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A Socioecological Model of Risk Associated With Campus Sexual Assault in a Representative Sample of Liberal Arts College Students

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Abstract

Campus sexual assault (CSA) is a growing area of research and public health concern, yet little research has considered the sociocultural context in which CSA occurs or the effect of sociocultural factors on the posttraumatic stress disorder (PTSD) symptoms of CSA survivors. This study describes the results of a web-based census survey administered to students at a liberal arts college. Of the 1,611 students who completed the survey (74% female; 71.4% White, 4.3% African American, 12% Hispanic), 13.5% reported experiencing at least one type of completed or attempted CSA. Female students, participants in Greek life, and students who reported victimization prior to college were more likely to report having experienced CSA. CSA was positively correlated with PTSD symptoms, and this relationship was stronger for racial/ethnic minorities, those who reported less sense of community, and those who were more aware of campus services to address CSA. This study demonstrates multiple levels of sociocultural influence on the mental health of college students who have experienced CSA and may suggest ways for improving prevention and intervention strategies to address CSA and its consequences.

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One in five college women experience campus sexual assault (CSA; Krebs et al., 2016), which includes any form of unwanted or involuntary sexual contact (e.g., fondling, forced kissing, rape). CSA comes with great costs to the public health system and to survivors, who often feel isolated, afraid, and ashamed (Wickramasekera, Wright, Elsey, Murray, & Tubeuf, 2015). Attention to sexual assault increased recently with the #MeToo and "Time's Up" movements (Langone, 2018), both of which raise awareness about the prevalence of sexual assault and harassment in the workplace and in everyday life. Attention to CSA, in particular, began to grow even before these movements with the issue of the *Dear Colleague Letter on Sexual Violence* (2011) by the Department of Education (DOE) as a reminder of the importance of addressing incidents of sexual assault in educational settings. Prior to the letter being withdrawn by the DOE in 2017, the White House Task Force to Protect Students from Sexual Assault (2014) responded by laying out guidelines for identifying, preventing, and responding to CSA. This report (also withdrawn by the DOE in 2017) urged colleges across the country to identify the prevalence of CSA with a campus climate tool. In response to that call, the current study joined the research initiative to evaluate the prevalence of CSA at a liberal arts college.

Survivors of CSA often experience symptoms of posttraumatic stress disorder (PTSD; for example, Flack et al., 2007), including intrusive memories or thoughts about the trauma, avoidance of trauma reminders, negative alterations in thoughts and mood, and alterations in arousal and reactivity (American Psychiatric Association, 2013). PTSD symptoms interfere with students' academic performance and engagement with the college community (Jordan, Combs, & Smith, 2014). Some CSA survivors may drop courses, leave school, or transfer (Baker et al., 2016). However, not all survivors of sexual assault experience the same degree of PTSD. The current study uses a socioecological model (see Campbell, Dworkin, & Cabral, 2009 for a review) to examine correlates of CSA and moderators of risk of PTSD across multiple ecological systems.

Individual-Level Factors

Several individual-level factors are related to an increased susceptibility to PTSD, including gender, race/ethnicity, and prior victimization. Women are

twice as likely as men to develop PTSD following a traumatic event, although this disparity is likely due to the higher likelihood of women experiencing sexual trauma compared with men. Indeed, Cortina and Pimlott Kubiak (2006) found that sexual victimization, rather than gender, predicted PTSD symptoms. Thus, PTSD risk may be higher in women due to the higher prevalence of sexual trauma in this population (Goldstein et al., 2016). Racial/ethnic minorities are also at greater risk of developing PTSD following trauma (Asnaani & Hall-Clark, 2017; Roberts, Gilman, Breslau, Breslau, & Koenen, 2011). In survivors of sexual assault, women of color and ethnic minorities experience more negative social reactions to disclosure of the assault, which may explain their higher risk of PTSD (Hakimi, Bryant-Davis, Ullman, & Gobin, 2018; Jacques-Tiura, Tkatch, Abbey, & Wegner, 2010). Prior victimization also predicts more severe symptomatology in revictimized individuals (Matlow & DePrince, 2013; Ullman, 2016; Walsh et al., 2012). Therefore, we hypothesized that students who identify as racial/ethnic minorities and those with prior sexual trauma would report higher levels of PTSD symptoms following CSA.

