VOLUME 16, ISSUE 2, PAGES 56–73 (2015)

Criminology, Criminal Justice, Law & Society

E-ISSN 2332-886X
Available online at
https://scholasticahq.com/criminology-criminal-justice-law-society/

Resistance Strategies and Sexual Assault Outcomes: Do Measurement Decisions Influence Empirical Findings?

Eryn Nicole O'Neal and Kimberly A. Kaiser

Arizona State University

ABSTRACT AND ARTICLE INFORMATION

Research examining resistance strategies and sexual assault outcomes has resulted in inconsistent findings. In order to substantially contribute to this body of literature, we estimate the effects of several resistance strategy measures on victim injury outcomes and rape completion. We attempt to determine whether resistance measurement decisions influence empirical results. Findings suggest that measurement matters. Results indicate that the effects of resistance strategies on injurious outcomes and rape avoidance vary depending on operationalization and measurement techniques. This knowledge informs a methodological direction for future sexual assault resistance research. Practical implications and suggestions for future research are discussed.

Article History:

Received 24 October 2014
Received in revised form 9 February 2015
Received in revised form 28 March 2015
Accepted 4 April 2015

Keywords:

sexual assault, rape resistance strategies, victimization, injury, rape completion, measurement, operationalization

Estimates indicate that approximately one-quarter of a million individuals are raped or sexually assaulted each year, with one in five American women experiencing rape at some point during the life course (Koss, 1993; Truman & Langton, 2014). These figures are particularly troubling when considering the physical and mental health consequences associated with sexual victimization. Victims of completed sexual assaults and rapes are at an increased risk for health consequences such as post-traumatic stress disorder, anxiety, substance use, depression, syphilis, gonorrhea, chlamydia, and other sexually transmitted infections (Burgess & Holmstrom, 1979; Duncan, Saunders, Kilpatrick, & Resnick, 1996; Jenny et al., 1990; Kawsaw, Anfield, Walters, McCabe, & Forster, 2004; Siegel, Golding, Stein, Burnam, & Sorenson, 1990). Because these detrimental outcomes are associated with completed assaults, understanding the effects of victim resistance behaviors during sexual assault is critical. After all, some scholars suggest that an important component of rape prevention is an effective defense (Norris, Nurius, & Dimeff, 1996). However, the topic of rape resistance is complicated by the possibility of sustaining physical injury if a victim tries to fight back verbally or physically during an assault. Controversy and debates have erupted regarding whether victim resistance is merely a response to an assault or may actually provoke injury (see Ullman & Knight, 1995).

Despite the controversy surrounding victim resistance and injurious consequences, it is important

Corresponding author: Eryn Nicole O'Neal, School of Criminology & Criminal Justice, Arizona State University, 411 North Central Ave., Suite 600, Phoenix, AZ 85004, USA. Email: eoneal@asu.edu

to identify resistance strategies that may work in efforts of preventing victim injury and rape completion in sexual assault offenses. This information can also inform victim decision making. Women can *decide* how to respond to sexual assaults, choosing whether to resist or remain passive. Overall, identifying effective resistance strategies and disseminating the information are crucial steps in educating women on a topic that directly influences their reality. It is also important to determine whether the use of multiple resistance strategies during a sexual assault, such as using verbal and physical resistance together or more than one form of physical resistance, can have an effect on victim injury and/or rape completion. It is necessary to note that examining resistance strategies in efforts of educating potential victims does not mean that victims *must* resist during sexual assaults or that they are at fault if they are unable to stop it (Ullman, 2007).

Prior studies have provided the foundation for rape resistance research (e.g., Bart, 1981; Clay-Warner, 2002; Kleck & Sayles, 1990; Levine-MacCombie, & Koss, 1986; Ullman & Knight, 1992, 1993, 1995); however, questions remain regarding whether various forms of resistance—and how they are measured—affect either the likelihood or the amount of victim injury or the likelihood of rape completion. The current study seeks to address these important empirical questions. Specifically, this study estimates the effects of several measures of resistance strategies on victim injury outcomes and rape completion to determine if variations in measurement influence results. By using multiple methods of measurement of both the dependent and independent variables, we are able to provide a more nuanced understanding regarding the effects of various resistance strategies.

Sexual Assault Resistance Strategies

Rape resistance strategies are broadly conceptualized as any protective action taken with the goal of avoiding completed rape or injurious consequences. These strategies include verbal and physical action or a combination of both forms of resistance (Quinsey & Upfold, 1985; Zoucha-Jensen & Coyne, 1993). More specifically, physical resistance includes actions such as fighting, biting, scratching, kicking, and punching; verbal resistance includes any vocal strategies, such as screaming, crying, and telling the suspect to stop (Clay-Warner, 2002; Norris et al., 1996; Zoucha-Jensen & Coyne, 1993).[1] Findings suggest that these various resistance strategies have differing effects depending on the situational context of the assault (Bart, 1981; Quinsey & Upfold, 1985; Ullman & Knight, 1993), and studies have been generally inconsistent in their measurement of victim resistance.

Studies of sexual assault resistance and protective action have generally followed three paths. The two more developed bodies of research have focused on resistance in the context of avoiding completed rape and the relationship between rape resistance and injurious outcomes. Researchers generally agree that *active* rape resistance is effective for evading the completion of rape (Clay-Warner, 2002; Guerette & Santana, 2010; Kleck & Sayles, 1990; Marchbanks, Lui, & Mercy, 1990; Ullman, 1998; Ullman, 2007; Ullman & Knight, 1992; Zoucha-Jensen & Coyne, 1993). Whereas fighting, fleeing, and screaming are all linked to a decreased likelihood of rape completion, less active verbal strategies such as reasoning, pleading, and crying, are associated with a higher likelihood of rape completion (for review, see Ullman, 2007). Unlike the largely consistent findings regarding resistance and rape avoidance, research results regarding the effect of resistance on injury avoidance is mixed (Atkeson, Calhoun, & Morris 1989; Block & Skogan, 1986; Brecklin & Ullman, 2001; Kleck & Sayles, 1990; Marchbanks et al., 1990; Prentky, Burgess, & Carter, 1986; Ullman & Knight, 1993). The third less developed—but growing—research tradition has examined the situational and contextual factors that shape sexual assault outcomes (discussed in more detail below). Overall, these three bodies of literature have produced necessary and important knowledge on various resistance topics including rape avoidance generally (Bart, 1981), victim protective action and injurious outcomes (Kleck & Sayles, 1990; Ullman & Knight, 1992), rape avoidance by rapist type (Ullman & Knight, 1995), non-stranger rape avoidance (Levine-MacCombie & Koss, 1986), and the effectiveness of protective action across different situations (Clay-Warner, 2002; Ullman & Knight, 1993). Although this work has provided the foundation for research on rape resistance strategies, it has resulted in a body of literature with contradictory findings (for a recent review, see Tark & Kleck, 2014). This is particularly true for work focusing on resistance and injurious outcomes.

