

## Research Article

# THE ROLE OF RAPE TACTICS IN RISK FOR POSTTRAUMATIC STRESS DISORDER AND MAJOR DEPRESSION: RESULTS FROM A NATIONAL SAMPLE OF COLLEGE WOMEN

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**Background:** *College women are at high risk for substance-involved rape. However, most studies have focused on forcible rape and have not differentiated these tactics from tactics that involve drug or alcohol intoxication. The purpose of this study was to determine the effects of lifetime exposure to forcible rape (FR), incapacitated rape (IR), and drug–alcohol facilitated rape (DAFR) tactics on risk for PTSD and depression. A secondary purpose was to examine the role of different incident characteristics, including relationship to the perpetrator, fear, injury, force, memory, and acknowledgement. Methods:* A national sample of 2,000 college women completed structured telephone interviews assessing demographics, psychiatric diagnoses, and rape experiences. **Results:** *Multivariate logistic regression analyses including demographic variables, multiple rape history, and rape tactics indicated that all three tactics were associated with increased risk for PTSD and depression. Correlational analyses revealed that rape tactics differed in relation to incident characteristics. Multivariate logistic regression analyses showed that only physical injury was positively associated with depression and no characteristics were related to PTSD. Conclusions:* *The strong association between IR/DAFR and psychiatric diagnoses suggests that the definition of rape experiences be expanded to include substance-involved tactics. Differing incident characteristics imply that IR/DAFR experiences are associated with different pathways to psychiatric symptoms in comparison to FR experiences. Depression and Anxiety 27:708–715, 2010. © 2010 Wiley-Liss, Inc.*

**Key words:** *sexual assault; substance use; mental health; intoxication; interpersonal violence; forcible rape; incapacitated rape; drug–alcohol-facilitated rape; incident characteristics*

College is a particularly high-risk environment for rape, with 20–25% of women reporting sexual assault at some point during their college years.<sup>[1]</sup> Rape is associated with a number of adverse health outcomes, including depression, posttraumatic stress disorder (PTSD), social adjustment problems, and chronic

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health problems.<sup>[2-4]</sup> For example, data from the National Women's Study<sup>[2]</sup> indicated that 31% of women with a history of forcible rape endorsed lifetime PTSD, compared with 5% of nonvictims of crime. Moreover, 30% of forcible rape victims endorsed lifetime depression, compared with 10% of nonvictims of crime.<sup>[2]</sup> Although the mental health outcomes of rape have been previously examined in both college and community samples, prior research of this nature has been limited in its focus on forcible rape (FR), and has not specifically examined the mental health associates of incapacitated (IR) and drug-alcohol facilitated rape (DAFR) experiences.

In addition to FR (i.e., intercourse involving force, threat of force, or injury), many legal statutes define rape as unwanted intercourse that occurs through lack of consent, including inability to give consent due to intoxication. These rapes include both IR and DAFR. IR is defined as rape that is perpetrated after a victim voluntarily uses drugs or alcohol, but is too intoxicated to be aware of or control her environment. DAFR is defined as rape that occurs after a perpetrator deliberately gives the victim drugs without the victim's permission or tries to get her drunk. Similarly, the victim is too intoxicated to be aware of or control the situation.<sup>[5]</sup> These experiences may be particularly relevant among college women due to the notably high rates of binge drinking among this population<sup>[6,7]</sup> and as studies have found that between one-half and two-thirds of college students' sexual assaults are associated with alcohol use.<sup>[8-11]</sup> Given high rates of substance use, especially alcohol use, on college campuses, risk of DAFR and IR is of particular concern for college women, and understanding the mental health correlates of IR/DAFR is a public health priority.<sup>[8,9]</sup>