Micro-Level Factors

Within the broader campus community, some students belong to various student organizations and groups. Although relationships that develop between members of these organizations are often characterized by a sense of trust and mutuality, members of these groups are more likely to experience CSA. Greek life is one such micro-level system associated with increased alcohol consumption and CSA (Franklin, 2016; Minow & Einolf, 2009; Turrisi, Mallett, Mastroleo, & Larimer, 2006). Members of fraternities/sororities are more likely than nonmembers to accept rape myths, which place greater blame on the victim (McMahon, 2010; Murnen & Kohlman, 2007). Furthermore, sorority women often feel safe within the Greek system, believing their risk of experiencing CSA to be relatively low (Gidycz, McNamara, & Edwards, 2006). Because of greater acceptance of rape myths, and because CSA violates expectations that college is a safe environment, sorority members who experience CSA may experience more self-blame and institutional betrayal, two factors that increase risk of PTSD in victims of sexual violence (Peter-Hagene & Ullman, 2016; Smith & Freyd, 2013). Thus, risk of PTSD following CSA may be higher among members of Greek life.

On the contrary, participation in college athletics may protect against sexual assault victimization, particularly for female athletes (Fasting, Brackenridge, Miller, & Sabo, 2008; Milner & Baker, 2017). Athletic participation leads to increased self-esteem and self-efficacy that protect against sexual victimization

(Milner & Baker, 2017; Taylor, Wamser, Welch, & Nanney, 2012). For women, participation in athletics offers a chance to flip the gender script that sports are male-only activities, leading to a sense of empowerment (Milner & Baker, 2017). Although athletes might be less likely to experience CSA, athletes who *are* victimized might experience worse PTSD. Membership with a sports team gives athletes a sense of connectedness and safety, which, if violated, may lead athletes to feel betrayed by their institution (Smith & Freyd, 2013). Thus, participation in college athletics might protect against CSA, but increase susceptibility to PTSD when CSA does occur. Members of other campus organizations may experience higher levels of PTSD following CSA for similar reasons.

Macro-Level Factors

To understand differences in the posttraumatic stress response of CSA survivors, it is important to look beyond individual and micro-level factors to the sociocultural context in which sexual assault takes place. This context influences a student's expectations about how the broader campus community and society as a whole responds to CSA. Students' perceptions of the campus climate (i.e., the attitudes and behaviors of the campus community about others' needs, abilities, and potential) impact whether a student anticipates a supportive response from their campus community or a negative response encompassing blaming the victim, doubt that the event actually took place, delegitimization of the assault, and minimization of the seriousness of the crime (Smith & Freyd, 2013). Although social support has been shown to buffer the effects of trauma exposure (Charuvastra & Cloitre, 2008; Wang, Herres, & Diamond, 2017), negative social responses following disclosure of assault leave victims feeling afraid, ashamed, and betrayed, resulting in worse psychological outcomes (Orchowski, Untied, & Gidycz, 2013; Ullman & Relyea, 2016). Thus, we predicted that negative views about the supportive nature of the college climate would relate to higher risk of developing PTSD symptoms following CSA.

Some programs on college campuses are created with the specific intention of providing CSA survivors with psychosocial support to mitigate the effects of trauma and decrease posttraumatic stress. Rothman and Silverman (2007) found that exposure to prevention programs reduced risk of first-time sexual assault. However, previously victimized students did not show a decreased likelihood of assault attributed to these programs. Despite this preliminary evidence for the efficacy of prevention programs in reducing risk of first-time sexual assault, very little research has examined the effects of other campus services meant to address the aftermath of sexual assault. It is unclear whether awareness of campus services relates to level of PTSD among CSA survivors.

Students offer many reasons for not using campus services following sexual assault, including a lack of knowledge about services (Holland & Cortina, 2017). However, knowledge of campus services does not necessarily mean that students will use these services. Very few students use campus services following CSA, citing reasons that include being too busy, fear of consequences, minimizing the assault, and thinking they would not be taken seriously (Walsh, Banyard, Moynihan, Ward, & Cohn, 2010). Although awareness about campus services may decrease prevalence of CSA on college campuses, there is no research to date connecting awareness of these programs to PTSD symptoms in CSA survivors. Therefore, it is unclear whether awareness of campus services has an effect on PTSD symptoms following CSA.

