

## [Rates of DSM-IV-TR Trauma Exposure and Posttraumatic Stress Disorder Among Newly Matriculated College Students](#)

By: Jennifer P. Read, Paige Ouimette, Jacquelyn White, Craig Colder, and Sherry Farrow

Read, J.P., Ouimette, P., White, J., Colder, C., & Farrow, S. (2011). Rates of *DSM-IV-TR* trauma exposure and posttraumatic stress disorder among newly matriculated college students. *Psychological Trauma: Theory, Research Practice, and Policy*, 3(2), 148-156. doi:10.1037/a0021260.

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### **Abstract:**

The negotiation of the freedoms and responsibilities introduced as adolescents begin college may be particularly challenging for those with a trauma history and traumatic stress sequelae (posttraumatic stress disorder; PTSD). The present study examined the prevalence of and risk for trauma and PTSD in a large sample of college students. Matriculating students ( $N = 3,014$ ; 1,763 female, 1,251 male) at two U.S. universities completed online and paper assessments. Sixty-six percent reported exposure to a Criterion A trauma. Nine percent met criteria for PTSD. Female gender was a risk factor for trauma exposure. Gender and socioeconomic status (SES) were associated with trauma severity. Although in bivariate models, gender and SES were associated with PTSD, multivariate analyses suggested this risk was a function of trauma severity. Thus, students enter college with significant trauma histories and PTSD symptoms. Findings highlight the potential for outreach to incoming students with trauma and point to research directions to enhance understanding of the psychological needs of entering college students.

### **Article:**

The field of psychology has a long history of studying psychological phenomena in college students for reasons of convenience. However, growing evidence points to college students as a population unique in developmental life stage and culture (Arnett, 2000; Sher & Gotham, 1999). The fact that more than a third of U.S. individuals between the ages of 18 and 24—a large portion of American youth—are currently in college (U.S. Bureau of the Census, 2007) further argues for the need to examine psychological phenomena in this population. Entry into college in particular is an important period of transition, as students move away from familiar surroundings, roles, and relationships and into new ones.

A large literature conducted with general community and clinical samples has documented rates, risk factors, and correlates of trauma and posttraumatic stress (PTSD; Breslau et al., 1998; Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995). However, despite evidence that college students are at risk for sexual assault and other stressful life events (Humphrey & White, 2000; Wood & Sher, 2002), there have been few examinations of trauma and PTSD in college samples. An understanding of the scope of these phenomena, and which students are at greatest risk, will help to inform targeted intervention approaches.

## TRAUMA IN COLLEGE STUDENTS

Studies have examined potentially traumatic events (PTEs) in college students (e.g., Bernat, Ronfeldt, Calhoun, & Arias, 1998; Humphrey & White, 2000; Kilpatrick, Acierno, Resnick, Saunders, & Best, 1997; Marx & Sloan, 2002; Scarpa et al., 2002; Vrana & Lauterbach, 1994), estimating the prevalence of such events to range between 67% and 84%. One reason for the variability in these estimates is that studies have applied broad definitions of what constitutes a traumatic event, counting any and all PTEs. Although it has been argued that thorough assessment of Criterion A trauma (in accordance with the Diagnostic and Statistical Manual of Mental Disorders; DSM) is essential to the internal validity of PTSD research (e.g., Schlenger, Jordan, Caddell, Ebert, & Fairbank, 2004), no studies to our knowledge have examined rates of DSM-IV-TR (DSM, 4th ed., text revision; American Psychiatric Association, 2000) Criterion A exposure in college students.

## SOCIODEMOGRAPHIC RISK FOR TRAUMA

Not everyone is at equal risk for trauma exposure (i.e., Breslau et al., 1998; Kessler et al., 1995). Although men are at risk for exposure to potentially traumatic events (Breslau, 2002), women may report more Criterion A trauma exposure (Breslau & Kessler, 2001; Norris, Foster, & Weissharr, 2002; Perkonig, Kessler, Storz, & Wittchen, 2000), and women consistently report more sexual assault exposure than men (Breslau & Kessler, 2001; Norris et al., 2002; Perkonig et al., 2000). In college studies, male gender is linked to risk for PTEs (e.g., Purves & Erwin, 2002), but gender differences in Criterion A trauma are unknown. At least two college-based studies have found women to be at greatest risk for specific traumas such as sexual and interpersonal violence (e.g., Smyth et al., 2008; Vrana & Lauterbach, 1994).