IR/DAFR experiences have been found to differ from FR experiences in several notable respects. FR is more likely than IR/DAFR to involve incident characteristics associated with poor mental health outcomes including injury, victim resistance, and life disruption.<sup>[10-13]</sup> Additionally, victims of FR are more likely to report child sexual abuse history, older age, sexually permissive attitudes, and low self-esteem than victims of IR/DAFR.<sup>[14,15]</sup> However, some evidence suggests that women experiencing IR/DAFR are more likely to report feeling less "on guard" during the rape and to report feeling responsible for what happened.<sup>[16]</sup> Further, among national samples of community and college women, IR and DAFR experiences are less likely to be reported to police or other authorities, with only 7% of college women stating that they reported an IR/DAFR experience.<sup>[16,17]</sup> It is reasonable to hypothesize that although IR/DAFR incidents are less likely to include elements traditionally associated with poorer mental health outcomes, IR/DAFR experiences may confer risk for mental health problems through variant mechanisms, such as victim guilt, self-blame, reduced help-seeking, or substance misuse.

Research has linked IR/DAFR to current and past substance use among rape victims.<sup>[11,14,16,18]</sup> In a large, national college sample, Mohler-Kuo et al.<sup>[19]</sup> found college heavy episodic drinking and high school (prior) heavy drinking to be among the strongest predictors of IR. Extending these findings, Kaysen et al.<sup>[20]</sup> found that IR was both concurrently and prospectively associated with an increase in alcohol consumption and negative alcohol-related consequences among college students. Findings that history of substance misuse is a strong predictor of IR/DAFR rape experiences, and that substance misuse among IR/DAFR victims remains relatively stable over time have been replicated among community samples and appear to be robust.<sup>[14,21]</sup> Given prior evidence suggesting that substance misuse may serve to exacerbate symptoms of PTSD and depression,<sup>[22-24]</sup> IR and DAFR victims' continued substance misuse may place them at increased risk (compared with non-victims) for PTSD and depression.

Only one prior study has examined the role of IR and DAFR as risk factors for PTSD and depression. This study relied on a national household probability sample of 3,001 women and evaluated the relative contribution of FR, IR, and DAFR to PTSD and depression.<sup>[25]</sup> Results indicated that lifetime DAFR (after controlling for FR tactics) was uniquely associated with PTSD; however, IR was not uniquely associated with mental health outcomes and FR was the strongest unique predictor of PTSD and depression. This study included overlapping rape tactics in one model and thus did not evaluate IR and DAFR separately from FR. It is possible that both IR and DAFR represent significant risk associates of PTSD and depression when not artificially controlling for overlapping tactics that cannot be disentangled from these episodes. Furthermore, it is unknown how IR and DAFR would relate to mental health outcomes in a college population given college women's higher rates of substance misuse<sup>[9]</sup> and IR/DAFR experiences.<sup>[5,26]</sup> Investigations involving young adult victims, who have more recent sexual assault experiences, are a necessary next step needed to more effectively evaluate the impact of variant rape experiences and would have direct relevance for primary prevention, tertiary assessment, and early intervention for mental health problems associated with sexual assault on college campuses.

The primary purpose of this study was to carefully assess, using a randomly selected national sample of college women, women's history of experiencing three variant rape tactics (FR, IR, and DAFR) and to examine whether these experiences were significant risk associates of PTSD and depression. In examining this association, we accounted for relevant risk and demographic factors (i.e., age, race/ethnicity, income, and prior sexual victimization) to better determine the effects of each rape tactic on PTSD and depression. It was expected that FR tactics would be strongly related to both lifetime PTSD and depression, given its

established association with peritraumatic force and injury, prior sexual abuse history, and poor self-esteem. Further, given prior evidence of self-blame and continued substance misuse found among victims of IR/DAFR, it was also predicted that both IR and DAFR would be significantly associated with PTSD and depression. The secondary purpose of this study was to explore potential trajectories through which variant rape tactics could be associated with mental health outcomes. We conducted exploratory analyses to determine whether the three rape tactics were associated with different incident characteristics, and whether these incident characteristics were associated with mental health outcomes.