The Current Study

Despite increased concern about a culture of sexual violence in our society, there is a dearth of research regarding the sociocultural context of CSA and its impact on PTSD symptoms. The current study filled these gaps in the literature with three main aims. First, we examined the prevalence of CSA in a sample of liberal arts college students. Second, we used a socioecological framework (Campbell et al., 2009) to study factors associated with CSA and PTSD across multiple ecological systems. We hypothesized that individual-level factors (female gender, racial/ethnic minority status, and revictimization), micro-level factors (membership in college organizations), and macro-level factors (campus climate and awareness about campus services) would be associated with a higher likelihood of CSA. Finally, we tested whether CSA would be positively associated with PTSD symptoms and whether this relationship would be moderated by factors spanning the different socioecological systems.

Method

Participants

The study involved a web-based census survey of students at a liberal arts college in a semiurban area of the East coast. The survey was spearheaded by the college's Title IX office to examine students' perceptions of the campus climate and awareness of campus services, types of sexual violence experienced by students, and students' comfort level in intervening in situations of sexual violence. The college's student body consisted of approximately 6,787 undergraduate students and 609 graduate students (approximately 65% White, 6% African American, 12% Hispanic, and 64% female). Because we were interested in the

experiences of students on the college campus, off-site students (students classified as "off campus global graduates") were excluded, leaving a total population of 6,980 students invited to participate in the survey. The survey was administered in the winter of 2017, and 2,224 students agreed to participate (31.8% response rate; 72.5% White or Caucasian, 4.8% African American, and 11.4% Hispanic; 68% female, 26% male, and 2.2% transgender or other gender). Most participants (97.1%) were undergraduate students. There were no significant differences between the general student body and those who participated in the survey on gender, male/female; $\chi^2(1) = 2.778$, $p = .10$, race, White, $\chi^2(1) = 1.58$, $p = .21$; African American/non-African American, $\chi^2(1) = 0.18$, $p = .67$, ethnicity, Hispanic/non-Hispanic; $\chi^2(1) = 0.10$, $p = .75$, or undergraduate status, undergraduate/graduate; $\chi^2(1) = 3.40$, $p = .07$.

Procedure

The study protocol was reviewed and approved by the Institutional Review Board. Students were invited via email to complete the survey over the course of 2 weeks (February 10-27, 2017), during which time three additional reminder emails were sent. Computers were also set up on tables around campus, encouraging students to complete the survey. After the 2-week period, access to the survey was closed. Students accessed the survey via an anonymous link, which began with an informed consent form. Participants who selected "yes" that they had read and understood the informed consent were able to proceed with the survey. Those who did not consent to participate by selecting "no" (.3% of those who clicked on the survey link) were directed to the end of the survey and were not prompted to answer further questions.

The survey took approximately 15 min to complete and was conducted using the online survey platform Qualtrics. Participants were not asked to enter identifiable information at any point during the survey. All questions were optional. Upon completion of the survey, students were provided with on- and off-campus counseling resources, as well as contact information for the Title IX office and campus police. Participants were given the option to complete a separate form to enter a raffle to win an Amazon gift card in the amount of either US$75, US$50, or US$25. In addition, US$100 gift cards were offered to student organizations with the most participation to increase involvement among these unique groups of students. Information used for the raffle entry was not linked to the participants' survey responses and was stored completely separately from the survey data. Only members of the research team had access to the data. Aggregate survey data were presented to the division of Student Affairs and other relevant offices at the college.

Measures

The survey was based on recommendations by the White House Task Force to Protect Students from Sexual Assault and adapted from a survey distributed by Rutgers University in 2015 (McMahon, Stepleton, O'Connor, & Cusano, 2015). Questions were tailored to reflect the institutional services and resources available to students at the college, and the language used was consistent with the college's Title IX policy. The survey consisted of five modules assessing: (1) demographic information, (2) perceptions of the campus climate, (3) awareness of campus services, (4) history of CSA experiences, and (5) posttraumatic stress symptoms. Some participants were skipped out of some questions in the survey if certain items were not endorsed (e.g., those without a history of CSA were not asked follow-up questions about CSA).

Demographics. Participants were asked to select races/ethnicity that describe them, class year, gender identity, living situation, and whether they were a member of an NCAA (National Collegiate Athletic Association) athletic team, fraternity/sorority, or other student organization (dummy coded 0 = no, 1 = yes). Gender was dichotomized (dummy coded 0 = cisgender female, 1 = cisgender male) due to a low base rate of participants identifying as transgender or "other gender" (.5% of the total sample).