Findings from community studies suggest possible risk associated with other sociodemographic variables as well. Although far from definitive, at least some evidence points to risk associated with ethnic minority status (see Norris & Sloan, 2007) and lower socioeconomic status (SES) for trauma exposure (Breslau et al., 1998). In college samples, a handful of studies have found non-White ethnicity to be a risk factor for stressful life events, but these studies have not assessed Criterion A trauma explicitly (Acierno, Kilpatrick, & Resnick, 1999; Acierno, Resnick, Kilpatrick Saunders & Best, 1999; Marx & Sloan, 2003). No studies have assessed the role of SES in Criterion A trauma exposure in college students.

## PTSD IN COLLEGE STUDENTS

Lifetime estimates of PTSD prevalence in the general population range from 1% to 10% (Davidson, Hughes, Blazer, & George, 1991; Kessler et al., 1995; Kulka et al., 1990). A small body of research has examined traumatic stress symptoms in college students, reporting rates of current PTSD to be in the range of 6%–17% (Lauterbach & Vrana, 2001; Marx & Sloan, 2003; McDevitt-Murphy, Weathers, Flood, Eakin, & Benson, 2007; Smyth, Hockemeyer, Heron, Wonderlich, & Pennebaker, 2008; Twamley, Hami, & Stein, 2004). Although this work suggests that PTSD is a significant problem in college students, these studies have been limited by a reliance on smaller convenience samples of psychology students (e.g., Lauterbach & Vrana, 2001; Marx & Sloan, 2003; McDevitt-Murphy et al., 2007; Smyth et al., 2008; Twamley et al., 2004) or a focus on PTSD due to one event type, such as terrorism (e.g., Blanchard et al., 2004; Blanchard, Rowell, Kuhn, Rogers, & Whittock, 2005) or sexual assault (e.g., Hetzel &

McCanne, 2005; Ullman & Filipas, 2005). Thus, a gap remains in our knowledge of PTSD in larger, nonselected college samples assessing a range of traumatic life events.

### SOCIODEMOGRAPHIC RISK FOR PTSD

Sociodemographic risk has been observed for posttraumatic stress. Female gender is a well-known risk factor for PTSD (cf. Kimerling, Ouimette, & Weitlauf, 2007; Kimerling, Ouimette, & Wolfe, 2003). Evidence for other sociodemographic factors such as ethnicity is less well developed, and findings are less consistent (e.g., Breslau et al., 1998; Kessler et al., 1995). SES also has been implicated in the development of PTSD (e.g., Norris & Sloan, 2007; Perkonig et al., 2000; Pole, Gone, & Kulkarni, 2008), although the extent to which demographic factors, rather than posing risk themselves, may instead serve as proxies for other more proximal predictors of PTSD (e.g., trauma severity) is unclear (e.g., Brewin, Andrews, & Valentine, 2000; Friedman, Schnurr, Sengupta, Holmes, & Ashcraft, 2004). Examination of sociodemographic risk associated with trauma and PTSD in college students has been rare.

### THE PRESENT STUDY

Data show that individuals with a trauma history and posttraumatic stress symptoms may also present with myriad psychological and other vulnerabilities that can set the stage for continued deleterious outcomes (e.g., Bolton et al., 2004; Kilpatrick et al., 1997; Miranda, Meyerson, Long, Marx, & Simpson, 2002). In light of this, it is clear that the negotiation of the many freedoms and responsibilities (Schulenberg, O'Malley, Bachman, Wadsworth, & Johnston, 1996) often introduced as students begin college may be particularly challenging for those who have a trauma history and resultant PTSD. Knowledge of the scope of trauma and PTSD, along with factors that may increase risk for these occurrences, will inform identification and intervention efforts for students just beginning their college careers.