## METHOD

### PARTICIPANTS

A list sample of about 17,000 college women was purchased from the American Student List (ASL). Respondents were stratified by region of the country, randomly selected, and then contacted via random digit dial methodology in proportion to the national census representation of college women. There were 253 different schools from 47 different states included in the sample. A total of 5,692 women were contacted and 2,000 telephone interviews were completed. Of the women contacted, 1,094 were not eligible and 2,598 either refused participation or did not complete the interview, resulting in a cooperation rate of 54.4%. Interviews were conducted by a national surveying firm, SRBI (Schulman, Ronca, & Bucuvalas, Incorporated).

### MEASURES<sup>1</sup>

**Demographic information.** Women were asked to report their current age, race/ethnicity, and estimated family yearly income.

**Mental health.** Lifetime PTSD and major depressive episode (MDE) were assessed with the National Women's Study (NWS) PTSD and MDE modules, structured interviews based on *Diagnostic and Statistical Manual of Mental Disorders-IV (DSM-IV)*<sup>[27]</sup> criteria.<sup>[28,29]</sup> The PTSD module assessed the 17 DSM-IV diagnostic symptoms in addition to functional impairment. Participants were asked to answer the questions in reference to "something bad" that happened to them. The MDE module assessed hallmark symptoms of major depression, including depressed mood, anhedonia, appetite/sleep disturbances, and psychomotor agitation/retardation. Research on these measures has provided support for concurrent validity and several forms of reliability (e.g., temporal stability, internal consistency, and diagnostic reliability).<sup>[12,30]</sup>

**Rape experiences.** We assessed women's first incident and, for women with multiple rapes, most recent incident of rape. Rape could have taken place at any point in the participant's lifetime and was defined as penetration of the victim's vagina, mouth, or rectum without consent. Several behaviorally specific questions were employed to determine whether women had been raped by (a) force or threat of harm, (b) after drinking so much alcohol that they were high, drunk, or passed out, and (c) after taking or being given enough drugs to make them high, intoxicated, or passed out. To differentiate between IR and DAFR, participants were asked whether (a) they had consumed alcohol/drugs voluntarily, (b) the perpetrator had deliberately given them alcohol/drugs without permission, or (c) both. They

were also asked whether they were too drunk or high to know what they were doing or to control their behavior.

Cases were defined as including FR tactics if the perpetrator used force or threat of force. The essential element of IR was that the victim perceived the perpetrator to have raped her when she was intoxicated and impaired via her voluntary intake of drugs or alcohol. On the contrary, the essential element of DAFR was that the perpetrator was perceived by the victim as having deliberately attempted to induce incapacitation by administering drugs or alcohol to the victim. In both DAFR and IR cases, the victim was unable to consent to sexual intercourse due to incapacitation (e.g., lack of consciousness/awareness or ability to control behavior).

Classification of individuals into rape tactic categories was based on the history of each type of rape tactic; classification was nonmutually exclusive. For example, women who reported a history of DAFR as their most recent incident but also reported a "first incident" that met criteria for FR were considered to have a history of both DAFR and FR. Women who reported incidents that involved more than one rape tactic as part of the same incident were classified as having a history of experiencing each rape tactic which they endorsed. Women who reported both a most recent incident and a first incident qualified for having multiple victimizations. A majority of women with a history of DAFR and IR also endorsed a history of FR (38–67%), whereas approximately 10–20% of women with a history of FR also had a history of IR or DAFR.