CSA. The measure of CSA was similar to those used in other climate surveys (e.g., Koss & Gidycz, 1985). Participants were asked whether or not they had experienced unwanted sexual contact: (a) by physical force, (b) by coercion or threats, (c) while unable to provide consent or stop what was happening because they were passed out, drugged, drunk, incapacitated, or asleep (Sample wording: "Since coming to [college], has anyone had unwanted sexual contact with you by using physical force?"). Participants were also asked whether anyone had *attempted* unwanted sexual contact across these same contexts. We report the prevalence of attempted and completed assault across all three contexts, and then combine responses in a single measure. Thus, history of CSA (yes/no) refers to a "yes" response to questions about either attempted or completed unwanted sexual contact since coming to college.

Prior victimization. Participants were asked whether they had ever experienced any form of sexual violence before coming to college (yes/no).

Sense of community. The modified Brief Sense of Community Scale (Peterson, Speer, & McMillan, 2008) includes seven items that assessed participants' sense of belongingness to the campus community. Items were rated on a

1 (*strongly disagree*) to 5 (*strongly agree*) scale. Sample items include the following: "This campus community helps me fulfill my needs," "I belong in this campus community," and "[The College] does enough to protect the safety of students." Higher mean scores indicate a greater sense of community ($\alpha = .92$). This scale has shown good construct validity (Peterson et al., 2008).

Student supportiveness. Four items assessed participants' beliefs about how other students would respond if a student reported an incident of sexual assault. The scale was adapted from a climate survey used by the Defense Equal Opportunity Management Institute to measure perceived responses to sexual assault by military and/or civilian personnel (Department of Defense, 2014). Items were rated on a 1 (*very unlikely*) to 5 (*very likely*) scale. Sample items include the following: "Students would label the person making the report a troublemaker" and "Students would have a hard time supporting the person who made the report" (items were reverse coded). Higher mean scores indicate more supportive responses ($\alpha = .80$).

College responsiveness. The modified Trust in the College Support System Scale (Sulkowski, 2011) includes four items that assessed participants' beliefs about how the college would respond if the safety of its students was threatened. Items were rated on a 1 (*strongly disagree*) to 5 (*strongly agree*) scale. Sample items included the following: "The College responds rapidly in difficult situations" and "College officials handle incidents in a fair and responsible manner." Higher mean scores indicate more positive perceptions of the college's responsiveness ($\alpha = .84$). The scale has shown good construct validity (Sulkowski, 2011).

College handling of sexual assault. Eight items assessed participants' beliefs about how the college would respond if a student reported CSA (McMahon et al., 2015). Items were rated on a 1 (*very unlikely*) to 5 (*very likely*) scale. Sample items included the following: "The College would take the report seriously" and "The College would maintain the privacy of the person making the report." Higher mean scores indicate more positive perceptions of the college's handling of CSA ($\alpha = .89$).

Awareness of campus services. The Awareness of Campus Services Scale (McMahon et al., 2015) assessed participants' awareness of the function of campus and community resources specifically related to sexual assault. Participants were given a list of seven resources (e.g., Title IX Office, Anti-Violence Initiative Office) and were asked to rate how aware they were of these resources on a 1 (*not at all aware*) to 5 (*extremely aware*) scale. A higher mean score indicates greater awareness of these campus services ($\alpha = .83$).

PTSD symptoms. The 5th edition of the PTSD Checklist (PCL-5; Weathers et al., 2013) is a 20-item self-report scale that measures the extent of symptoms across four symptom clusters (intrusive recollection of the trauma, avoidance of trauma reminders, hyperarousal, and numbing). Participants were asked to rate the frequency with which they experienced symptoms over the past 2 weeks on 0 (*not at all*) to 4 (*extremely*) scale. Sample items included the following: "Repeated, disturbing dreams of the stressful experience"; "Avoiding memories, thoughts, or feelings related to the stressful experience"; and "Feeling jumpy or easily startled." A higher sum of all items reflects more severe PTSD symptoms ($\alpha = .96$). Research supports the validity of the PCL-5 for use with college students (Blevins, Weathers, Davis, Witte, & Domino, 2015).