The present study examined the rates of *DSM-IV* Criterion A trauma exposure and PTSD among incoming college students, as well as sociodemographic predictors (i.e., gender, non-White ethnicity, and SES) of Criterion A trauma and PTSD. Finally, we examined the unique effects of sociodemographic factors on PTSD after controlling for two important indices of trauma severity (i.e., characteristics that connote greater risk for PTSD)—number of trauma types (Bernat et al., 1998; Perkonig et al., 2000) and sexual assault (Norris et al., 2002).

### METHOD

#### *Participants*

Participants ( $N = 3,014$ ; 1,763 women, 1,251 men) were incoming college freshmen at two midsized public universities in the northeastern (State University of New York at Buffalo; UB) and southeastern (University of North Carolina, Greensboro; UNCG) United States, ages 18 to 24 ( $M = 18.0$  years,  $SD = 0.39$ ). Seventy-four percent self-identified as Anglo Caucasian ( $n = 2,241$ ), 12% as Asian ( $n = 366$ ), 11% as Black ( $n = 323$ ), 4% as Hispanic/Latino ( $n = 131$ ), 2% as American Indian/Alaskan ( $n = 44$ ) or 1% Hawaiian/Pacific Islander ( $n = 22$ ). Four percent of the sample identified as multiracial ( $N = 110$ ). Both maternal and paternal educational attainment ranged from “less than high school” to “graduate or professional degree,” with a median level of “college education.” Parental income ranged from  $< \$10,000$  to  $> \$60,000$ , with a median level of  $\$51,000$ – $\$60,000$ .

## *Procedure*

Data collection for the present study was part of a longitudinal study that sought to examine prospective and dynamic associations among trauma exposure, posttraumatic stress symptoms, and substance use over the transition into college. Recruitment procedures were identical across the two universities. Data collection took place in three cohorts; at the UB site in the summer of 2006, and then at both the UB and UNCG sites in the summer of 2007. Data presented here are from all cohorts. To be eligible, students had to be at least 18 years old, incoming freshmen, and enrolled either part- or full-time in a 4-year degree program. In the summer before matriculation, all eligible students were sent a “prenotification” letter describing the study and inviting participation in the upcoming screening. Two weeks later, a personalized e-mail and a Web link to a secure online survey were sent to the incoming students. An identical hard-copy packet (and a self-addressed stamped envelope for survey return) was sent to each student through U.S. postal service so that participants could choose their response modality (Internet or by paper-and-pencil survey). Approximately 60% of the surveys were completed through the Internet. Trauma and PTSD rates did not differ by mode of administration,  $\chi^2(1, N = 3,014) = 2.26$  and  $0.46$ , *ns*, respectively.

Participants were sent a \$5 gift card to a local retailer on survey completion. Weekly personalized reminder e-mails and phone calls were made to enhance participation rates. Of 5,885 (i.e., to all eligible students) surveys that were sent out, 3,391 (58%) were completed and returned. This is comparable with other online surveys that used similar methodologies but did not query about trauma (Larimer, Turner, Mallet, & Geisner, 2004; Lewis, Neighbors, Oster-Aaland, Kirkeby, & Larimer, 2007; Neighbors, Geisner, & Lee, 2008; Neighbors, Larimer, & Lewis, 2004). After data cleaning, and deletion of cases with significant missing data, the final sample consisted of 3,014 usable cases. This sample was relatively representative of the larger UB and UNCG first-year classes but slightly overrepresented women (58% vs. 47% averaged across universities) and Caucasian students (72% vs. 62% averaged).

## *Measures*

### **Demographics**

Participants reported on several demographic characteristics including gender, age, ethnicity, and maternal and paternal education level. A composite variable representing SES was created by summing mother's and father's education levels and income variables after standardization by *z* score. A composite ethnicity variable (ethnic minority/nonminority) was created with those who self-reported being of Anglo-Caucasian ethnicity in the nonminority group and those who endorsed any other ethnic status (including multiethnic) as being in the ethnic minority group.