Research on sexual assault resistance and its effects on the likelihood of victim injury has produced mixed conclusions.[2] Some research has found that protective action during sexual assault increases the likelihood a victim will suffer an injury (Kleck & Sayles, 1990; Marchbanks et al., 1990; Prentky et al., 1986; Ullman & Knight, 1993), and some scholars have argued that forceful resistance is useless and sometimes dangerous (Brecklin & Ullman, 2001; Griffin & Griffin, 1981; Marchbanks

et al., 1990). Linking protective action to dangerousness is often based on findings that suggest a connection between resistance and injury. Marchbanks and colleagues (1990) found that the likelihood of injury increased when victims engaged in *any* form of self-protective action. In addition, Ullman & Knight (1993) found that the probability of injury increased when victims verbally resisted (i.e. screaming, crying, or pleading) indoors, and Kleck and Sayles (1990) found that forceful resistance and arguing with or threatening the attacker was significantly associated with higher rates of victim injury. The linking of resistance and dangerousness may be problematic. Findings that indicate a positive relationship between rape resistance and injury may tell an incomplete story, as such research does not establish the sequencing of events; it is unclear whether rape resistance actions preceded or followed the suspect's infliction of injury (e.g., Atkeson, et al., 1989; Block & Skogan, 1986; Brecklin & Ullman, 2001; Griffin & Griffin, 1981; Marchbanks et al., 1990; Ruback & Ivie, 1988). Highlighting inconsistencies within this body of literature, studies have *also* found that resistance reduces injury (Kleck & Sayles, 1990), and some have found no significant effects (Guerette & Santana, 2010; Kleck & Sayles, 1990; Tark & Kleck, 2014; Ullman & Knight, 1992; Zoucha-Jensen & Coyne, 1993). Additionally, research that teases apart different sexual assault resistance strategies reveals a more complex story. Quinsey and Upfold (1985), for example, found that victim resistance was positively associated with injury only in cases when the victim verbally resisted a known attacker. They found, however, that general resistance was associated with a lower probability of sustaining injury. Furthermore, research examining the sequential timing of victim resistance has found that increasing levels of initial perpetrator violence results in more serious victim injury due to increases in victim resistance. Stated differently, injury may result out of a more violent attacker (Ullman, 1997; Ullman & Knight, 1991).

Like research focusing on victim resistance and injurious consequences, mixed results are found in the body of resistance literature focusing on the contextual factors that shape sexual assault outcomes (Bart, 1981; Clay-Warner, 2002; Norris et al., 1996; Ullman & Knight, 1993, 1995). More than three decades ago, Bart (1981) found that respondents were more likely to avoid rape when their assailant was a stranger, the incident occurred outside, they employed multiple resistance strategies, and their primary concern during the attack was not being raped. Clay-Warner (2002) examined situational factors including the presence of a bystander, location of attack, whether the offender was a stranger, and suspect weapon use. Her research indicated that the efficacy of resistance strategies did not vary across most situations. Alternatively, Ullman & Knight (1993) found that women who fought back were more likely to avoid rape, even if a weapon was present. The likelihood of injury, however, increased when victims resisted against assailants who used a weapon. Most recently, Tark & Kleck (2014) investigated numerous rape resistance strategies and found that most protective actions (forceful and nonforceful) reduced the likelihood of rape. Specifically, running away, struggling, hiding, bringing attention to the incident, and attacking the perpetrator without a weapon reduced the risk of rape completion compared to nonresistance. Despite mixed findings, these studies demonstrate the general move toward more nuanced investigations of resistance (see Ullman & Knight, 1991; Tark & Kleck, 2014). However, there remains a lack of work addressing whether the operationalization of different sexual assault resistance variables influences empirical findings regarding victim injury and rape avoidance. This gap in knowledge may be due to the recent decline in rape resistance research.

Despite the relatively large body of work produced in the 80s, 90s, and early 21st century, research examining rape resistance has decreased in the last decade.[3] In fact, Ullman (2007), in her 10-year review of rape avoidance literature, cited only seven studies published between 2000 and 2007. This recent decrease in research has delayed the development of knowledge on this relatively understudied issue. One consequence of the limited development in resistance research is that existing work has resulted in a body of literature with mixed conclusions. These variations in findings may be due to different study foci (i.e. rape avoidance generally vs. situational factors), varying measurement techniques, failure to include statistical controls, small samples, differences in sample type, and differing analytic strategies such as AVOVA (e.g. Ullman & Knight, 1995; c.f. Ullman & Knight, 1991; Tark & Kleck, 2014), regression analysis (e.g. Quinsey & Upfold, 1985), and qualitative analysis (e.g. Bart, 1981).[4] The current study seeks to address the recent decline in rape resistance research by contributing to the small body of rape resistance literature that has employed sophisticated statistical methods using large sample sizes (e.g. Tark & Kleck, 2014; Ullman, 1998; Ullman & Knight, 1991). Moving beyond prior work, this study estimates the effects of several resistance strategy measures on victim injury outcomes and rape completion.

Current Focus

Despite general progress in understanding the relationship between sexual assault resistance strategies and assault outcomes, additional work needs to clarify the nature of this relationship. The present study addresses issues related to this goal and contributes to the current body of literature in three important ways. First, we assess whether sexual assault resistance, measured in various ways, influences the likelihood or amount of victim injury. Second, we examine the effects of these measures on the likelihood of rape completion. Finally, we further disaggregate our measures of resistance to provide additional insights into how various forms of resistance might influence our outcomes of interest.

Methods

Data

We analyze quantitative data on 944 sexual assault complaints that were reported to the Los Angeles County Sheriff's Department (LASD) and the Los Angeles Police Department (LAPD) in 2008, which were collected for a study of policing and prosecuting of sexual assault (Spohn & Tellis, 2012). For that study, case files were collected for sexual assaults with female victims that were reported in 2008. Outcome data on rape, attempted rape, sexual penetration with a foreign object, oral copulation, sodomy, unlawful sex, and sexual battery were collected. From the LASD, case files were obtained for all reports that met the selection criteria (N = 543).[5] Due to the numerous cases reported to the LAPD in 2008, a stratified random sample of cases was selected (N = 401). To ensure an adequate number of cases from each of the LAPD's 19 divisions, as well as an adequate number of cases from each case clearance category (cleared by exceptional means, investigation continuing, cleared by arrest, and unfounded), the sample was stratified by LAPD division and, within each division, by the type of case clearance. During initial data collection, the goal was to select six cases from each case closure type from each of the 19 divisions that existed in 2008. This would have produced a sample of 456 cases. Because each division did not necessarily have 6 cases from each case closure type in 2008, the final LAPD sample included 401 cases. Case files were initially coded for more than 350 case processing and assault-related variables based on several readings of the case narratives. Victims were interviewed by police personnel using uniform report documents; however, each interview was distinct in the type of information provided. The coding system was developed by examining the narratives and identifying contextual themes. In addition to information about rape resistance, rape completion, and injury, cases were coded for factors relating to victim and suspect characteristics, assault characteristics, the characteristics of the relationship between the victim and suspect, the victim's experiences with the criminal justice system, and the combined influences of characteristics that result in an activation of law enforcement response.

It is important to note that the present study relied on sexual assault cases that were reported to the LAPD and the LASD; therefore, it is exploratory in nature and limited in generalizability. Studies of sexual assault that rely on police reports are limited because they reflect only those that have come to the attention of law enforcement. Therefore, they are not necessarily representative of all sexual assaults. In addition, sexual assaults where resistance strategies did *not* result in injury or rape completion may be underrepresented; it is likely that women who fought back and avoided injury or rape would not report the incident to the police. Along these same lines, victims in this sample may have over-reported the use of resistance strategies and the amount of injuries suffered to appeal to law enforcement officers. Victims may believe that their case will be taken more seriously if injuries are present and resistance was used. A final limitation of the present study includes the inability to verify the accuracy of the information in each case file. Although we were provided with a redacted copy of each case, we cannot know if the information provided by the investigating officer accurately represents the victim's, suspect's, and witnesses' experiences.

The sample consisted of female victims between the ages of 12 and 99, with an average age of 26.[6] The majority of cases involved Hispanic or Latina victims, accounting for 48.8 % of the sample (n = 448). Additionally, 24.79% of the sample were White (n = 234), 21.13% were Black (n = 194), and 5.28% were categorized as "other." Regarding the suspects, the majority of cases, 89.1%, had only one suspect (n = 841), 6.9% had two suspects (n = 65), and 3.9% (n = 37) had three or more suspects. Of the first identified suspect, 16% of suspects were White (n = 151), 25.7% were Black (n = 243), 49.6% were Hispanic (n = 468), 2.9% were Asian (n = 27), and 1.9% were identified as "other" (n = 18).[7] Descriptive statistics for the sample are presented in Table 1.