**Rape incident characteristics.** For women who endorsed a rape experience, several incident characteristics were assessed. Whether the victim knew the perpetrator was assessed by asking, "Did you know the person fairly well or not?" Peritraumatic fear was assessed by asking "Were you afraid that you might be killed or seriously injured?" Injury was assessed by "Did you suffer serious physical injuries, minor injuries, or no physical injuries as a result of the incident?" Participants were categorized as injured if they endorsed serious or minor injuries. Force was assessed by "Were you physically forced to engage in this act?" Memory was assessed by "How well do you remember the details of what happened in this incident?" Women reporting "extremely well" and "very well" were categorized as remembering the event well, whereas women reporting "not so well" and "not well at all" were categorized as not remembering the event well. Acknowledgement of the event as rape or a crime was assessed by asking whether women felt that the incident was "an unpleasant incident but not a crime," "some type of crime but not a rape," or "a rape." For women who reported multiple incidents, only data from the most recent incident were used to define these variables.

### PROCEDURE

A computer-assisted telephone interviewing system was used to conduct the interviews. Experienced female interviewers conducted the interviews in either English or Spanish, based on respondent language preference. The interviewer first determined that the residence contained one or more women eligible for the study. The interviewer then introduced the study and provided a toll-free telephone number to confirm authenticity of the study. For residences that included more than one woman who met study criteria, the woman with the most recent birthday was interviewed. Verbal consent was obtained after providing participants with a complete description of the study. Completed interviews averaged 20 min. This study was approved by the Institutional Review Board at a major medical university.

### STATISTICAL ANALYSES

Descriptive statistics were conducted for the full sample. Multivariate logistic regressions were used to determine whether rape

<sup>1</sup>Interview measures are available upon request.

tactics were associated with PTSD and MDE after controlling for demographic variables and multiple rape history. Correlations were conducted to explore the relationship between rape tactics and incident characteristics. Correlations were anchored to the most recent incident for both characteristics and tactics. Pearson's correlations were used to examine the relationship between continuous variables, phi correlations for the relationship between dichotomous variables, and biserial correlations for the relationship between dichotomous and continuous variables. Logistic regression analyses examined whether rape characteristics were related to the mental health disorders among the subsample of rape victims.

## RESULTS

The prevalence of lifetime PTSD among the full sample of college women was 18.0% ( $n = 360$ ), and 16.0% ( $n = 321$ ) met criteria for lifetime MDE. With regard to rape history, 4.2% ( $n = 84$ ) of college women reported history of IR, 2.7% reported history of DAFR ( $n = 54$ ), and 8.7% reported history of FR ( $n = 174$ ); 4.8% of all women surveyed reported multiple rape experiences. Approximately 76% of the sample were Caucasian, 11% were African-American, 6% were Hispanic, and 7% were either Pacific Islander, Native American, Asian, or self-reported "other." The mean age was 20.13 ( $SD = 3.19$ ). Approximately 35% were freshman, 24% were sophomores, 20% were juniors, and 20% were seniors. Over half of the sample reported a

yearly family income of over \$60,000 (55%), 34% reported income between \$20,000 and \$60,000, and 11% reported an income of less than \$20,000.

### FORCIBLE RAPE

As shown in Table 1, multivariate logistic regression analyses demonstrated that a history of FR was associated with increased likelihood of both PTSD ( $OR = 4.47$ ,  $P < .001$ ) and MDE ( $OR = 3.55$ ,  $P < .001$ ).  $\chi^2$  statistics were significant for both models, indicating good model fit (PTSD:  $\chi^2 = 153.35$ , (11,  $N = 1,773$ ),  $P < .001$ ; MDE:  $\chi^2 = 99.11$ , (11,  $N = 1,773$ ),  $P < .001$ ).

### INCAPACITATED RAPE

Results of logistic regression analyses indicated that women with a history of IR were approximately twice as likely to meet criteria for PTSD ( $OR = 2.43$ ,  $P < .001$ ) and MDE ( $OR = 1.91$ ,  $P < .05$ ) in comparison to women with no IR history (Table 2).  $\chi^2$  statistics were significant for both models (PTSD:  $\chi^2 = 117.16$ , (11,  $N = 1,773$ ),  $P < .001$ ; MDE:  $\chi^2 = 73.60$ , (11,  $N = 1,773$ ),  $P < .001$ ).