### **Trauma exposure**

Items from the Traumatic Life Events Questionnaire (Kubany et al., 2000), a reliable and valid measure of *DSM* Criterion A trauma, were adapted to create a brief measure of lifetime trauma exposure. For this study, 7 items assessed exposure to (1) accident/natural disaster/fire; (2) combat; (3) sudden unexpected death of a loved one; (4) life-threatening illness (self or loved one); (5) physical assault (to self or witnessing violence); (6) sexual assault; or (7) any other event that was life threatening, caused serious injury, or extreme distress (as shown later in Table 2). A follow-up question assessed subjective responses (i.e., fear, helplessness, or horror) to each endorsed event.

Table 2

Rates of Specific Criterion A Trauma Categories by Gender and Ethnic Minority Status Among College Freshmen ( $N = 3,014$ )

Criterion A trauma category	% (and $n$ ) for:			$f$	$\chi^2(1)$	Ethnic minority	Nonethnic minority	$\chi^2(1)$	$f$
	Total sample	Female	Male						
Accident/natural disaster/fire	27 (807)	32 (561)	20 (246)	0.14	55.29***	29 (220)	26 (587)	1.54	0.02
Warfare/combat	1 (17)	1 (10)	1 (7)	0.00	0.00	1 (10)	0.3 (7)	9.88**	0.06
Sudden unexpected death	34 (1,023)	42 (733)	23 (290)	0.19	110.70***	35 (266)	34 (756)	0.15	0.00
Life-threatening illness	35 (1,068)	43 (759)	25 (309)	0.19	107.70***	33 (252)	36 (816)	3.57	0.03
Physical violence	24 (714)	28 (489)	18 (225)	0.11	38.49***	32 (246)	21 (468)	38.29***	0.11
Unwanted sex	7 (224)	11 (199)	2 (25)	0.18	91.78***	10 (77)	7 (147)	9.73**	0.06
Other	20 (614)	22 (397)	17 (217)	0.06	12.07**	22 (167)	20 (446)	1.06	0.02

\*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

### Traumatic stress sequelae

We assessed traumatic stress sequelae using the PTSD Checklist—Civilian Version (PCL-C; Weathers, Huska, & Keane, 1991; Weathers, Litz, Herman, Huska, & Keane, 1993), a reliable and well-validated measure of the 17 *DSM* PTSD symptoms. Participants endorsing trauma exposure were instructed to complete the PCL-C with regard to their particular traumatic event(s). PCL-C items were rated as symptom or nonsymptom using Blanchard, Jones-Alexander, Buckley, and Forneris's (1996) empirically derived cut scores. With these symptom ratings, participants were grouped into PTSD-positive or PTSD-negative consistent with *DSM-IV-TR* diagnostic criteria. Cronbach's alpha in this sample was 0.93.

## RESULTS

### *Rates and Sociodemographic Correlates: Criterion A Trauma*

#### Any exposure

A total of 66% ( $n = 1,999$ ) of participants reported a traumatic life event. The mean number reported was about 1.5 ( $SD = 1.45$ ), with 23% of participants reporting one event, 20% reporting two events, and 25% reporting three or more events.

#### Specific trauma types

Consistent with findings from community samples (e.g., Breslau et al., 1998), the most common events were life-threatening illness (35%) and sudden death of a loved one (34%), followed by accident/natural disaster/fire (26%), physical violence (24%), other event (20%), sexual assault (7%), and combat (1%; see Table 2).

#### Sociodemographic factors associated with any exposure

Table 1 presents associations between sociodemographic variables and trauma types. Women were more likely to report trauma exposure than men, and women experienced more events than men,  $M = 1.79$  ( $SD = 1.49$ ) versus  $M = 1.05$  ( $SD = 1.26$ ),  $t(3012) = 14.11$ ,  $p < .001$ , Cohen's  $d = 0.51$ . Non-White ethnicity was not associated with ever having trauma exposure. Lower SES was significantly associated with trauma exposure. Effect size estimates were in the medium range for significant associations. Of those with a history of trauma, ethnic minority status (coded as yes or no) and lower SES were associated with more events,  $r(3013) = .05$ ,  $p < .01$ ; and  $r(3012) = .12$ ,  $p < .001$ , indicating small effects.