Table 1: Descriptive Statistics- Sexual Assault Victimization, LAPD & LASD 2008

Variables	Mean or %	*SD*
Dependent Variables		
Victim Injury (1 = yes)	39.62 %	
Victim Injury Index	.66	.98
Bruise	24.15 %	
Cuts	14.19 %	
Burns	.53 %	
Broken Bones	.42 %	
Stab Wounds	.11 %	
Internal Injuries	1.80 %	
Genital Injuries	20.25 %	
Bite Marks	2.55 %	
Choke Marks	2.65 %	
Completed Rape (1 = yes) [a]	85.16 %	
Independent Variables		
Any Resistance Used	73.09 %	
Forceful Physical Resistance Used	17.16 %	
Fought Back	16.72 %	
Used Weapon to Fight Back	1.53 %	
Non-Forceful Physical Resistance Used	55.30 %	
Struggled	49.40 %	
Fled/Attempt Flee	24.26 %	
Forceful Verbal Resistance Used	61.76 %	
Attempt to Fool/Dissuade	2.40 %	
Screamed	23.88 %	
Protested/Said "Stop"	55.51 %	
Called Suspect Names	.87 %	
Non-Forceful Verbal (Cried)	15.80 %	
Verbal Resistance Score	.98	.91
Physical Resistance Score	.92	.93
All Resistance Score	1.90	1.53
Control Variables		
Rape	59.53 %	
Weapon Used	10.38 %	
Victim Consumed Alcohol	23.27 %	
Victim Used Drugs	6.59 %	
Suspect Consumed Alcohol	31.32 %	
Non-Stranger	46.70 %	
Intimate Partner	21.60 %	
Stranger (Reference)	31.70 %	
Victim Age	26.15	12.64
Victim Black	21.13 %	
Victim Hispanic	48.80 %	
Victim White (Reference)	24.79 %	
Victim Other Race	5.28 %	
Suspect Age	31.83	11.78
Suspect Black	28.19 %	
Suspect Hispanic	54.29 %	
Suspect White (Reference)	16.00 %	
Suspect Other Race	1.52%	

[a] This dependent variable uses subsample of completed rape versus attempted rape only (*N*= 701)

Variables

Dependent variables. Assaults were coded for the presence (or absence) of various victim injuries, which included *bruises* (*n* = 228), *cuts* (*n* = 134), *burns* (*n* = 5), *broken bones* (*n* = 4), *stab wounds* (*n* = 1), *internal injuries* (*n* = 17), *genital injuries* (*n* = 191), *bite marks* (*n* = 24), and *choke marks* (*n* = 25). During a sexual assault incident, victims may have received more than one type of injury, which were initially coded separately using dichotomous indicators. For the present study, we use two injury dependent variables. First, we use a dichotomous indicator for *victim injury* that was coded 1 if the victim suffered any type of collateral injury, with 0 signifying no reported injury to the victim. Second, we conducted additional analyses using a 6-item variety score measure of *victim injury*, which combines the various injuries into a count variable (*M* = .66; *SD* = .98). Regarding rape completion, *completed rape* was used to indicate if the victim reported either a completed or attempted rape (1 = rape, 0 = attempted rape).

Independent variables. Cases were coded using dichotomous indicators for the presence (or absence) of various resistance strategies. Physical resistance strategies included *physical fighting* (*n* = 153), such as hitting, biting, scratching, and kicking; *struggling* (*n* = 452); *fleeing or attempting to flee* (*n* = 222); and *used weapon to fight back* (*n* = 14).[7] First, these variables were used to make two dichotomous variables for *forceful physical resistance,* which includes physical fighting and using a weapon to fight back (1 = forceful physical resistance used, 0 = not used) and *non-forceful physical resistance*, which includes struggling and attempting to flee (1 = non-forceful physical resistance used, 0 = not used). Second, a 4-item composite measure was created that sums the *total number of physical resistance strategies* used by the victim (*M* = .92, *SE* = .93).

In addition to measures for physical resistance strategies, verbal resistance was also included. Verbal resistance strategies included *crying* (*n* = 145), *screaming* (*n* = 219), *attempting to fool or dissuade* (*n* = 22), *called suspect names* (*n* = 8), and *protesting* (i.e., telling the suspect "no"; *n* = 508). Each individual strategy was coded 1 if the victim engaged in that type of resistance strategy during the assault. As with the physical resistance variables, these were first used to create two dichotomous variables indicating *forceful verbal resistance,* including attempting to fool or dissuade, screaming, protesting, and calling the suspect names (1 = forceful verbal resistance used, 0 = not used) and *non-forceful verbal resistance,* which represents crying. Additionally, a 5-item *verbal resistance variety score* was created that combines these strategies, measuring the total number of verbal resistance strategies used by the victim (*M* = .98, *SD* = .91). Also included were two variables which represent all forms of resistance strategies. The first variable is a dichotomous indicator of *any resistance used* during the assault (1 = victim used resistance, 0 = no resistance used). Finally, a 9-item *all resistance variety index* was created to account for all forms of physical and verbal resistance strategies (*M* = 1.90, *SD* = 1.53).

Control variables. A number of variables were included in the analyses as statistical controls in order to isolate the effects of victim resistance strategies. Control variables in this study included continuous variables for *victim age* and *suspect age* and dummy variables for victim and suspect race (*Black* and *Hispanic*) with White as the reference group (see above for percentages). Additionally, *suspect use of alcohol* (31.32%) and *suspect weapon use* (10.38%) were measured using dichotomous variables (both coded as 1=affirmative to using alcohol or use of weapon, respectively). In addition, *rape* was used to indicate if the victim reported either a completed or attempted rape (1 = rape/attempted rape reported, 0 =other type of sexual assault reported). This control variable is only used when examining injurious consequences; it is not used when examining rape completion. If the *victim consumed alcohol* (23.27%) and *victim used drugs* (6.59%), were additional dichotomous control variables used for the analyses (1 = yes, 0 = no). We included three dummy variables measuring the victim-suspect relationship, whether the suspect was a *non-stranger* (46.70%), suspect was an *intimate partner* (21.60%), with suspect was *stranger* (31.70%) as the reference group.

Analytic Strategy

As demonstrated above, research on sexual assault resistance has taken many forms and has resulted in mixed and inconsistent findings. In order to substantially contribute to this body of literature, we estimate the effects of several measures of resistance strategies on victim injury outcomes and rape completion. After estimating the bivariate relationships (Pearson's r) between the various resistance variables, theoretically relevant control variables, and the dependent variables of interest, we first estimate the effects of victim resistance, net of controls, on whether a victim sustained injuries during the assault using a series of logistic regression models. Second, we estimate a series of negative binomial models using the variety score measure of victim injury. Third, we estimate the effects of these resistance measures on the likelihood of rape completion compared to attempted rape. Lastly, we

disaggregate the resistance strategies and test them simultaneously on the outcomes of interest. Robust standard errors are estimated for all multivariate models to guard against potential bias from heteroskedasticity (Long & Freese, 2006).

Results

Prior to presenting the results of the multivariate models we begin by assessing the bivariate correlations presented in Table 2. As might be expected, there was a high level of correlation between the verbal and physical resistance measures. Given these high levels of correlation, model diagnostics were conducted to determine whether collinearity would bias the parameter estimates in a multivariate model. Variance inflation factors (VIF) for the variables in all subsequent models were below 2, well below the standard conservative cutoff of 4 (Fox, 1991), and the condition indices for all models were between 15 and 16, well below 30, the standard threshold for acceptability (Belsley, Kuh, & Welsch, 1980). These significant bivariate correlations between our variables of interest, coupled with no evidence of harmful levels of collinearity, provide reason to move forward with multivariate models.

Table 3 presents the findings from our first multivariate logistic regression models estimating the effects of resistance on the likelihood of the victim being injured. First, victim injury is regressed on our first measure of resistance, which is a dichotomous indicator for any type of resistance (Model 1). This model revealed that resistance, when measured in this way, does not predict victim injury. In Model 2, we tease apart the four types of resistance strategies (forceful physical, non-forceful physical, forceful verbal, and non-forceful verbal) using separate dichotomous measures to determine if using physical and verbal strategies have independent effects on the likelihood of sustaining physical injury during sexual assault. This analysis also revealed that most resistance strategies, when measured using these dichotomous indicators, do not predict injurious consequences, the notable exception being forceful physical resistance, which increases the likelihood of receiving an injury by 88% ($b = .63$, $p < .01$).