### DRUG-ALCOHOL FACILITATED RAPE

Table 3 shows that DAFR history was associated with more than three times the likelihood of meeting criteria

**TABLE 1. Results of logistic regression analyses relating forcible rape to posttraumatic stress disorder and major depressive episode**

Predictor	Posttraumatic stress disorder			Major depressive episode		
	Wald	OR	CI (95%)	Wald	OR	CI (95%)
Age	3.38			1.89		
18–20		1.00	–		1.00	–
Over 21		1.52	0.97–2.37		1.36	0.88–2.10
Race	2.78*			3.13*		
Caucasian		1.00	–		1.00	–
African-American		1.02	0.68–1.56		1.29	0.86–1.91
Hispanic		1.92	1.20–3.09		2.00	1.26–3.16
Other		0.82	0.47–1.42		1.18	0.70–1.98
Income	2.04			1.21		
< \$20,000		1.16	0.76–1.78		1.32	0.89–1.97
\$20,000–\$60,000		1.34	1.01–1.77		1.19	0.89–1.59
> \$60,000		1.00	–		1.00	–
Education	0.82			0.43		
Freshman		1.46	0.84–2.51		1.34	0.79–2.29
Sophomore		1.54	0.89–2.67		1.27	0.74–2.19
Junior		1.24	0.80–1.94		1.22	0.78–1.89
Senior		1.00	–		1.00	–
Multiple rapes	13.77***			5.54*		
No		1.00	–		1.00	–
Yes		2.82	1.63–4.87		1.99	1.12–3.53
History of forcible rape	49.52***			32.47***		
No		1.00	–		1.00	–
Yes		4.47	2.94–6.79		3.55	2.29–5.49

OR, odds ratio; CI, confidence interval. Reference groups for dependent variables were as follows: posttraumatic stress disorder (PTSD): no history of PTSD; major depressive episode (MDE): no history of MDE.

\* $P < .05$ ; \*\*\* $P < .001$ .

**TABLE 2. Results of logistic regression analyses relating incapacitated rape to posttraumatic stress disorder and major depressive episode**

Predictor	Posttraumatic stress disorder			Major depressive episode		
	Wald	OR	CI (95%)	Wald	OR	CI (95%)
Age	5.86*			3.58		
18–20		1.00	–		1.00	–
Over 21		1.72	1.11–2.67		1.52	0.98–2.35
Race	2.92*			3.28*		
Caucasian		1.00	–		1.00	–
African-American		1.10	0.74–1.66		1.36	0.92–2.00
Hispanic		1.93	1.21–3.07		2.02	1.26–3.22
Other		0.81	0.47–1.41		1.17	0.70–1.96
Income	1.49			0.94		
<\$20,000		1.14	0.75–1.74		1.29	0.87–1.93
\$20,000–\$60,000		1.28	0.97–1.69		1.14	0.86–1.53
>\$60,000		1.00	–		1.00	–
Education	1.38			0.79		
Freshman		1.61	0.93–2.79		1.48	0.87–2.53
Sophomore		1.76	1.02–3.04		1.43	0.83–2.47
Junior		1.40	0.90–2.17		1.35	0.87–2.09
Senior		1.00	–		1.00	–
Multiple rapes	59.17***			34.78***		
No		1.00	–		1.00	–
Yes		6.41	3.99–10.29		4.18	2.60–6.72
History of incapacitated rape	10.96***			5.19*		
No		1.00	–		1.00	–
Yes		2.43	1.44–4.11		1.91	1.09–3.35

OR, odds ratio; CI, confidence interval. Reference groups for dependent variables were as follows: posttraumatic stress disorder (PTSD): no history of PTSD; major depressive episode (MDE): no history of MDE.

