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**Draft Final Technical Report:
The Impact of Victim Self-Protection
on Rape Completion and Injury**

The Analysis of Existing Data Program,
National Institute of Justice

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Abstract

Rape and other sexual assault is prevalent and inflicts serious trauma on its victims, yet prior researchers and law enforcement agencies have failed to provide practical and consistent self-protection advice to potential victims. Researchers have generally agreed that female victims' resistance is effective for preventing the completion of a rape attempt. Controversy remains, however, concerning the impact of resistance, especially forceful resistance, on whether the victim suffers any additional injuries other than rape itself.

Variation in the findings of these studies is due in part to defects of methodology and data. The problems include using small non-probability sample, failing to consider the temporal sequence of victim protective actions and injury, lumping various victim protective action into two or three broad categories, and not controlling for relevant circumstances. The current research avoids or reduces these flaws.

We analyzed the largest probability sample of sexual assault incidents available, derived from the National Crime Victimization Survey for 1992-2002. In order to provide comparative insights, assault cases involving female victims were also analyzed. The sample consisted of 733 rapes, 1,278 sexual assaults, and 12,235 assault incidents involving female victims.

Logistic regression analysis revealed that most self-protection (SP) actions, both forceful and non-forceful, significantly reduce the risk of rape completions, and that the effects of SP actions on rape completion did not vary depending upon conditions such as whether the offender was a sexual intimate, whether the offender was under the influence of alcohol or other drugs, whether there were multiple offenders, whether incidents

occurred at home, or at night. We did not find significant effects of specific SP actions on injury or serious injury, in part because injuries, particularly serious injuries, beyond rape itself, are rare.

Cross tabulation findings indicated that victim resistance was not associated with nonsexual injury (injury besides rape or attempted rape) compared to nonresistance, and was associated with only very slightly more risk of serious injury. Even if one made the extreme assumption that SP actions alone caused the slightly higher rate of serious injury than no SP, the difference is very small, especially considering the large favorable effects of SP on rape completion. Further, the results of the multivariate analyses of general assault incidents (including both sexual and nonsexual assaults) involving female victims showed that most SP tactics, both forceful and non-forceful, appear to reduce the risk of injury and serious injury compared to nonresistance.

Taken together, we believe that rape victims' self-protection actions significantly reduce the probability of rape completion and do not significantly increase the risk of serious injury.

Draft Summary :
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Introduction

Rape and sexual assault are prevalent in contemporary America. According to the National Crime Victimization Survey (NCVS), “persons age 12 or older experienced an average annual 140,990 completed rapes, 109,230 attempted rapes, and 152,680 completed and attempted sexual assaults between 1992 and 2000” (Rennison 2002, p. 1). It is well established that rape can cause long-term physical and emotional trauma to victims, including fear, anxiety, suspicion, confusion, anger, and even suicidal behaviors, particularly when the rape incident involves completed rape and additional physical injuries (Burgess and Holmstrom 1974; Kilpatrick, Resick, and Veronen 1981).

Despite the prevalence of rape and sexual assaults, and its traumatic impact on American women, prior researchers and law enforcement agencies have failed to provide practical and consistent self-protection advice to potential victims (Ullman 1997). Researchers have generally agreed that female victims’ resistance is effective for avoiding rape completion (Cohen 1984; Marchbanks et al. 1990; Kleck and Sayles 1990; Ullman, 1998; Ullman and Knight 1992; Zoucha-Jenson and Coyne 1993). Controversy remains, however, concerning the impact of resistance, especially forceful resistance, on whether the victim suffers any additional injuries other than rape itself (Ullman 1997).

Variation in the findings of these studies is due in part to defects of methodology and data. The problems include using small non-probability samples, failing to consider the temporal sequence of victim protective actions and injury, lumping various victim protective action into two or three broad categories, and not controlling for relevant circumstances. We sought to better assess the impact of resistance, especially forceful resistance, on whether the victim

suffers any additional injuries other than rape itself (Ullman 1997), being avoiding or reducing these flaws.