In Model 3, victim injury is regressed using variety scores for both verbal and physical resistance. This analysis indicates that the number of physical resistance strategies used does not significantly predict injurious outcomes; however, the more verbal resistance strategies used by the victim increased the odds of receiving an injury by about 23% ($b = .21$, $p < .05$). Additionally, in the final model victim injury is regressed using a variety score that combines all forms of resistance into one measure. This measure assesses whether the likelihood of injury increases as victims engage in more forms of resistance. This analysis indicates that the number of resistance strategies used during a sexual assault significantly increases the likelihood of sustaining physical injury. Specifically, for a one unit increase in the number of resistance strategies used, there is a 17% increased likelihood of the victim sustaining an injury (odds ratio = 1.17; $b = .16$; $p < .01$). Across these models, rape had the largest effect on whether the victim received an injury. The odds ratios indicate that a victim of rape was between 2.25 and 2.44 times more likely to incur injury during the assault (Model 1: $b = .89$, $p < .001$; Models 2 and 3: $b = .95$, $p < .001$; Model 4: $b = .92$; $p < .001$).

We also estimated negative binomial models using a 6-item variety score measure of victim injury. The results of these models reveal consistent findings with the logistic models presented earlier in this paper—with two exceptions (see Table 4). First, in Model 2, the forceful physical resistance dichotomous variable was found to be statistically significant in increasing the amount of injury sustained by a victim ($b = .38$; $p < .01$) and non-forceful verbal resistance (i.e. crying) was also shown to increase the amount of injury sustained by the victim ($b = .31$; $p < .05$). Second, both verbal ($b = .11$) and physical resistance ($b = .09$) scores were statistically significant at the $p < .10$ level in Model 4, indicating an increased amount of injury. The all resistance score variable remained significant in this model, positively predicting the amount of injury sustained by the victim ($b = .10$; $p < .01$).

Table 2: Correlation Matrix

Variables		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	Victim Injury	-																						
2	Victim Injury Index	.82*	-																					
3	Completed Rape	.04	.05	-																				
4	Any Resistance	-.02	-.03	-.13*	-																			
5	Forceful Physical	.07	.05	-.26*	.26*	-																		
6	Non-Forceful Physical	.00	-.01	-.20*	.61*	.33*	-																	
7	Forceful Verbal	.00	-.01	-.07	.80*	.17*	.47*	-																
8	Non-Forceful Verbal	.04	.09*	.07	.27*	.03	.18*	.27*	-															
9	Physical Resistance Score	.06	.05	-.28*	.52*	.69*	.80*	.39*	.12*	-														
10	Verbal Resistance Score	.05	.09*	-.04	.63*	.20*	.44*	.76*	.67*	.39*	-													
11	All Resistance Score	.07	.09*	-.19*	.69*	.54*	.75*	.68*	.47*	.84*	.83*	-												
12	Rape	.04	.04	.84*	-.07	-.19*	-.13*	-.02	.09*	-.20*	.03	-.11*	-											
13	Weapon Used	.07	.10*	-.01	-.02	.02	-.06	-.12	-.02	.00	-.09*	-.05	-.02	-										
14	Suspect Alcohol Use	.17*	.14*	.04	-.10*	-.06	-.03	-.04	-.03	-.02	-.03	-.03	.00	-.04	-									
15	Victim Alcohol Use	.13*	.13*	.09*	-.21*	-.10*	-.17*	-.17*	-.10*	-.14*	-.15*	-.17*	.04	-.07	.58*	-								
16	Victim Used Drugs	-.03	-.05	.05	-.13*	.00	-.04	-.18*	-.08*	-.03	-.16*	-.11*	.01	.03	.05	.19*	-							
17	Non-Stranger	-.04	-.05	.10	-.06	-.13*	-.11*	-.01	-.07	-.15*	-.07	-.13*	.07	-.07	.15*	.16*	.06	-						
18	Intimate Partner	.05	.09	.02	.09*	.04	.10*	.13*	.13*	.08	.15*	.13*	.04	-.04	-.07	-.17*	-.12*	-.62*	-					
19	Victim Age	.07	.08	-.11*	-.04	.00	-.05	-.02	-.09	-.04	-.06	-.06	-.10*	.00	.01	.02	-.03	-.29*	.27*	-				
20	Victim Black	-.05	-.04	.07	-.01	.04	.02	.04	.00	.03	-.00	.02	.07	.01	-.15*	-.11*	.07	.05	-.06	-.02	-			
21	Victim Hispanic	.02	.00	-.10*	.02	-.01	.00	.00	.01	-.03	.03	.00	-.08*	.06	.12*	-.06	-.09*	.00	.07	.00	-.55*	-		
22	Suspect Age	-.02	.00	-.08	-.06	.02	-.01	-.08	-.07	.01	-.10*	-.05	-.09*	-.01	-.05	-.02	.02	-.11*	.09*	.50*	.01	-.05	-	
23	Suspect Black	.00	.00	.12*	.01	-.01	.03	.05	.05	.02	.03	.03	.09*	.01	-.09*	-.05	.07	.05	-.10*	.01	.73*	-.47*	-.05	-
24	Suspect Hispanic	.05	.04	-.19*	.06	.05	.04	.03	-.04	.05	.04	.06	-.15*	.00	.05	-.03	-.08	-.03	.03	-.06	-.53*	.61*	-.01	-.69*

$p < .05$ (two-tailed test).

Table 3: Logistic Regression Models Predicting Victim Injury

Variables	Model 1			Model 2			Model 3			Model 4		
	b	*SE*	*z*	*b*	*SE*	*z*	*b*	*SE*	*z*	*b*	*SE*	*z*
Resistance												
Any Resistance	.18	.19	.96									
Forceful Physical				.63	.23	2.74**						
Non-Forceful				.01	.19	.07						
Forceful Verbal				.10	.20	.50						
Non-Forceful Verbal				.13	.22	.87						
Physical Resistance Score							.10	.10	1.07			
Verbal Resistance Score							.21	.09	2.19*			
All Resistance Score										.16	.05	2.84**
Rape	.89	.17	5.09***	.95	.18	5.25***	.95	.18	5.22***	.92	.18	5.20***
Weapon Used	.68	.26	2.64**	.71	.26	2.76**	.75	.25	2.93***	.75	.25	2.96**
Suspect Alcohol Use	.64	.21	3.07**	.64	.21	3.00**	.62	.21	2.91**	.63	.23	2.92**
Victim Alcohol Use	.44	.24	1.78	.50	.25	1.99*	.53	.25	2.11*	.52	.25	2.10*
Victim Used Drugs	-.33	.32	-1.02	-.34	.33	-1.06	-.32	.33	-.95	-.31	.33	-.92
Non-Stranger	.00	.20	1.00	.06	.21	.28	.01	.21	.03	-.01	.20	-.04
Intimate Partner	.50	.23	2.14*	.47	.24	2.00*	.44	.24	1.85	.43	.24	1.79
Victim Age	.01	.01	1.84	.02	.01	2.06*	.02	.01	2.13*	.02	.01	2.12*
Victim Black	-.31	.29	-1.09	-.34	.29	-1.17	-.27	.29	-.94	-.26	.29	-.90
Victim Hispanic	-.19	.21	-.91	-.19	.22	-.87	-.18	.22	-.84	-.19	.22	-.86
Suspect Age	-.01	.01	-1.15	-.01	.01	-1.07	-.01	.01	-1.25	-.01	.01	-1.20
Suspect Black	.63	.30	2.13*	.59	.30	1.97*	.52	.30	1.74	.51	.30	1.71
Suspect Hispanic	.52	.25	2.10*	.48	.25	1.95*	.45	.25	1.79	.45	.25	1.79
Constant	-1.89	.41	-4.65***	-2.07	.41	-5.05***	-2.10	.41	-5.11***	-2.08	.41	-5.11***
Model χ^2		82.37***			93.85***			95.62***			96.31***	
McFadden R^2		.09			.10			.10			.10	
N		750			742			739			739	

Entries are unstandardized coefficients (*b*) with robust standard errors (*SE*)

* $p < .05$; ** $p < .01$; *** $p < .001$ (two-tailed test).