\* $P < .05$ ; \*\*\* $P < .001$ .

for PTSD (OR = 3.36,  $P < .001$ ) and four times the likelihood of meeting criteria for MDE (OR = 4.02,  $P < .001$ ).  $\chi^2$  statistics were significant for both models (PTSD:  $\chi^2 = 118.85$ , (11,  $N = 1,773$ ),  $P < .001$ ; MDE:  $\chi^2 = 85.21$ , (11,  $N = 1,773$ ),  $P < .001$ ).

## SECONDARY ANALYSES AMONG RAPE VICTIMS

Exploratory analyses in the subsample of rape victims ( $n = 230$ ) were conducted to determine whether incident characteristics (i.e., known perpetrator, peritraumatic fear, injury, use of force, memory of the event, and acknowledgement) were associated with rape tactics (see Table 4). Both IR and DAFR were generally negatively correlated with most of the incident characteristics. IR was negatively related to knowing the perpetrator ( $r = -.18$ ,  $P < .05$ ), fear ( $r = -.30$ ,  $P < .001$ ), injury ( $r = -.22$ ,  $P < .01$ ), force ( $r = -.53$ ,  $P < .001$ ), remembering the event well ( $r = -.25$ ,  $P < .001$ ), and acknowledgement ( $r = -.25$ ,  $P < .001$ ). DAFR was also negatively related to knowing the perpetrator ( $r = -.17$ ,  $P < .05$ ), fear ( $r = -.16$ ,  $P < .05$ ) and force ( $r = -.16$ ,  $P < .05$ ). Conversely, FR was positively associated with most of the characteristics. Specifically, FR was positively associated with fear ( $r = .37$ ,  $P < .001$ ), injury ( $r = .44$ ,  $P < .001$ ), force ( $r = .86$ ,  $P < .001$ ), remembering

the event well ( $r = .32$ ,  $P < .001$ ), and acknowledging the event as a crime or rape ( $r = .37$ ,  $P < .001$ ).

Multivariate logistic regression analyses were conducted to explore the associations between incident characteristics, PTSD, and MDE. None of the incident characteristics were significantly associated with PTSD (see Table 5); however, having a known perpetrator was marginally related to decreased risk of PTSD (OR = 0.43,  $P = .06$ ). As shown in Table 5, the only significant predictor of MDE was having an injury resulting from the rape (OR = 2.66). Similar to the PTSD model, knowing the perpetrator was marginally associated with decreased likelihood of MDE (OR = 0.43,  $P = .08$ ).

## DISCUSSION

This study examined how three variant rape tactics related to PTSD and MDE while accounting for history of other relevant risk factors. Consistent with hypotheses, all three rape tactics were positively associated with mental health outcomes among college women. Although FR history was associated with the highest risk for PTSD and MDE, IR and DAFR history were associated with two to four times the risk of developing these disorders, in comparison to women without IR or DAFR history. These findings contrast

**TABLE 3. Results of logistic regression analyses relating drug–alcohol-facilitated rape to posttraumatic stress disorder and major depressive episode**

Predictor	Posttraumatic stress disorder			Major depressive episode		
	Wald	OR	CI (95%)	Wald	OR	CI (95%)
Age	5.81*			3.34		
18–20		1.00	–		1.00	
Over 21		1.71	1.10–2.65		1.50	0.97–2.31
Race	2.97*			3.38*		
Caucasian		1.00	–		1.00	
African American		1.11	0.74–1.68		1.39	0.94–2.06
Hispanic		1.96	1.22–3.15		2.04	1.27–3.27
Other		0.80	0.46–1.41		1.17	0.70–1.96
Income	1.66			1.02		
<\$20,000		1.14	0.74–1.74		1.30	0.87–1.95
\$20,000–\$60,000		1.30	0.98–1.71		1.17	0.87–1.56
>\$60,000		1.00	–		1.00	–
Education	1.27			0.60		
Freshman		1.57	0.91–2.69		1.42	0.84–2.40
Sophomore		1.71	1.00–2.95		1.38	0.80–2.37
Junior		1.33	0.86–2.07		1.27	0.82–1.97
Senior		1.00	–		1.00	–
Multiple Rapes	62.57***			33.48***		
No		1.00	–		1.00	–
Yes		6.55	4.11–10.44		3.88	2.45–6.15
History of drug–alcohol-facilitated rape	13.49***			19.33***		
No		1.00	–		1.00	–
Yes		3.36	1.76–6.42		4.02	2.16–7.47