Table 1  
*Rates of Criterion A Trauma Exposure by Gender, Ethnicity, and Socioeconomic Status*

Variable	Exposure present		Exposure absent		$\chi^2(N = 1)$	$t(3010)$	$\phi$	$d$
	% (n)	$M (SD)$	% (n)	$M (SD)$				
Gender								
Female	75 (1,324)		25 (439)		146.45***		.22	
Male	54 (675)		46 (576)					
Ethnic minority								
Yes	69 (531)		31 (241)		2.83		.03	
No	66 (1,467)		35 (774)					
SES		-0.14 (2.26)		.27 (2.20)		4.76***		0.17

Note. SES = socioeconomic status;  $\phi$  = Phi coefficient;  $d$  = Cohen's  $d$ .  
 \*\*\*  $p < .001$ .

### Sociodemographic associations with specific trauma types

Tables 2 and 3 present specific trauma types in association with sociodemographic variables. Women reported higher rates of exposure across all trauma categories, with the exception of warfare/combat, as compared with men. Ethnic minority status was associated with greater lifetime exposure to combat, physical violence, and unwanted sex. Lower SES scores were associated with exposure across all categories, with the exception of warfare/combat and life-threatening illness (see Table 3). In general, effect size estimates of significant associations between gender and trauma exposure categories were in the medium range, whereas those for associations between ethnic minority status and trauma exposure categories were in the small range. Effect size estimates for SES and trauma exposure categories were small, with the exception of associations between SES and physical violence and “other,” which were in the large range.

Table 3  
*Rates of Specific Criterion A Trauma Categories by Socioeconomic Status (SES) Among College Freshmen*

Criterion A trauma category	$M$ (and $SD$ ) for SES and:		$t(3009)$	Cohen's $d$
	Trauma present	Trauma absent		
Accident/natural disaster/fire	-0.21 (2.19)	0.08 (2.29)	3.17**	0.12
Warfare/combat	-0.67 (2.41)	0.00 (2.24)	1.23	0.04
Sudden unexpected death	-0.19 (2.25)	0.09 (2.24)	3.34**	0.12
Life-threatening illness	-0.09 (2.27)	0.05 (2.20)	1.71	0.06
Physical violence	-0.55 (2.43)	0.17 (2.16)	7.60***	0.28
Unwanted sex	-0.47 (2.36)	0.04 (2.23)	3.27**	0.12
Any other	-0.37 (2.31)	0.09 (2.21)	12.07**	0.44

\*\*  $p < .01$ . \*\*\*  $p < .001$ .

### *Rates and Sociodemographic Correlates: PTSD* **PTSD**

About 9% of the sample reported trauma and met criteria for PTSD ( $n = 266$ ). In general, the rate of PTSD increased as the number of trauma types experienced increased,  $r(3014) = .33, p < .001$ . Rates of PTSD were highest among those exposed to unwanted sex, followed by physical violence and “other” (shown later in Table 5).

Table 5  
Rates of Posttraumatic Stress Disorder (PTSD) by Different Trauma Categories

Criterion A trauma category	% (and n) for:			$\chi^2(1)$	$\phi$	% (and n) for:		$\chi^2(1)$	$\phi$
	PTSD	Female	Male			Ethnic minority	Nonethnic minority		
Accident/natural disaster/fire	15 (123)	16 (92)	13 (31)	1.91	0.05	17 (38)	15 (85)	0.96	0.04
Warfare/combat	12 (2)	10 (1)	14 (1)	0.07	0.07	20 (2)	0 (0)	1.59	0.31
Sudden death	16 (168)	18 (132)	12 (36)	4.74*	0.07	18 (48)	16 (120)	0.66	0.03
Life-threatening illness	15 (159)	16 (122)	12 (37)	2.91	0.05	18 (46)	14 (113)	2.90	0.05
Physical violence	22 (157)	24 (117)	18 (40)	3.40	0.07	22 (53)	22 (104)	0.04	0.00
Unwanted sex	31 (69)	33 (65)	16 (4)	2.89	0.11	23 (18)	35 (51)	3.03	0.12
Any other	21 (130)	24 (96)	16 (34)	6.09*	0.10	23 (38)	21 (92)	0.33	0.02

\*  $p < .05$ .