Table 4: Negative Binomial Regression Models Predicting Variety of Victim Injury Score

Variables	Model 1			Model 2			Model 3			Model 4		
	b	*SE*	*z*	*b*	*SE*	*z*	*b*	*SE*	*z*	*b*	*SE*	*z*
Resistance												
Any Resistance	.10	.12	.86									
Forceful Physical				.38	.14	2.77**						
Non-Forceful				.04	.12	.36						
Forceful Verbal				-.06	.14	-.45						
Non-Forceful Verbal				.31	.13	2.27*						
Physical Resistance Score							.11	.06	1.87[a]			
Verbal Resistance Score							.09	.05	1.68[b]			
All Resistance Score										.10	.03	3.13**
Rape	.54	.13	4.24***	.48	.13	3.74***	.57	.13	4.46***	.58	.13	4.60***
Weapon Used	.48	.14	3.45***	.57	.14	4.16***	.53	.13	3.97***	.53	.13	3.95***
Suspect Alcohol Use	.27	.13	2.15*	.25	.13	2.01*	.26	.13	2.13*	.36	.12	2.13*
Victim Alcohol Use	.38	.14	2.69**	.28	.14	2.63**	.43	.14	3.09**	.43	.14	3.09**
Victim Used Drugs	-.36	.19	-1.83	-.46	.21	-2.17*	-.33	.20	-1.61	-.33	.20	-1.64
Non-Stranger	.12	.14	.83	.12	.14	.85	.09	.14	.68	.10	.14	.71
Intimate Partner	.47	.15	3.18***	.48	.15	3.21***	.41	.15	2.77**	.42	.15	2.78**
Victim Age	.01	.01	1.36	.00	.01	1.28	.01	.00	2.00*	.01	.00	2.01*
Victim Black	-.17	.19	-.91	-.16	.19	-.84	-.12	.18	-.68	-.13	.18	-.70
Victim Hispanic	-.20	.14	-1.42	-.24	.14	-.164	-.21	.14	-1.52	-.21	.14	-1.50
Suspect Age	-.00	.01	-.42	-.00	.01	-.41	-.00	.00	-.96	-.00	.00	-.97
Suspect Black	.38	.19	1.98*	.36	.19	1.90	.28	.19	1.49	.28	.19	1.50
Suspect Hispanic	.36	.16	2.22*	.36	.16	2.20*	.31	.17	1.88	.31	.17	1.88
Constant	-1.48	.27	-5.50***	-1.61	.28	-5.73***	-1.59	.27	-5.92***	-1.59	.27	-5.92***
Model χ^2		97.47***			135.79***			135.35***			134.12***	
McFadden R^2		.05			.06			.06			.06	
N		747			739			736			736	

Entries are unstandardized coefficients (*b*) with robust standard errors (*SE*)

[a] $p = .06$; [b] $p = .09$;

* $p < .05$; ** $p < .01$; *** $p < .001$ (two-tailed test).

Table 5: Logistic Regression Models Predicting Completed Rape vs. Attempted Rape in Models Predicting Variety of Victim Injury Score

Variables	Model 1			Model 2			Model 3			Model 4		
	b	*SE*	*z*	*b*	*SE*	*z*	*b*	*SE*	*z*	*b*	*SE*	*z*
Resistance												
Any Resistance	-.91	.39	-2.37*									
Forceful Physical				-1.15	.29	-4.01***						
Non-Forceful				-1.13	.38	-3.01**						
Forceful Verbal				.11	.29	.30						
Non-Forceful Verbal				.58	.37	1.56						
Physical Resistance Score							-.87	.14	-6.31***			
Verbal Resistance Score							.22	.15	1.44			
All Resistance Score										-.37	.08	-4.42***
Weapon Used	-.02	.37	-.05	.11	.41	.26	.24	.41	.58	.00	.38	.01
Suspect Alcohol Use	.-.04	.32	-.13	-.01	.34	-.04	.06	.34	.19	.00	.33	.01
Victim Alcohol Use	.57	.38	1.54	.40	.40	1.00	.43	.40	1.07	.48	.38	1.26
Victim Used Drugs	.35	.56	.62	.76	.58	1.30	.72	.59	1.23	.30	.56	.54
Non-Stranger	.88	.31	2.83**	.67	.33	2.03	.64	.32	2.00*	.79	.31	2.50**
Intimate Partner	.98	.34	2.89**	1.09	.38	2.88**	1.10	.37	2.97**	1.15	.35	3.24***
Victim Age	-.03	.01	-2.44*	-.01	-.04	.01	-.04	.04	-3.17	-.04	.01	-2.83**
Victim Black	-.52	.53	-.99	.29	-.30	.55	-.42	.54	-.78	-.48	.53	-.90
Victim Hispanic	-.12	.35	-.34	.07	-.19	.38	-.29	.38	-.77	-.13	.36	-.35
Suspect Age	-.01	.01	-.79	-.01	-.01	.01	-.00	.01	-.28	-.01	.01	-.71
Suspect Black	.19	.60	.32	.02	.61	.03	.15	.60	.25	.25	.60	.43
Suspect Hispanic	-1.37	.50	-2.76**	-1.29	.50	-2.59**	-1.30	.49	-2.67**	-1.29	.49	-2.64***
Constant	3.90	.74	5.29***	4.17	.74	5.60***	4.14	.71	5.84***	4.13	.70	5.92***
Model χ^2		45.05			65.61***			68.63***			52.43***	
McFadden R^2		.12			.19			.19			.14	
N		572			566			565			565	

Entries are unstandardized coefficients (*b*) with robust standard errors (*SE*)

* $p < .05$; ** $p < .01$; *** $p < .001$ (two-tailed test).

Table 6: Regression Models Predicting Victim Injury and Completed Rape using Separate Resistance Strategies

Variables	Victim Injury[a]			Victim Injury Score[b]			Completed Rape[a]		
	b	*SE*	*z*	*b*	*SE*	*z*	*b*	*SE*	*z*
Resistance									
Fought Back	.29	.23	1.27	.10	.14	.75	-1.12	.32	-3.54***
Used Weapon to Fight Back	1.54	.69	2.22*	.84	.27	3.06**	-.97	.65	-1.48
Struggled	.21	.18	1.13	.04	.12	.39	-.61	.35	-1.75
Fled/Attempt Flee	-.30	.20	-1.51	-.10	.13	-.76	-.78	.32	-2.45**
Attempt to Fool/Dissuade	.45	.52	.90	.27	.29	.93	-.57	.70	-.81
Screamed	.30	.20	1.50	.25	.12	.2.13*	-.42	.32	-1.30
Protested/Said "Stop"	.03	.18	.14	-.03	.12	-.24	-62	.32	1.94*
Called Suspect Names	.71	.82	.86	.40	.33	1.22	.31	1.46	.21
Cried	.20	.22	.95	.27	.12	2.26	.62	.41	1.53
Weapon Used	.64	.25	3.29***	.56	.13	4.13***	.28	.41	.96
Suspect Alcohol Use	.64	.21	3.02***	.29	.13	2.28*	-.03	.35	-.08
Victim Alcohol Use	.67	.24	2.75**	.50	.14	3.59	.51	.41	1.24
Victim Used Drugs	-.38	.35	-1.08	-.34	.21	-1.61	.72	.60	1.18
Non-Stranger	.10	.21	.46	.17	.14	1.22	.46	.34	1.33
Intimate Partner	.69	.23	2.93**	.58	.15	3.94***	.80	.37	2.15*
Victim Age	.01	.01	1.69	.01	.00	1.66	-.04	.01	-2.82**
Victim Black	-.20	.29	-.70	-.10	.18	-.54	-.42	.55	-.75
Victim Hispanic	-.20	.22	-.91	-.22	.15	-1.53	-.21	.39	-.53
Suspect Age	-.01	.01	-1.32	-.00	.01	-.83	-.01	.01	-.48
Suspect Black	.61	.30	2.04*	.35	.19	1.88	.15	.63	.24
Suspect Hispanic	.39	.25	1.58	.32	.17	1.92*	-1.31	.52	-2.52**
Constant	-1.47	.38	-3.88***	-1.25	.26	-4.85	4.05	.74	5.47***
Model χ^2		74.79***			115.91***			75.03***	
McFadden R^2		.08			.05			.21	
N		739			739			565	

[a] Logistic Regression Model; [b] Negative Binomial Model

Entries are unstandardized coefficients (*b*) with robust standard errors (*SE*)

* $p < .05$; ** $p < .01$; *** $p < .001$ (two-tailed test).