OR, odds ratio; CI, confidence interval. Reference groups for dependent variables were as follows: posttraumatic stress disorder (PTSD): no history of PTSD; major depressive episode (MDE): no history of MDE.

\* $P < .05$ ; \*\*\* $P < .001$ .

**TABLE 4. Correlations among rape tactic and rape characteristics for most recent incident (rape victims only)**

	1	2	3	4	5	6	7	8	9
(1) IR	–	–.28***	–.47***	–.18*	–.30***	–.22**	–.53***	–.25***	–.25***
(2) DAFR		–	–.14*	–.17*	–.16*	–.07	–.16*	–.12	–.02
(3) FR			–	.14	.37***	.44***	.86***	.32***	.37***
(4) Known perpetrator				–	–.02	.08	.08	.10	.03
(5) Peritraumatic fear					–	.31***	.38***	.24***	.31***
(6) Injury						–	.27***	.15**	.42***
(7) Force							–	.30***	.34***
(8) Remember event well								–	.12
(9) Acknowledgement									–

\* $P < .05$ ; \*\* $P < .01$ ; \*\*\* $P < .001$ .

with a prior community study that failed to find a relationship between IR and PTSD or depression, or between DAFR and MDE.<sup>[25]</sup> However, the community study included overlapping rape tactics within one model and may therefore have artificially controlled for important co-occurring elements of DAFR/IR incidents. This study presents a fuller picture of the associations between each rape tactic and mental health outcomes. Furthermore, this study focused on college women, who were likely to have experienced a rape more recently and to be at greater risk for experiencing IR or DAFR. Therefore, the association between IR/

DAFR and mental health may be magnified in this population.

This study also explored (a) whether rape tactics were associated with different incident characteristics and (b) whether these characteristics were associated with PTSD and MDE. FR was positively associated with fear, injury, force, remembering the event well, and acknowledging the event as a crime or rape. IR and DAFR tended to be negatively associated with these characteristics. FR’s association with a number of risk factors for poor mental health outcomes (i.e., fear, force, injury, and acknowledgement<sup>[10,31]</sup>) may account

**TABLE 5. Logistic regression results: rape characteristics and mental health**

Predictor	PTSD			MDE		
	OR	95% CI	P-value	OR	95% CI	P-value
Known perpetrator						
No	1.00	–	.06	1.00	–	.08
Yes	0.43	0.18–1.03		.47	0.20–1.11	
Peritraumatic fear						
No	1.00	–	.64	1.00	–	.70
Yes	1.21	0.54–2.69		1.18	0.52–2.68	
Injury						
No	1.00	–	.13	1.00	–	.02
Yes	1.79	0.83–3.85		2.66	1.21–5.87	
Force						
No	1.00	–	.45	1.00	–	.41
Yes	1.34	0.62–2.87		1.41	0.62–3.21	
Remember event well						
No	1.00	–	.36	1.00	–	.13
Yes	1.37	0.70–2.69		.57	0.28–1.17	
Acknowledgement						
Unpleasant incident	1.00	–	.26	1.00	–	.62
Crime	1.71	0.72–4.07		1.55	0.64–3.72	
Rape	2.15	0.85–5.40		1.33	0.51–3.50	

OR, odds ratio; CI, confidence interval. Reference groups for dependent variables were as follows: posttraumatic stress disorder (PTSD): no history of PTSD; major depressive episode (MDE): no history of MDE.

for the fact that it was associated with the highest risk for PTSD and MDE. However, only injury was associated with a mental health outcome (MDE) in this study. This is perhaps due to our reliance on lifetime mental health diagnoses and our assessment of incident characteristics for only the most recent incident.