### Sociodemographic associations

Female gender and lower SES were associated with increased risk for PTSD; small effect sizes were noted for these associations. Ethnic minority status was not associated with PTSD (see Table 4).

Table 4  
Posttraumatic Stress Disorder (PTSD) by Gender, Ethnicity, and Socioeconomic Status (SES)

Variable	PTSD present		PTSD absent		$\chi^2(N = 1)$	$t(3010)$	$\phi$	Cohen's $d$
	% (n)	$M (SD)$	% (n)	$M (SD)$				
Gender								
Female	11 (199)		89 (1,564)		31.99***		0.10	
Male	5 (67)		95 (1,184)					
Ethnic minority								
Yes	10 (76)		90 (696)		1.33		0.02	
No	9 (190)		92 (2,051)					
SES		-0.34 (2.45)		0.03 (2.22)		2.61**		0.09

\*\*  $p < .01$ . \*\*\*  $p < .001$ .

With regard to specific trauma types (see Table 5), female gender was significantly associated with higher risk for PTSD after sudden death of a loved one and "other" trauma exposure. Ethnic minority status was not associated with PTSD risk after any specific life event. SES was only associated with PTSD after a life-threatening illness (see Table 6). All effect sizes were small for these associations.



**Table 6**  
*Posttraumatic Stress Disorder (PTSD) by Socioeconomic Status (SES) Among College Freshmen*

Criterion A trauma category	<i>M (and SD) for SES and:</i>		<i>t(3009)</i>	<i>Cohen's d</i>
	PTSD present	PTSD absent		
Accident/natural disaster/fire	-0.24 (2.37)	-0.21 (2.17)	0.16	0.01
Warfare/combat	1.62 (2.27)	-0.97 (2.33)	-1.48	0.05
Sudden unexpected death	-0.39 (2.44)	-0.15 (2.21)	1.31	0.05
Life-threatening illness	-0.54 (2.47)	-0.02 (2.15)	2.80**	0.10
Physical violence	-0.69 (2.57)	-0.51 (2.39)	0.85	0.02
Unwanted sex	-0.35 (2.44)	-0.52 (2.32)	-0.49	0.02
Other	-0.53 (2.48)	-0.33 (2.26)	0.89	0.03

\*\*  $p < .01$ .

### *Multivariate Analysis of Socio-Demographic Risk Factors for Trauma and PTSD*

Hierarchical logistic regression was used to identify sociodemographic variables uniquely associated with trauma exposure and PTSD. In predicting trauma exposure, data collection site (UB vs. UNCG) was entered on the first step. Sociodemographic variables significantly associated with trauma exposure (i.e., SES, gender) were entered on the second step. For the model predicting PTSD status, site was entered on the first step, trauma severity (number of trauma types; unwanted sexual contact) was entered on the second step, and sociodemographic variables significantly associated with PTSD (SES, gender) were entered last. Number of traumas served as a proxy for the sensitizing effects of multiple traumas on risk for PTSD (Breslau, Chilcoat, Kessler, & Davis, 1999) and unwanted sexual contact because of its particularly noxious effects on risk for PTSD (e.g., Kessler et al., 1999). Thus, we could examine whether sociodemographic variables predicted unique variance beyond indices of trauma severity.

We examined the change in Wald's chi-square at each step as an indicator of whether the variables on that step added significant unique variance to the existing model.

### *Model Predicting Trauma Status*

There was a significant improvement in the model chi-square at Step 1,  $\chi^2(1, N = 3,012) = 20.22$ ,  $p < .001$ ; suggesting a site effect. The odds of having a history of trauma exposure were 1.52 times higher (95% confidence interval [CI] = 1.26, 1.83) for participants from UB, compared with participants from UNCG. There was significant increment in the model chi-square at Step 2,  $\chi^2(2, N = 3,012) = 144.95$ ,  $p < .001$ , suggesting significant effects of sociodemographic variables. After controlling for other variables, the odds of trauma exposure were 2.46 times higher (95% CI = 2.08–2.85) for women compared with men,  $\chi^2(1, N = 3,012) = 123.52$ ,  $p < .001$ . After controlling for other variables, the odds of trauma exposure decreased by 7% (OR = .93; 95% CI = .89–.97) for every one unit increase in SES score,  $\chi^2(1, N = 2012) = 15.72$ ,  $p < .001$ .