Table 5 presents the logistic models estimating the effects of resistance on the likelihood of a rape being completed compared to non-completed, attempted rapes. Although the dichotomous variable for any resistance was not significant in predicting the likelihood of victim injury, Model 1 of this table shows that it was predictive of reducing the odds of a rape being completed by about 60% (b = -.91; p < .05). Additionally, all of the physical resistance variables were statistically significant at reducing the likelihood of completed rape, with Model 2 showing that both forceful and non-forceful physical resistance decrease the likelihood of rape by about 32% (forceful physical resistance: b = -1.15; p < .001 and non-forceful physical resistance: b = -1.13; p < .01) and Model 3 indicating that the more types of physical resistance used decreased the likelihood of completed rape by 58% (b = -.87; p <.001). Finally, Model 4 demonstrates that the more types of resistance used overall also decreased the likelihood of completed rape by about 31% (odds ratio: .69; b = -.37; p < .001).

Our final models presented in Table 6 disaggregate the various forms of resistance on victim injury and rape completion in an attempt to isolate which specific strategies may be most effective. First, these individual resistance measures were regressed on the likelihood of victim injury. This model demonstrates that when the victim used a weapon to fight back, she was actually over 460% more likely to be injured (odds ratio: 4.60; b = 1.54; p < .05). In our second model using negative binomial regression to assess whether specific resistance strategies increased the number of types of injuries received by a victim, we also found that using a weapon to fight back increased the number of types of injuries received (b = .84; p < .01). Whether a victim screamed during the attack also increased the types of injuries received by about 28% (odds ratio: 1.28; b = .25; p < .05). Finally, we used the individual measures of resistance to predict whether a rape would be completed. This model found that while not significant in predicting victim injury, fighting back decreased the likelihood of rape being completed by about 67% (odds ratio: .32; b = -1.12; p < .001). Additionally, attempting to flee also reduced the likelihood of rape completion by about 54% (odds ratio: .46; b = -.78; p < 01), and protesting or saying "stop" also decreased the likelihood of rape completion by about 46% (odds ratio: .54; b = -.62; p < .05).

Discussion

Building on prior research, we developed models predicting both the likelihood and amount of injury during sexual assaults as well as rape completion using various measurement forms of resistance. The findings presented in this paper may help guide future research as well as inform intervention policies and practitioner responses to sexual assault victimization. Accordingly, there are three broad conclusions that can be extracted from these findings. After discussing key conclusions, we present specific suggestions for future research.

Key Conclusions

First, this study demonstrates the importance of researching outcomes of sexual assault victimization in a more nuanced context by considering how resistance may be quantified in various ways. This study also improves upon prior methodological techniques used in extant rape resistance research by using a larger sample and multiple statistical methods. The results of this study offer several considerations for continued research in the area of sexual assault resistance and raise methodological and sample issues that deserve consideration in future research. As mentioned above, studies that rely on police investigative reports are limited because they reflect only sexual assaults that have been reported to law enforcement. Another limitation of this sample, as with any research using official reported data, is the inability to confirm the accuracy of the information in each case file. The files include the initial crime report, all follow-up reports, and the district attorney's charging decision. The files also included victim, witness, and suspect statements; a description of collected physical evidence; and the forensic exam of the victim. Furthermore, while this study attempted to expand the current research on sexual assault resistance by reviewing various measurement techniques, we were limited in our ability to assess additional measurement possibilities. For example, we were unable to determine the severity of injuries that resulted from the sexual assault. Lastly, the use of police reports in this study may have contributed to our results, so future research should work to replicate this study using police reports as well as other study samples.

A second key conclusion of this research relates to intervention and educational programming for sexual assault prevention. The findings of this study, coupled with previous research, provide public health professionals and sexual assault victim advocates directions for educational campaigns (Zoucha-Jensen & Coyne, 1993). The relationship between suspect

alcohol consumption and victim injury (across numerous models) as well as the relationship between victim alcohol consumption and injurious outcomes suggests that alcohol's role in sexual assault needs to be integrated into prevention and awareness programs. Ullman (2014) discusses how "the topic of resistance is more challenging in the context of alcohol-related rapes" and why researchers and practitioners need to develop ways to "better address this issue" (p. 5). In addition, and specific to sexual assault, educational programming should focus on helping women through knowledge in their efforts to resist and defend themselves against sexual violence (Macy, 2007), including offering information regarding alcohol's role in sexual assault.

Some universities have incorporated information about alcohol consumption in their sexual assault prevention and education programs. For example, University of California, Los Angeles' (UCLA, 2012) Campus Assault Resources and Education (CARE) program includes workshops aimed at reducing the risk of sexual assault as well as unhealthy intimate partnerships. Specifically, the university offers a seminar that helps attendees understand the role of alcohol in sexual decisions, the definition of consensual sexual experiences, resources to facilitate the response to incidents of sexual assault, and strategies to prevent sexual assault (UCLA, 2012). Another example includes University of the Pacific, which provides prevention education regarding sexual misconduct and alcohol awareness (University of the Pacific, 2015). Moving beyond the walls of the university, schools can work with local establishments to reduce the potential for sexual assault on campus and in proximate areas. For example, Boston University has urged local bar owners to educate their employees about the alcohol-crime relationship as well as make their businesses less attractive to predators (Daniloff, 2011). Boston University's task force on alcohol has also joined forces with local rape crisis experts, law enforcement personnel, and substance abuse counselors in an effort to address the issue of alcohol-assisted sexual violence (Daniloff, 2011).

In addition to alcohol awareness education, practitioners should focus attention to enhancing the efficacy of self-protective actions. Self-defense classes and seminars are an established part of the feminist agenda to empower women to avoid sexual assault (Ullman, 2007). Although the current study found that sexual assault resistance strategies are sometimes ineffective at decreasing collateral injury, they do decrease the likelihood of rape completion. Regarding injurious outcomes, the answer to reducing collateral injury during sexual assault may be providing women self-defense training to increase the effectiveness of some of the resistance strategies discussed in this study (see Tark & Kleck, 2014, for a discussion of rape avoidance and self-defense). Anecdotal data indicate that this type of training helps women avoid future assaults and injury (Ullman, 2007). In addition, self-defense training has been found to significantly increase women's protective actions (Brecklin, 2008; Brecklin & Ullman, 2005; Gidycz, Rich, Orchowski, King, & Miller, 2006). Self-defense workshops are common in university settings; the University of California, Los Angeles provides a workshop focused on "knowing your power." Attendees are made aware of sexual assault risk factors, taught how to strengthen assertiveness skills, and learn self-defense techniques. All of these learning objectives are part of a broader goal to raise awareness, promote education, and prevent incidents of sexual assault (UCLA, 2012). This current research and discussion should not be interpreted as supporting the idea of holding women responsible for sexual assault prevention. However, as long as males continue to perpetrate sexual assault, females should be offered information about resistance strategies and the ways contextual factors can shape sexual assault outcomes (for a discussion of rape resistance information dissemination, see Ullman, 2014). Ullman (2007) argues that informing women can be done in a way that does not blame them for their victimization.