Reliability question. A "reliability check" item was included toward the end of the survey to assess whether participants were thoroughly reading all questions. The question instructed participants, "If you are still reading this survey, please mark '5' for this question."

Data Analytic Plan

Analyses were conducted using SPSS version 23. Chi-square analyses and *t* tests first tested whether participants differed on any demographics, campus climate variables, awareness of services, or history of sexual assault by survey completion rates. We then examined the prevalence of CSA, the mean level of PTSD symptoms in our sample, and bivariate correlations among all study variables. Next, regression analyses tested whether CSA predicted PTSD symptoms, controlling for demographics. Finally, we used the SPSS PROCESS Macro (Hayes, 2013) to explore whether demographic variables, prior victimization, and/or campus climate variables moderated the link between CSA and PTSD symptoms. Results were largely unchanged when analyses were repeated using a square-root-transformed PTSD variable to correct for positive skew. We report results using the original PTSD variable for interpretability.

Results

Survey Response

Of the 2,224 students who began the survey, 64 (2.9%) did not answer any questions, 223 (10%) dropped out after completing Module 1/demographics, 138 (6.2%) after Module 2/campus climate, 24 (1.1%) after Module 3/awareness, and 46 (2.1%) after Module 4/experiences. A total of 1,729 (77.7%)

completed the entire survey through Module 5/PTSD symptoms. Male participants were more likely than females to drop out after Modules 2, $\chi^2(1) = 10.67$, $p = .002$, and 3, $\chi^2(1) = 9.11$, $p = .006$, and females were more likely to complete the full survey, $\chi^2(1) = 20.34$, $p < .001$. There were no other demographic differences in survey completion. Participants who completed the full survey compared with those who dropped out after modules three, $t(176.72) = 3.41$, $p = .001$, and four, $t(234.72) = 3.22$, $p = .001$, rated the campus lower on student supportiveness. In addition, 107 participants answered the reliability item incorrectly (i.e., they did not select 5, *very true*) and were removed from the analytic sample. Little's MCAR test was not significant, $\chi^2(4,216) = 4,093.58$, $p = .91$, indicating that data were missing completely at random (MCAR). Therefore, listwise deletion created the final sample used for all subsequent analyses ($N = 1,611$; 74% female; 71.4% White or Caucasian; 4.3% African American; 12% Hispanic).

Prevalence of CSA

A total of 172 (10.4%) students reported experiencing CSA, 97 (5.8%) of whom experienced assault by physical force, 54 (3.3%) by coercion or threat of physical force, and 96 (5.8%) when they were unable to provide consent because they were passed out, drugged, drunk, incapacitated, or asleep. In addition to reports of completed CSA, 137 (8.3%) reported experiencing *attempted* CSA, 84 of whom (5.1%) experienced attempted CSA by physical force and 84 (5.1%) by coercion or threat. In total, 218 (13.5%) students reported experiencing some form of completed or attempted CSA. Students may have reported more than one experience. The CSA variable used in subsequent analyses included either completed or attempted CSA.

Correlates of CSA

Table 1 shows correlations between all study variables. Women, participants in Greek life, fourth-year students, participants in off-campus housing, and those with prior victimization were significantly more likely to report CSA. Off-campus housing was not significantly correlated with CSA when controlling for class year (partial $r_{pb} = .005$, $p = .842$). Participants in college athletics were significantly less likely to report a history of CSA. Minority race was not associated with a history of CSA. Perceptions of student supportiveness, college responsiveness, and college handling of sexual assault were significantly associated with a history of CSA. Sense of community and awareness of campus services were not associated with CSA.

Table 1. Correlations Among all Variables (N = 1,611).