The data for this study were taken from the National Crime Victimization Survey (NCVS), covering incidents that occurred in the United States from 1992 through 2002 (U.S. Dept. of Justice 2004). Rape, sexual assault (including rape), and assault incidents (not including sexual assault) involving female victims were selected according to the NCVS Type of Crime (TOC) typology. The unweighted numbers of cases included in the sample were 733 rapes, 1,278 sexual assaults, and 12,235 assault incidents. Incidents were weighted using a modified version of the NCVS Incident Weight, which reflected the differing probabilities of selection into the sample of different cases.

Findings

FREQUENCY, COMPLETION, AND INJURY RATES OF PROTECTIVE ACTIONS

Table 1 shows how often NCVS rape victims reported using the various types of victim self-protective (SP) actions, the share of victims using each method who experienced a completed rape (vs. an attempted rape), and the share who suffered any other, nonsexual, injuries. We addressed the problem of temporal sequence of injury and resistance by measuring rates of injury that followed any protective actions taken by the victim. Injuries that preceded protective actions obviously could not have been provoked by those actions. The injury rate figures show that while many crime victims are injured, resisting victims are less frequently and less seriously injured after taking some kind of protective action than non-resisting victims. In 556 rape/attempted rape incidents where victims resisted in some way, 54 percent of the rape attempts were completed, but only 19 percent of rape attempts with resisting victims were completed after the victim took SP actions, 26 percent involved the victim suffering some other

(nonsexual) injury after taking SP actions, and 5 percent involved the victim suffering a serious (more serious than cuts and bruises) nonsexual injury. In contrast, among the 177 incidents involving victims who did not resist, 88 percent of incidents resulted in rape completion, 25 percent of such incidents resulted in a nonsexual injury, and 2.8 percent resulted in serious nonsexual injury. Overall, victim SP during rape attempts was associated with significantly lower risks of rape completion and with slightly higher risks of serious nonsexual injuries as compared to taking no SP actions. These figures imply that resistance during rape attempts could have provoked offenders to inflict further (serious) injuries to victims in no more than 2.4 percent of all rape incidents (the 5.2% post-SP serious injury rate among resisting victims, minus the 2.8% “baseline” serious injury rate that prevailed among nonresisting victims).

(Table 1 about here)

Similar patterns were found among 1,278 sexual assault and 12,235 assault incidents. Among sexual assault incidents (including rape incidents) involving female victims who resisted, only 11.7 percent involved victims who were non-sexually injured after resisting offenders, and 2.2 percent of incidents involved victims who were seriously injured after resisting. Among non-resisting victims, the rate of non-sexual injury was higher. In the 265 incidents with non-resisting victims, 19.2 percent resulted in victim injury, and 2.3 percent resulted in serious victim injury. If we view these injury rates among nonresisting victims as indications of the “baseline” level of danger prevailing in assaults regardless of victim defensive actions, resistance does not appear to add to this level of risk of injury.

The NCVS sample included a total of 12,235 general assault incidents involving female victims. Among the 8,704 incidents with resisting victims, only five percent involved victims who were injured after taking SP actions, and only 0.6 percent resulted in serious post-SP injury.

Thus, cases with serious post-SP injury claimed just 0.4 % of all assaults with female victims. Non-sexual violent crime is nevertheless inherently dangerous, given that even among non-resisting victims, 20.2 percent were injured and 2.3 percent were seriously injured. Compared to the “baseline” risk of injury in assaults among nonresisting victims, the rates of post-SP injury and serious post-SP injury in assault incidents among resisting victims are much lower, and do not support the idea that resistance provokes offenders into inflicting additional injury on victims.