A third conclusion that can be drawn from this research is related to perceptions of sexual assault victimization. Although the finding that certain measures of resistance strategies may potentially increase the likelihood of injurious consequences was unanticipated, it does help inform official response to, and perceptions of, sexual assault victimization. There is often an ill-conceived perception that if a victim does not actively fight back during a sexual assault, that she is somehow less of a victim. Victims may be negatively viewed by their decision to remain passive. The current research, however, has revealed that the choice of not fighting back may lessen a victim's chance of injury. These findings are relevant to law enforcement response, as we used police data to examine resistance strategies and assault outcomes. Overall, a victim's choice of actively resisting or being passive during a sexual assault is one that should not be criticized or determinative of police response to these offenses.

Future Research

Based on the findings presented in the current study, we suggest three paths for future research. First, previous research consistently identifies the suspect-victim relationship as being salient in the study of sexual assault. For example, the relationship

between the suspect and victim often influences criminal justice decision making (Bouffard, 2000; Martin, 2005; Spohn & Tellis, 2014), perceptions and attributions of responsibility to a rape victim (Smith, Keating, Hester, & Mitchell, 1976), and the victim experience (Koss, Dinero, Seibel, & Cox, 1988). Given the dynamics surrounding sexual assault, it makes sense that victim resistance strategies would be less effective in intimate partnerships due to the private nature of intimate partner sexual assault. It is unlikely that resistance strategies used by victims who are assaulted in their homes (or in their partner's home) will deter suspects from inflicting injury (see Quinsey & Upfold, 1985, for a discussion of crime location and rape completion). In addition, victim resistance strategies may be more effective in stranger cases because these assaults typically happen in more populated areas such as parties, clubs, and public spaces. Therefore, we suggest that future research examine the influence of rape resistance on sexual assault outcomes according to different suspect-victim relationships (e.g. intimate, strangers, nonstrangers).

Second, studying the sequence of offender attack and victim resistance is necessary to obtain information about the effects of resistance (Ullman, 1997). This information was not available in the current dataset. We did not have indicators of the degree of force used by the suspect. Rape and the use of a weapon, however, were both significantly related to victim injury, which may indicate that suspect degree of force may influence victim injury. Therefore, increased use of force by the suspect may result in increased resistance strategies by the victim.

Third, more research is needed that examines resistance in more nuanced ways. As this study demonstrates, including additional measures of resistance may provide additional information. Most notably, the findings of this study suggest that we should move beyond examining physical and verbal resistance separately and look at the combined effect of multiple resistance strategies. While this study only provides a preliminary examination of this, future research should continue to examine how resistance strategies may be used in combination to deter assaults and prevent injury. Additionally, as mentioned above, future research should also examine the complexities of victim injury, specifically the severity of injury rather than the presence or absence of an injury. While this paper was not able to directly assess the severity of injuries given the limitations of the data, we attempted to proxy injury severity by using composite measures with the assumption that the increase in the number of victim injuries, the more severe the attack. In terms of the use of police reports, future research should focus on replicating these results using law enforcement data to determine if findings differ depending on the type of sample used. This line of research may also benefit by additional qualitative research to better understand how victims choose specific forms of resistance.

Conclusion

This study found that sexual assault resistance effects varied across measurement strategies, demonstrating the importance of analytic techniques when examining the connection between protective action and sexual assault outcomes. Generally, this study informs women, practitioners, and scholars about different sexual assault resistance strategies. It is necessary that we provide potential victims information so they can make informed decisions about protective action. When communicating sexual assault resistance and outcome information to potential victims, it is important that researchers and practitioners not blame women for the outcomes of sexual attacks. Educating potential victims does not mean that victims *must* resist during sexual assaults or that they are at fault if they are unable to stop it (Ullman, 2007). Overall, as long as males continue to perpetrate sexual assault, females should be offered information about resistance strategies and the ways contextual factors can shape sexual assault outcomes.

References

Atkeson, B. M., Calhoun, K. S., & Morris, K. T. (1989). Victim resistance to rape: The relationship of previous victimization, demographics, and situational factors. *Archives of Sexual Behavior*, *18*(6), 497–507. doi: 10.1007/BF01541675

Bart, P. B. (1981). A study of women who both were raped and avoided rape. *Journal of Social Issues*, *37*(4), 123–137. doi: 10.1111/j.1540-4560.1981.tb01074.x

Bart, P. B., & O'Brien, P. H. (1985). Stopping rape: Effective avoidance strategies. *Signs*, *10*(1), 83–101.

Belsley, D. A., Kuh, E., & Welsch, R. E. (1980). *Recession diagnostics: Identifying influential data and sources of collinearity.* New York, NY: John Wiley.

Block, R., & Skogan, W. (1986). Resistance and nonfatal outcomes in stranger-to-stranger predatory crime. *Violence and Victims*, *1*(4), 241–253.

Bouffard, J. A. (2000) Predicting type of sexual assault case closure from victim, suspect, and case characteristics. *Journal of Criminal Justice*, *28*(6), 527–542. doi:10.1016/S0047-2352(00)00068-4

Brecklin, L. R. (2008). Evaluation outcomes of self-defense training for women: A review. *Aggression and Violent Behavior*, *13*(1), 60–76. doi:10.1016/j.avb.2007.10.001

Brecklin, L. R., & Ullman, S. E. (2001). The role of offender alcohol use in rape attacks: An analysis of National Crime Victimization Survey Data. *Journal of Interpersonal Violence*, *16*(1), 3–21. doi: 10.1177/088626001016001001

Brecklin, L. R., & Ullman, S. E. (2005). Self-defense or assertiveness training and women's responses to sexual attacks. *Journal of Interpersonal Violence*, *20*(6), 738–762. doi: 10.1177/0886260504272894

Burgess, A. W., & Holmstrom, L. (1979). Adaptive strategies and recovery from rape. *American Journal of Psychiatry*, *136*(10), 1278–1282.

Clay-Warner, J. (2002). Avoiding rape: The effects of protective actions and situational factors on rape avoidance. *Violence and Victims*, *17*(6), 691–705. doi: 10.1891/vivi.17.6.691.33723

Daniloff, C. (2011, March 25). Talking about alcohol and sexual violence: Local bar staff gets primer on how to prevent rape. *BU Today*. Retrieved from http://www.bu.edu/today/2011/talking-about-alcohol-and-sexual-violence/

Duncan, R. D., Saunders, B. E., Kilpatrick, D. G., Hanson, R. F., & Resnick, H. S. (1996). Childhood physical assault as a risk factor for PTSD, depression, and substance abuse: Findings from a national survey. *American Journal of Orthopsychiatry*, *66*(3), 437–448. doi: 10.1037/h0080194

Fox, J. (1991). *Regression diagnostics.* Newbury Park, CA: Sage.

Gidycz, C. A., Rich, C. L., Orchowski, L., King, C., & Miller A. K. (2006). The evaluation of a sexual assault and risk-reduction program for college women: A prospective study. *Psychology of Women Quarterly*, *30*(2), 173–186. doi: 10.1111/j.1471-6402.2006.00280.x

Griffin, B. S., & Griffin, C. T. (1981). Victims in rape confrontation. *Victimology*, *6*(1-4), 59–75.

Guerette, R. T., & Santana, S. A. (2010). Explaining victim self-protective behavior effects on crime incident outcomes: A test of opportunity theory. *Crime & Delinquency*, *56*(2), 198–226. doi: 10.1177/0011128707311644

Jenny, C., Hooton, T. M., Bowers, A., Copass, M. K., Krieger, J. N., Hillier, S. L., … Holmes, K. K. (1990). Sexually transmitted diseases in victims of rape. *New England Journal of Medicine, 322*(11), 713–716. doi: 10.1056/NEJM199003153221101

Kawsaw, M., Anfield, A., Walters, E., McCabe, S., & Forster, G. E. (2004). Prevalence of sexually transmitted infections and mental health needs of female child and adolescent survivors of rape and sexual assault attending a specialist clinic. *Sexually Transmitted Infections*, *80*, 138–141. doi:10.1136/sti.2003.007252

Kleck, G., & Sayles, S. (1990). Rape and resistance. *Social Problems*, *37*(2), 149–162. doi: 10.2307/800645

Koss, M. P. (1993). Detecting the scope of rape: A review of prevalence research methods. *Journal of Interpersonal Violence*, *8*(2), 198–222. doi: 10.1177/088626093008002004

Koss, M. P., Dinero, T. E., Seibel, C. A., & Cox, S. L. (1988). Stranger and acquaintance rape: Are there differences in the victim's experience? *Psychology of Women Quarterly*, *12*(1), 1–24. doi: 10.1111/j.1471-6402.1988.tb00924.x

Levine-MacCombie, J., & Koss, M. P. (1986). Acquaintance rape: Effective avoidance strategies. *Psychology of Women Quarterly, 10*(4), 311–320. doi: 10.1111/j.1471-6402.1986.tb00756.x

Long, J. S., & Freese, J. (2006). *Regression models for categorical dependent variables using Stata* (2nd ed.). College Station, TX: Stata Press.