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Individual-level														
1. Gender	—													
2. Minority status	–.01	—												
3. Class year	.004	.01	—											
4. Off-campus housing	.06*	.08*	.62*	—										
5. Prior victimization	–.15*	–.05	.07*	.03	—									
Micro-level														
6. Greek life	–.01	.02	.21*	.23*	–.01	—								
7. Athletic team	.04	.08*	–.09*	.01	–.09*	–.12*	—							
8. Other organization	–.02	–.02	–.10*	–.09*	–.03	.003	–.15*	—						
Macro-level														
9. Community	–.05*	.11*	–.10*	–.01	–.07*	.16*	.04	.17*	—					
10. Supportiveness	.003	.09*	–.11*	–.07*	–.10*	–.12*	.11*	–.06*	.18*	—				
11. Responsiveness	–.04	.06*	–.15*	–.09*	–.10*	–.1*	.05*	–.03	.41*	.31*	—			
12. Handling	.05*	.05	–.18*	–.07*	–.12*	–.07*	.06*	–.03	.32*	.37*	.59*	—		
13. Awareness	.02	–.02	–.09*	–.07*	–.05*	.06*	.003	.10*	.30*	.11*	.22*	.30*	—	
Outcomes														
14. CSA	–.15*	.02	.09*	.09*	.20*	.17*	–.05*	.01	–.03	–.16*	–.16*	–.18*	–.03	—
15. PTSD	–.03	.08*	.06*	.06*	.21*	.01	–.05	.04	–.21*	–.20*	–.21*	–.19*	–.07*	.22*

Note. Spearman's correlation was used to examine the relationship between two continuous variables. The phi coefficient tested the correlation between two dichotomous variables. The point-biserial correlation tested the relationship between a dichotomous variable and a continuous variable. Community = Sense of Community; Supportiveness = Student Supportiveness, Responsiveness = College Responsiveness, Handling = College Handling of Sexual Assault; Awareness = Awareness of Campus Resources; CSA = campus sexual assault; PTSD = posttraumatic stress disorder.
*$p < .05$.

PTSD in Sample

The mean PCL-5 score was 14.58 ($SD = 15.60$). Using the cut-off score of 38, 180 participants (11.2%) reported experiencing clinically significant levels of PTSD symptoms. Minority participants, upperclassmen, and students with a prior history of sexual violence reported higher levels of PTSD. PTSD symptoms were also associated with poorer perceptions of the campus community, student supportiveness, the college's responsiveness to reports of CSA, the college's handling of CSA, and awareness of campus services.

Relationship Between CSA and PTSD

Results of a regression analysis with controls for gender, minority status, class year, and membership in student organizations showed that experiencing any form of attempted or completed CSA significantly predicted PTSD symptoms, $b = 9.72$, $\beta = .22$, $R^2 = .05$, $p < .001$.

Moderation Analyses

Individual- and micro-level factors. Gender, class year, and membership in student organizations (Greek life, athletics, or other clubs) did not moderate associations between CSA and PTSD symptoms (ps > .05). However, there was a significant interaction between minority status and CSA, such that racial/ethnic minorities with a history of CSA reported higher PTSD symptoms than nonminority participants with a history of CSA, $F(1, 1589) = 4.06$, $p = .04$, $R^2 = .05$. Experiencing revictimization during college was associated with less PTSD symptoms, $F(1, 1588) = 16.57$, $p < .001$, $R^2 = .08$.

Macro-level factors. Students who reported a better sense of community reported more PTSD symptoms associated with CSA, $F(1, 1583) = 4.75$, $p = .03$, $R^2 = .10$. However, neither perceptions of other students' supportiveness, trust in the college's responsiveness, nor perceptions of how the college would handle sexual assault moderated associations between CSA and PTSD symptoms. Finally, students who were more aware of campus services had more PTSD symptoms following CSA, $F(1, 1586) = 4.47$, $p = .04$, $R^2 = .05$. Significant macro-level moderation findings held when associated individual- and micro-level variables (see correlations in Table 1) were included as controls in the models.

Discussion

The current study examined the prevalence of CSA in a representative sample of liberal arts college students, as well as correlates of CSA and PTSD across

multiple socioecological systems, including factors spanning individual-, micro-, and macro-level systems. In terms of individual-level factors, female students, fourth-year students, those living off-campus, and those who reported prior sexual victimization were more likely to report CSA. The relationship between CSA and PTSD was stronger for racial/ethnic minorities and individuals who had not experienced sexual assault prior to coming to college. Several micro-level factors, membership in Greek life and college athletics, were also related to CSA, though they did not moderate the link between CSA and PTSD. At the macro-level, individuals who had poorer perceptions of student supportiveness, college responsiveness, and college handling of reports of CSA were more likely to report a history of CSA, and CSA survivors who felt a weaker sense of community and who were more aware of campus services had more PTSD symptoms.