### *Model Predicting PTSD Status*

Step 1 did not provide a significant increment in model,  $\chi^2(1, N = 3,012) = .05$ , *ns*; suggesting no site effects on PTSD status. There was a significant increment in model chi square at Step 2,  $\chi^2(2, N = 3,012) = 310.81$ ,  $p < .001$ ; trauma severity (number of traumas, unwanted sexual



contact) was associated with PTSD status. Controlling for other variables, the odds of PTSD were 1.98 times higher (95% CI = 1.78, 2.16) for each additional trauma experienced,  $\chi^2(1, N = 3,012) = 190.89, p < .001$ ; and 1.73 times higher (95% CI = 1.18, 2.53) for those with a history of unwanted sexual contact compared with those without this history,  $\chi^2(1, N = 3,012) = 7.96, p < .01$ . The increment in model chi-square was not statistically significant at Step 3,  $\chi^2(5, N = 3,012) = 3.69, ns$ ; suggesting no effects of sociodemographic (gender, SES) variables on PTSD status.

## DISCUSSION

The present study examined rates of *DSM-IV* Criterion A and posttraumatic stress symptoms among incoming college freshmen. Results show that students enter college with significant trauma histories and PTSD symptoms. Trauma characteristics were stronger predictors of the development of PTSD than were sociodemographic factors.

### *Criterion A Trauma Among Incoming College Students*

A striking proportion (66%) of our incoming students reported a history of exposure to a Criterion A event. This is consistent with previous studies with college students (Amir & Sol, 1999; Bernat et al., 1998; Blanchard et al., 2005; Vrana & Lauterbach, 1994), although on the lower end of the range of rates previously reported. This likely is due to the fact that we assessed Criterion A trauma (objective and subjective components), whereas most studies to date have examined only event exposure.

One quarter of our sample reported a history of physical assault, and 7% reported sexual assault (11% of women, 2% of men). The high rates of interpersonal violence are consistent with other studies of college students (Bernat et al. 1998; Koss, Gidycz, & Wisniewski, 1987; Mohler-Kuo, Dowdall, Koss, & Wechsler, 2004), as well as with community studies (Breslau et al., 1998). These rates are of clinical concern as these events pose risk not only for PTSD (discussed later), but also for problem outcomes such as social isolation, substance abuse, and aggression (Borsari, Read, & Campbell, 2008; Feerick & Snow, 2005; Filipas & Ullman, 2006; Jakupcak & Tull, 2005).

Similar to Breslau et al.'s (1998) findings in their community sample, the most common traumas among these students were life-threatening illness and sudden and unexpected death of a loved one—reported by approximately one third of our sample. The relatively high occurrence of these types of traumas points to the need for further work to examine the impact of these two types of events on student adjustment and functioning.

### *Sociodemographic Correlates of Criterion A Trauma*

Female gender and lower SES were associated with Criterion A trauma in multivariate models. Women were over two times more likely to report Criterion A trauma than men. This corroborates previous data showing female gender to emerge as a risk factor when *DSM*-defined trauma is assessed (Breslau & Kessler, 2001; Norris et al., 2002). Gender differences were most pronounced for sexual assault, which women reported five times more often than men. There is substantial evidence that women bear the burden of sexual violence (Kimerling et al., 2007). Data here suggest that the college milieu is no exception.

Female gender and lower SES were associated with almost all trauma types with the exception of combat (and life-threatening illness for SES). We also observed non-White ethnicity to be a risk factor for combat and assaultive violence. These findings generally are consistent with those of Breslau et al. (1998), although Breslau et al. found female gender to be a risk factor only for trauma types that included rape and sexual assault.

