationships, institutions, and cultures.

In addition, these results highlight a need for interventions at higher levels of the social ecology. Several promising interventions that target relational and institutional levels could be introduced into campus sexual violence prevention programming and/or policies. One intervention in development focuses on improving social reactions to disclosure among survivors' social support networks to buffer against negative mental health outcomes (Edwards et al., 2022). Other notable work includes theory and research on *institutional courage* (Freyd, 2018), defined as moral actions that prioritize the safety and needs of institutional members, despite possible short-term (e.g., negative press coverage) or long-term costs (e.g., lawsuits; Freyd, 2018). Initial research has found that higher levels of perceived institutional courage attenuate the relationship between institutional betrayal and harmful work outcomes among individuals who have experienced workplace sexual harassment (Smidt et al., 2023). Another study found that institutional courage attenuates the relationship between institutional betrayal and trauma symptoms among undergraduate survivors (Adams-Clark et al., 2024). Thus, universities may begin to intervene on sexual assault outcomes by incorporating institutional courage practices recommended by Freyd (2018), including apologizing for past wrongdoing, developing transparent policies, or issuing statements of belief in victims' accounts of violence.

Limitations

These results should be interpreted in light of crucial limitations. The cross-sectional nature of this data precludes inferences of causality. Although theory suggests that sexual assault victimization, negative social reactions, and institutional betrayal precedes posttraumatic stress, it is also possible that greater levels of posttraumatic stress may predispose someone to be more likely to be assaulted, receive negative social reactions, or experience institutional betrayal. Cross-sectional data also hinders the use of advanced modeling approaches that are vital in capturing nuanced relationships between individual and contextual variables. Although regression is useful for estimating unique variance at each theorized level of the social ecology, these variables are likely linked in complex and reciprocal ways. Furthermore, this study used retrospective reporting of sexual violence, and several of the questionnaires are general measures not specific to sexual assault, which could bias results.

In addition, the current study was centered within one, predominantly white university in the Pacific Northwest of the United States. The results may not generalize to students who experience sexual assault at other universities with different demographic backgrounds. Because of this, our analyses fail to reckon with the role of racism, discrimination, and sociocultural factors in experiences of campus sexual violence. Given prior research and theory suggesting that race/ethnicity and sociocultural norms in the macrosystem interact with posttraumatic stress (Dworkin & Weaver, 2021), this is a significant limitation that should be addressed in future research by examining these characteristics among diverse groups of students both nationally and internationally. In addition, these results do not necessarily apply to clinical populations, as the study consisted of a general sample of college student survivors, only 21.6% ($n = 53$) of whom exceeded a clinical cutoff of 33 or more on the PCL. Although college students were our target population of interest, and the human subjects pool at the university where the study was conducted is designed in such a way to minimize self-selection (Freyd, 2012), results should be replicated among a variety of populations embedded within many different types of institutions (e.g., medical systems, legal systems).

Conclusion

Overall, this study supports the value of taking a socioecological approach to understanding and researching campus sexual assault. Results of this study indicates that a range of factors, including intrapersonal, relational, and institutional dynamics, may play important, unique roles in campus sexual assault survivors' mental health. Future research that conceptualizes posttraumatic stress using a socioecological and betrayal trauma lens will lead to a greater range of resources to both prevent and alleviate the effects of sexual violence.

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Data availability statement

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