Individual-Level Risk Factors

Consistent with previous research, women were more likely than men to experience CSA (Krebs et al., 2016), although female CSA survivors experienced the same degree of PTSD as male CSA survivors. Our findings are consistent with evidence that women are more likely than men to experience sexual violence, a form of interpersonal trauma most strongly associated with PTSD (Norris, Foster, & Weisshaar, 2002). These findings support the assertion that the association between gender and PTSD can be explained by a higher rate of sexual assault and threat of sexual assault experienced by women (Cortina & Pimlott Kubiak, 2006). However, it is important to note that only 14 male students (3.6% of the sample) reported a history of CSA compared with 149 female students (12.6% of sample). The fact that female survivors in our sample did not report worse PTSD symptoms may have been due to a low number of male participants that underpowered our ability to detect gender differences in the CSA to PTSD link.

Class year and living situation were both linked to higher likelihood of CSA. This finding suggests that CSA occurs during all years in college, though likelihood of CSA may incrementally increase during a student's final year. Alternatively, it may be explained by the fact that fourth-year students have greater access to alcohol. Unfortunately, we did not ask our participants to report a timeframe for sexual assault; thus, we did not have the data to examine whether students are more likely to experience sexual assault during the initial years of college. According to prior research, most instances of sexual assault occur off-campus (Krebs et al., 2016). Although we found that off-campus housing was associated with a history of CSA, this finding was not significant when controlling for class year.

Although students who identified as racial/ethnic minorities were not more likely to experience CSA than White students, CSA survivors who identified as racial/ethnic minorities reported more severe PTSD than nonminority students. Prior research supports this finding, showing that women of color receive more negative responses to disclosure of sexual assault (Hakimi et al., 2018; Jacques-Tiura et al., 2010), which, in turn, is linked to more severe PTSD symptoms (Ullman & Relyea, 2016). It is likely that other factors related to minority stress, such as lower socioeconomic status, discrimination, and stigmatization explain the increased susceptibility to PTSD for racial/ethnic minorities (Roberts et al., 2011). Future research should focus on identifying factors that protect these groups of students from the effects of minority stress.

Students with a history of sexual violence prior to attending college were more likely to experience CSA since entering college, which is consistent with previous research demonstrating increased likelihood of sexual assault in adults with a history of child sexual abuse (Ullman, Najdowski, & Filipas, 2009). Also consistent with previous research (Matlow & DePrince, 2013; Ullman, 2016; Walsh et al., 2012), a history of sexual violence prior to college predicted more severe PTSD. Surprisingly, among participants who reported CSA, PTSD severity did not depend on whether they had been victimized prior to coming to college. Rather, students with any history of sexual violence, regardless of the timing, reported high levels of PTSD compared with those with no history of sexual violence.

Micro-Level Risk Factors

Supporting our hypotheses, members of Greek life were more likely to experience CSA, whereas college athletes were *less* likely to experience CSA. Membership in Greek life is a well-documented risk factor for CSA victimization (e.g., Minow & Einolf, 2009). This is likely because members of Greek life consume more alcohol than other college students (Turrisi et al., 2006). However, participation in college athletics may serve as a protective factor against CSA because athletes tend to have higher self-esteem and self-efficacy (Fasting et al., 2008; Milner & Baker, 2017; Taylor et al., 2012).

Contrary to our hypotheses, membership in student organizations was not associated with PTSD symptoms in CSA survivors. We had hypothesized that these victimized students would experience more PTSD as a result of feeling a sense of betrayal after having previously felt safe within their organizations (Smith & Freyd, 2013). However, since our findings did not support this hypothesis, it is possible that sexual assault training programs recently initiated by Title IX and antiviolence initiatives have been

successful in increasing the supportiveness of the organizations toward CSA survivors and are helping members of these organizations cope following incidents of CSA. Positive reactions from individuals within Greek life or athletic teams could counteract negative consequences of CSA. More research should assess the effects of these programs targeted at student organizations.

Macro-Level Risk Factors

Individuals with poorer perceptions of student supportiveness, college responsiveness, and college handling of sexual assault were more likely to have a history of CSA, though it is unclear whether poor campus climate leads to more instances of CSA or whether experiencing CSA leads to poorer perceptions of the campus climate. Although sense of community was not linked to CSA history, CSA survivors with a poorer sense of community reported more PTSD symptoms. These students may feel less supported by their community, which could decrease the likelihood of disclosing their CSA and worsen their posttraumatic response. Nondisclosure in and of itself can lead to worse outcomes following sexual assault, including higher levels of PTSD (see Halstead, Williams, & Gonzalez-Guarda, 2017 for a review). Nondisclosure often occurs when victims anticipate a negative response to discussing their sexual assault or when they feel their community would not support them. Thus, a poor sense of community might prevent victims from disclosing their sexual assault to others and receiving the support they need, leading to more severe PTSD.