### *PTSD Among Incoming College Students*

Approximately 9% of the 3,014 students in our sample met criteria for posttraumatic stress disorder using the Blanchard et al. cutoffs. Our data corroborate previous reports in college students (e.g., Amir & Sol, 1999; Smyth et al., 2008), with a more heterogeneous sample (both with respect to trauma type and sociodemographic factors). The timing of our assessment is also important, as it sheds light on rates of PTSD in students as they begin their college careers. These rates suggest that, although perhaps buffered from some of life's harsher realities within the college environment, college students are not protected from trauma and resulting psychological sequelae. The risk that we observed to be associated with multiple traumas is notable, particularly because exposure to multiple trauma types was the modal experience among those with trauma.

### *Sociodemographic Correlates of PTSD*

Although female gender and SES were associated with increased risk for PTSD in univariate models, these sociodemographic factors were no longer significant predictors in multivariate models. This suggests that, among college students, the specific risk of female gender and SES for PTSD appears to be a function of severity of trauma exposure.

In a meta-analytic review of risk factors for PTSD (Brewin et al., 2000), factors distal to trauma exposure, such as gender, SES, and ethnicity showed relatively smaller average effect sizes (approximately .15), whereas effect sizes for trauma severity were larger (.23). The authors proposed that risk factors more proximal to the trauma may mediate or moderate the effect of pretrauma factors on PTSD risk. A second meta-analysis focused on person characteristics relevant to psychological processing of trauma found that trauma severity and peritraumatic emotions were important risk factors, with pretrauma variables having a relatively weaker effect (Ozer, Best, Lipsey, & Weiss, 2003). Taken together with our findings, proximal factors (i.e., trauma severity) appear to have a stronger effect on PTSD risk for college students than more distal sociodemographic factors.

### *Limitations, Future Directions, and Clinical Implications*

Strengths of this study include a large and heterogeneous sample of college students, assessed at a critical developmental juncture. The use of well-validated measures with strong associations with gold-standard diagnostic assessments of Criterion A trauma and PTSD symptoms (Foa, 1995; Foa, Riggs, Dancu, & Rothbaum, 1993; Read, Farrow, Jaanimägi, & Ouimette, 2009; Ruggerio, Del Ben, Scotti, & Rabalais, 2003), along with effect size estimates that allow for estimation of the magnitude of the effects for this sample also are strengths.

Limitations to this study include the potential for self-selection biases and reliance on self-report measures. Furthermore, no data were available regarding functional impairment among those with trauma and significant PTSD symptoms. The primary objective of this work was to

document the scope of Criterion A trauma, PTSD, and their predictors in a matriculating college sample. Future work should examine outcomes relevant to college functioning, as specific clinical implications may emerge from such research.

The apparent ubiquity of trauma and PTSD in college students suggests that these issues may be an important area of focus for college counselors and administrators. For example, university-based outreach efforts may be aimed specifically to incoming students who are experiencing psychological sequelae associated with trauma exposure. Events that we observed to be of high frequency in our sample (e.g., life-threatening illness, sudden unexpected death of a loved one) could be targeted. Outreach efforts could take the form of educating students explicitly about available services for individuals struggling with the aftermath of trauma. Such outreach would not necessarily need to be resource intensive or costly, as it could take place during routine orientation activities typically organized for beginning first-year students.

In addition, our findings regarding the association between trauma severity and PTSD symptoms point to the particular toxicity of repeated trauma exposure and again offer clinical implications. Information about trauma types and number of trauma exposures should routinely be collected by university counseling centers whenever trauma is reported, as such information may help to identify those at greatest risk for experiencing PTSD symptoms.

In summary, our findings delineate the scope of trauma exposure and posttraumatic stress symptoms among matriculating college students and help identify those students who may be at greatest risk as they enter college. Future work should examine functional outcomes associated with Criterion A trauma and PTSD, and, if relevant, develop appropriate services for those entering college with trauma and posttraumatic stress as they make the transition from high school to college, from adolescence into adulthood.

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*Acknowledgement: This work was supported by a grant (R01DA018993) from the National Institute on Drug Abuse to Jennifer P. Read. We thank Rachel Bachrach, Melissa Griffin, Jennifer Merrill, and Jeffrey Wardell for their helpful comments on earlier drafts of this article.*

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