These conclusions can be drawn even before performing complex multivariate tests because even if one were to make the extreme assumption that all cases of post-SP injury were incidents in which resistance alone caused the offender to hurt the victim, it would still be accurate to conclude that resistance rarely causes the victim to suffer further injury. In reality, it is highly unlikely that all crime victims who resisted and then were injured suffered those injuries because they resisted, since some offenders were surely determined to hurt their victims regardless of whether the victims resisted. Thus, the post-SP injury percentages are properly viewed as upper limits on the share of crimes in which protective actions could have provoked offenders into attacking and injuring the victim.

These simple injury rates, however, cannot tell us whether resistance actually reduces risk of injury. Perhaps victims resist only in situations that were already relatively safe or resist only offenders who appeared unlikely to hurt them. Nor can these figures tell us which protective actions are relatively more effective, inconsequential, or counterproductive. To address these issues, analyses using multivariate controls are needed.

Multivariate Results

Rape Completion

Table 2 displays findings from the logistic regression analysis assessing the impact of each type of SP action on whether rapes are completed or are unsuccessful attempts. The first column presents findings similar to those reported in most past research, in that they show the association between protective actions and rape completion without respect to whether rape completion preceded or followed resistance. In this analysis, most strategies seem to reduce the risk of rape completion.

(Table 2 about here)

The conclusion however may not be correct because one cannot know for sure whether SP increased the likelihood of rape completion without knowing the sequence between them. The second column presents the finding that addresses the problem of sequence. Here the dependent variable denotes whether the victim was raped after taking protective actions. Victims were coded 2 if they took SP actions and were injured after doing so, and were coded 1 if they took SP actions and were not injured after doing so, the latter group including those who were injured only before taking SP actions. The result from the second column describes only victims who took some kind of protective action, and address the question: “Among victims who did something for protection, which actions were relatively more effective in averting subsequent rape, beyond any injury that may have already been inflicted before the victims took defensive action?” We selected “called the police” as the omitted category because it is sometimes presented as the officially recommend course of action for victims, and thus can serve as a useful point of comparison.

Despite the different dependent variable, we found a similar pattern in the second column as in the first column. The effectiveness of most SP actions revealed by odds ratio was not statistically different from the presumably effective strategy of calling the police. “Trying to attract attention to help/cried out for help” was even associated with lower risk of rape than the omitted category. It was only “arguing/reasoning/pleading” that was associated with a significantly higher post-SP rape completion rate than calling the police. Note that this is the second-most common type of SP action taken by rape victims (first column, Table 1). As in the first column results, “cooperation” and “screaming from fear” also appeared to be less effective than the reference point, although the difference was not statistically significant.

An alternative way to perform the post-SP rape completion analysis is to include “no-SP” cases, i.e., crimes in which the victim did not take any SP actions. We estimated models in which post-SP rape was coded 2 if (a) the victim took some SP actions and was raped afterwards, or (b) took no SP and was raped. This variables was coded 1 if (a) the victim took SP actions and was not raped, (b) took SP action and was raped, but before SP actions, or (c) took no SP action and was not raped. Cases in which the victim reported that SP actions and injury occurred simultaneously were treated as missing, since it was impossible to establish the SP-injury sequence in these incidents. The alternative analysis provides answers to those who want to know the effectiveness of SP strategies as compared to no resistance. Since 'no-SP' was treated as the excluded SP category, the odds ratio for SP variables can be interpreted as reflecting a comparison between each SP and taking no SP actions at all.

The third column in Table 2 presents the results of this analysis. The odds ratios are directly comparable to those of the first column and this comparison directly establishes the effects of taking account of the sequence of injury and SP actions, since this is the only

difference between the first column models and the third column models. The results are essentially the same. Most SP actions are associated with a lower risk of rape completion as compared to nonresistance, many of them significantly so. The most effective methods of SP include “run/hide,” “get help,” “struggling,” and “attacking without weapon.” These SP actions appear to decrease the risk of rape more than 80 percent compared to nonresistance. Only the ambiguous category of “screaming from pain or fear” is associated with a significantly higher risk of rape completion than nonresistance - it was associated with a risk of rape completion more than four times as high as that of nonresistance. These findings support prior research that found that most SP actions were effective in reducing the risk of rape completion.