Greater awareness of campus services was also associated with higher levels of PTSD symptoms following CSA. One possible explanation for this finding is that students with worse PTSD symptoms seek out information regarding campus services to cope with these symptoms. Thus, symptoms may have preceded awareness of these services. Furthermore, students' knowledge that campus services exist does not necessarily translate to their utilization. Few CSA survivors use campus services, even when they know that they exist (Walsh et al., 2010). As nondisclosure has been linked to negative psychological outcomes (Halstead et al., 2017), it follows that knowledge without usage of campus services might exacerbate PTSD symptoms.

Limitations and Future Directions

Findings of the current study should be considered in the context of the study's limitations. One limitation of the study is the lack of diversity in the sample. For example, there were relatively few students who identified as a racial/

ethnic minority. It is also possible that response to CSA in the form of PTSD symptoms is socially constructed based on the experiences of White students (Green, Chung, Daroowalla, Kaltman, & DeBenedictis, 2006), and, thus, the measurement of PTSD might lack construct validity for African American students and other racial/ethnic minorities. The inclusion of qualitative methods to evaluate the experiences of unique groups of students in future work would complement quantitative analyses and allow for cross-cultural validation of findings (e.g., Green et al., 2006). In addition, female participants and those who believed that other students would have more supportive responses to sexual assault were more likely to complete the full survey and be included in analyses. Furthermore, our survey failed to assess the unique experiences of students who identify as lesbian, gay, bisexual, transgender, or questioning (LGBTQ). Thus, it is possible that findings would not generalize to a more diverse student body or represent the experiences of all students. Although our response rate (31.8%) was consistent with other campus climate surveys (e.g., McMahon et al., 2015), we are currently working to increase participation in the survey, particularly by marginalized groups, such as LGBTQ students. Our future research will explore the unique experiences of minorities with a history of CSA, particularly due to a lack of positive support resulting from discrimination and prejudice (Kaufman, Baams, & Dubas, 2017).

Another limitation is that the cross-sectional nature of the study did not allow for exploration of causation among study variables. To address this, future research should use longitudinal methods to examine whether perceptions of campus climate worsen following CSA and predict the development of PTSD symptoms over time. Future longitudinal studies should also examine whether the response one receives from the community following disclosure of sexual assault is related to perceptions of the general campus climate. Furthermore, we chose to focus on PTSD when other psychosocial outcomes, such as depression and poor academic performance, warrant attention as well. We also did not assess disclosure of CSA, which might explain some of the links observed in this study. In addition, we did not account for the effects of social desirability on survey responses or the impact of other stressors/traumas on PTSD symptoms, which might be particularly relevant for minority populations (Green et al., 2006). Finally, by combining attempted and completed assault, the current study did not consider the varying severity of PTSD associated with degree of violation (e.g., Neilson, Norris, Bryan, & Stappenbeck, 2017).

Implications and Conclusion

Having taken a socioecological approach to sexual assault, the study contributes important information regarding the context of CSA and its correlates across individual-, micro-, and macro-level systems. With both the DOE and

society as a whole increasing focus on sexual assault over the last decade, our research contributes to these efforts by identifying factors associated with CSA and risk of PTSD symptoms. Findings emphasize a need for college and Title IX officials to develop and implement educational programs that focus on preventing violence against women, particularly for members of Greek life and students with a prior history of sexual assault. Finally, findings suggest that intervention efforts should focus on enhancing students' sense of community to improve outcomes for CSA survivors. All students, but particularly students of color, should feel supported by their campus community. College campuses can support victims of CSA through the implementation of programs that acknowledge the need for a larger societal and community level response to sexual assault. For example, mandatory bystander intervention training can create positive community norms and a sense of community responsibility by giving all members a specific role to play in preventing CSA (Banyard, Edwards, & Siebold, 2017). Colleges and universities must engage in efforts such as this to improve the social climate and empower men and women to work collectively to end rape.

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