Macy, R. J. (2007). A coping theory framework toward preventing sexual revictimization. *Aggression and Violent Behavior*, *12*(2), 177–192. doi:10.1016/j.avb.2006.09.002

Marchbanks, P. A., Lui, K. J., & Mercy, J. A. (1990). Risk of injury from resisting rape. *American Journal of Epidemiology*, *132*(3), 540–549.

Martin, P. Y. (2005). *Rape work: Victims, gender and emotions in organization and community context.* New York, NY: Routledge.

Norris, J., Nurius, P. S., & Dimeff, L. A. (1996). Through her eyes: Factors affecting women's perception of and resistance to acquaintance sexual aggression threat. *Psychology of Women Quarterly*, *20*(1), 123–145. doi: 10.1111/j.1471-6402.1996.tb00668.x

Prentky, R. A., Burgess, A. W., & Carter, D. L. (1986). Victim response by rapist type: An empirical and clinical analysis. *Journal of Interpersonal Violence*, *1*(1), 73–98. doi: 10.1177/088626086001001005

Quinsey V. L., & Upfold, D. (1985). Rape completion and victim injury as a function of female resistance strategy. *Canadian Journal of Behavioral Science*, *17*(1), 40–50. doi: 10.1037/h0080128

Ruback, R. B., & Ivie, D. L. (1988). Prior relationship, resistance, and injury avoidance: An analysis of crisis center records. *Violence and Victims*, *3*(2), 99–111.

Siegel, J. M., Golding, J. M., Stein, J. A., Burnam, M. A., & Sorenson, S. B. (1990). Reactions to sexual assault: A community study. *Journal of Interpersonal Violence, 5*(2), 229–246. doi: 10.1177/088626090005002007

Smith, R. E., Keating, J. P., Hester, R. K., & Mitchell, H. E. (1976). Role and justice considerations in the attribution of responsibility to a rape victim. *Journal of Research in Personality*, *10*(3), 346–357. doi:10.1016/0092-6566(76)90024-6

Spohn, C. C., & Tellis, K. (2012). *Police decision making in sexual assault cases: An analysis of crime reported to the Los Angeles Police Department and the Los Angeles County Sheriff's Department, 2008* (NIJ 2009-WG-BX-009).

Spohn, C. C., & Tellis, K. M. (2014). *Policing and prosecuting sexual assault: Inside the criminal justice system.* Boulder, CO: Lynne Rienner Publishers.

Tark, J., & Kleck, G. (2014). Resisting rape: The effects of victim self-protection on rape completion and injury. *Violence Against Women*, *20*(3), 270–292. doi: 10.1177/1077801214526050

Truman, J. L., & Langton, L. (2014) *Criminal victimization, 2013*. Retrieved from Bureau of Justice Statistics website: http://www.bjs.gov/content/pub/pdf/cv13.pdf

Ullman, S. E. (1997). Review and critique of empirical studies of rape avoidance. *Criminal Justice and Behavior, 24*(2), 177–204. doi: 10.1177/0093854897024002003

Ullman, S. E. (1998). Does offender violence escalate when rape victims fight back? *Journal of Interpersonal Violence*, *13*(2), 179–192. doi: 10.1177/088626098013002001

Ullman, S. E. (2007). A 10-year update of "review and critique of empirical studies of rape avoidance." *Criminal Justice and Behavior*, *34*(3), 411–429. doi: 10.1177/0093854806297117

Ullman, S. E. (2014). Reflections on researching rape resistance. *Violence Against Women*, *20*(3), 343–350. doi: 10.1177/1077801214526308

Ullman, S. E., & Knight, R. A. (1991). A multivariate model for predicting rape and physical injury outcomes during sexual assaults. *Journal of Consulting and Clinical Psychology*, *59*(5), 724–731. doi: 10.1037/0022-006X.59.5.724

Ullman, S. E., & Knight, R. A. (1992). Fighting back: Women's resistance to rape. *Journal of Interpersonal Violence*, *7*(1), 31–43. doi: 10.1177/088626092007001003

Ullman, S. E., & Knight, R. A. (1993). The efficacy of women's resistance strategies in rape situations. *Psychology of Women Quarterly*, *17*(1), 23–38. doi: 10.1111/j.1471-6402.1993.tb00674.x

Ullman, S. E., & Knight, R. A. (1995). Women's resistance strategies to different rapist types. *Criminal Justice and Behavior*, *22*(3), 263–283. doi: 10.1177/0093854895022003005

University of California, Los Angeles (2012). CARE prevention and education programs—Blame it on the alcohol: Sex and the morning after. Retrieved from http://www.counseling.ucla.edu/care_prevention.html

University of the Pacific (2015). Sexual assault and misconduct prevention programs. Retrieved from http://www.pacific.edu/Campus-Life/Safety-and-Conduct/Sexual-AssaultHarassment-Resources-and-Support/Sexual-Assault-Prevention-Program.html

Zoucha-Jensen, J. M., & Coyne, A. (1993). The effect of resistance strategies on rape. *American Journal of Public Health*, *83*(11), 1633–1634. doi: 10.2105/AJPH.83.11.16

About the Authors

Eryn Nicole O'Neal is a doctoral student and research assistant in the School of Criminology and Criminal Justice at Arizona State University. Her research interests include intimate partner sexual assault (IPSA), arrest and charging decisions in sexual assault and intimate partner violence cases, poststructural approaches in feminist theory, and qualitative methods.

Kimberly Kaiser is a doctoral student and research assistant in the School of Criminology and Criminal Justice at Arizona State University. Her primary research and teaching interests are in the American court system, legal analysis of sentencing criminal justice policies, re-entry policy and practices evaluation, corrections policy, and sentencing policy evaluation.

Endnotes

[1] Some scholars may argue that the inclusion of crying as a verbal resistance strategy is problematic. Nonetheless, we include crying as a verbal resistance strategy as is common in extant rape resistance literature (see Clay-Warner, 2002; Ullman, 1999; Ullman & Knight, 1991, 1993; Zoucha-Jensen & Coyne, 1993). It should also be noted that in her 10-year review of rape resistance research, Ullman (2007) cites crying as a verbal strategy, most likely because it is unlikely that people would cry during consensual sexual acts. Therefore, crying should indicate to the perpetrator that the victim is not a willing sexual partner. However, we do recognize that crying may be a more passive form of verbal resistance as opposed to screaming or telling the perpetrator to stop. Therefore, we have disaggregated crying into a non-forceful verbal measure to test the effects separately. We also include an analysis where we disaggregate the various resistance measures and assess them individually on our dependent variables.

[2] It should be noted that mixed results may be a product of different methodology and the reliance on crime surveys that do not capture all sexual assaults.

[3] The decrease in research may reflect lack of funding, which makes it challenging to build up literature.

[4] Regarding sample type, some studies have relied on small non-probability samples reported to agencies such as law enforcement, college-affiliated agencies, and rape crisis centers (e.g. Atkeson, et al., 1989; Bart, 1981; Bart & O'Brien, 1985; Levine-MacCombie & Koss, 1986; Ruback & Ivie, 1988; Ullman, 1998; Ullman & Knight, 1992, 1993; Zoucha-Jensen & Coyne, 1993).

[5] There were 17 cases in which the victim's age was unknown.

[6] Suspect characteristics were identified in all but 37 cases.

[7] Some victims engaged in more than one form of resistance.