Non-Sexual Injury

Some scholars have suspected that even though SP might reduce the risk of rape completion, it might increase the risk of other physical injuries by angering the rapist into inflicting additional injuries. Table 3 presents findings from analyses of the impact of each SP action on whether the offender inflicted physical injury on the victim beyond rape itself. Here the dependent variables reflect only non-sexual injuries, i.e. those other than rape, attempted rape, or the verbal threat of rape.

The results presented in the first column of Table 3 show associations between protective actions and non-sexual injury in rape incidents, without respect to whether injury preceded or followed resistance. These results at first glance seem to support the idea that some SP actions increase the risk of physical injury. “Attacking without weapons,” “struggling” and “screaming from pain/fear” are associated with higher injury rates compared to nonresistance. These results, however, are misleading because they do not take into account the temporal sequence between

SP action and injury. Thus, the positive associations might reflect the possibility that victims who are injured in the first place are more likely to attack the offender, struggle, or scream.

The results appearing in the second column take into account the temporal sequence between victim SP actions and injury, because the dependent variable is nonsexual injury inflicted after SP. The no-SP cases are excluded from this analysis, and the omitted reference category is “calling the police.” The effects of most SP variables were not significantly different from those of calling the police. Only “screaming from fear” was associated with a higher risk of injury than calling the police. Other SP actions that seem to be correlated with higher injury risks than calling the police were non-forceful actions like “cooperation,” “struggling,” and “argue/reason/plead.” The coefficients of these variables almost reach statistical significance even with small sample sizes. In sum, there was no evidence that forceful resistance is more dangerous than non-forceful resistance, once temporal sequence is taken into account.

The results shown in the third column do reflect the comparison between each SP action and no-SP. The odds ratios are directly comparable to those of first column because no-SP cases were included in the sample and served as the omitted category in both analyses. The results are mixed and without clear patterns. About half of the odds ratios are bigger than one, indicating a higher risk of injury compared to no-SP, and about half are smaller than one. In part because of small sample sizes, only one SP variable, “screaming,” had a statistically significant association, indicating a higher risk of injury than nonresistance. It may currently be impossible to find statistically significant effects of SP actions on nonsexual injury in rape because the sample sizes are so small and injury inflicted after SP is so rare, even in the largest available body of survey data.

(Table 3 about here)

The middle panel of Table 3 displays estimates of models pertaining to sexual assaults, while right-most panel of Table 3 shows estimates of models concerning assaults. The sexual assault and assault analyses reveal clearer patterns of SP effects, perhaps because of the larger sample sizes and more stable estimates that they afford. Most SP variables, both forceful and non-forceful, are associated with lower risks of injury, many of them significantly so. The most effective SP actions include “ran away/hid,” “called the police,” “attacked without weapon,” “attacked with non-gun weapon,” and “threatened with non-gun weapon.” These SP actions appear to reduce by half the risk of injury compared to nonresistance. Both forms of resistance with a gun -“attack with a gun” and “threat with a gun”- are also associated with lower risk compared to no SP, although the differences are not statistically significant. As with rape and sexual assault incidents, only “screaming” is associated with a significantly higher risk compared to nonresistance.

The results contradict scholars who have concluded that forceful resistance is often dangerous because it provokes offender to inflict further injury, especially for female victims (Bachman and Carmody 1994; Bachman et al. 2002; Marchbanks et al. 1990). These earlier findings were probably an artifact of the failure to address SP-injury sequence, since these scholars effectively treated injury preceding SP as if it could be a consequence of SP.