Despite the fact that IR and DAFR were negatively associated with incident characteristics that have historically put victims at risk, and that IR was associated with poor memory for the event, these rape tactics demonstrated a significant positive association with PTSD and MDE. This finding suggests that there are other victim and incident characteristics that place IR/DAFR victims at increased risk for poor mental health. It is possible that FR and IR/DAFR are associated with different psychosocial trajectories. For example, IR was negatively associated with acknowledging the event as a crime or rape, which may limit reporting and help-seeking. IR and DAFR were also negatively correlated with knowing the perpetrator, and assaults committed by strangers have been associated with more fear and anxiety than assaults committed by intimates.<sup>[32]</sup> In this study, not knowing the perpetrator approached significance as a correlate of PTSD and MDE. Finally, victims of IR/DAFR are more likely to hold themselves responsible and are particularly at risk for substance use disorders, which may exacerbate post-assault PTSD and MDE symptoms.<sup>[14,16,21–23]</sup>

While this study offers novel information on the mental health correlates of IR and DAFR in college women, certain limitations should be noted. Several factors limited our ability to draw conclusions about causal linkages between rape tactics and mental health outcome, including the cross-sectional design, inclusion of lifetime mental health diagnoses, and assessment of PTSD symptoms that were not anchored to rape experiences. Furthermore, the retrospective, self-report methodology may have been associated with recall and reporting biases. The use of telephone interviews excluded women who resided in homes without landline telephones, institutionalized women, and homeless women. However, it should be noted that relatively few women comprise these groups. The measurement of IR/DAFR could have been improved by including an assessment of intoxication levels, such as blood alcohol level. The use of non-mutually exclusive categorizations of rape incidents allowed us to more accurately reflect that specific rape incidents often involve the use of more than one rape tactic and allowed us to avoid losing ecological validity by creating false delineations between rape tactics. However, future studies could extend these findings by comparing mutually exclusive categories of rape victims (e.g., FR only, IR/FR, and DAFR/FR). Finally, we were restricted to information on women's first and most recent rape incidents. Research that investigates the full lifetime history of rape experiences by tactic is needed to fully understand the contributions of various rape tactics and incident characteristics to psychiatric disorders.

The findings of this study have important clinical and practical implications. Our findings suggest that, in order to better identify college women at risk for PTSD and MDE, researchers and service providers need to broaden their definition of rape to include cases of drug–alcohol-related incapacitation. Given the risk for substance use disorders in addition to PTSD and MDE among IR/DAFR victims, providers should be prepared to assess for and treat comorbid substance use conditions in this population. Finally, IR incidents were less likely to be acknowledged as rape in this study, which is consistent with the low likelihood that these assaults are reported to police and service providers.<sup>[17]</sup> Therefore, intervention efforts also need to focus on educating the public regarding a broader definition of rape and the benefits of reporting these incidents. Such efforts could ensure that IR/DAFR victims receive needed treatment and furthermore prevent chronic mental health problems among this population. These interventions would be of particular relevance on college campuses where the prevalence of alcohol-involved sexual assaults is high and where providers have the opportunity to intervene soon after an assault takes place.<sup>[19]</sup>

In summary, this study adds to the literature delineating the need to include IR and DAFR tactics in assessments of rape experiences and to treat trauma-related mental health problems in this population. Our

findings require replication with longitudinal designs. In addition, future research should explore whether IR/DAFR and FR are associated with different psychosocial trajectories. Specifically, research is needed to determine whether substance use, self-blame, perpetrator relationship, and reduced help-seeking represent risk factors for the development of psychiatric symptoms among IR/DAFR victims. Finally, studies are needed to determine whether tailoring interventions based on different rape experiences would improve risk-reduction and treatment outcomes among rape victims.

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