Serious Non-Sexual Injury

Table 4 presents results of analyses addressing the impact of SP actions on whether the victim suffered serious nonsexual injury, defined as nonsexual injury more serious than cuts or bruises. The first column shows estimates of the association between protective actions and serious non-sexual injury to the victim, without respect to whether injury preceded or followed

resistance. These results are not only mixed but also misleading because we did not take into account the temporal sequence between SP action and serious injury, as discussed earlier.

(Table 4 about here)

The estimates in the second column of Table 4 are based on a model that addresses the temporal sequence between SP actions and serious injury – the dependent variable is serious injury after SP, and the omitted SP category is “called the police.” In these analyses, victim who suffered serious injuries after taking protective actions were coded 2, and those who suffered no injuries other than rape, minor injuries, or only injuries inflicted before taking protective actions were coded 1. In part because of a small sample size (n=170), and the rarity of serious post-SP injury, no coefficient was significantly associated with serious injury among either rape incidents or sexual assaults. In fact, most t-ratios (the ratio of the coefficient over its standard error) reached zero, indicating a standard error so large that it was impossible to meaningfully estimate the effects of SP variables.

The rightmost panel of Table 4 displays estimates based on the larger sample of all assault incidents with female victims. In this larger sample, several SP actions were associated with a higher risk of serious injury compared to calling the police. They were all non-forceful SP actions, and included “struggling,” “cooperation,” and “screaming from fear/pain.” Again the results mean only that those SP actions are less effective than widely recommended course of calling the police, and do not mean they increase the risk of serious injury compared to nonresistance.

The third column model in Table 4 presents the comparison between each SP action and no-SP, which corresponds to the third column model in Table 2 and 3. Here again, it is virtually meaningless to discuss the coefficients because of large standard errors of coefficients both in the

sample of rape incidents and in the sample of sexual assaults. In the larger sample of all assault incidents, however, a meaningful pattern was found. When temporal sequence between SP actions and serious injury was taken into account, many SP variables were associated with a lower risk of serious injury than nonresistance. In particular, “attacking without weapon,” “run away/hide,” and “called the police” are significantly associated with lower risks of serious injury. They appear to reduce the risk of serious injury somewhere from 66 percent (attacking without weapon) to 90 percent (called the police). On the other hand, the ambiguous categories of “cooperation” and “screaming from fear/pain” appear (perhaps misleadingly) to increase the risk of serious injury almost ten times and three times, respectively. These results contradict scholars who have asserted that forceful resistance is more dangerous than non-forceful SP because it increases the risk of serious injury to female victims.

Are the Effects of Protective Actions Contingent on Other Conditions?

It has been suggested that the effectiveness of different defensive actions may depend on a variety of conditions under which they are used. We examined whether the effects of each SP action differ depending on the victim-offender relationship, particularly, when the victim and offender(s) are sexual intimates (e.g., Ruback and Ivie 1984; Bachman et al. 2002), the offender(s)’ alcohol consumption, location of the incident (at home or not), time (night or not), and the number of offenders.

In the post-SP rape completion models, we did not find that the effectiveness of SP actions depend on these conditions. No more than one out 16 interaction variables had a significant coefficient in any one model, and one would expect one coefficient to be “significant” at the .05 level solely as a result of chance, due to the large number of hypothesis tests. Further, the signs of the coefficients were as likely to be contrary to theoretical expectations as consistent

with them. On the whole, the effects of victim actions on injury do not appear to significantly vary depending on victim or victim-offender relationship, crime location, offender intoxication, time, or the number of offenders.

Conclusions

Rape is a traumatic but nevertheless not rare victimization for American women. It is useful to provide evidence-based, practical advice to millions of potential victims as to which courses of action (or inaction) are most likely to prevent rape completion and accompanying injury. Researchers have generally agreed that female victims' resistance is effective for avoiding rape completion. The current work is an attempt to cast light on the question of whether victim resistance, especially forceful resistance, affects whether the victim suffers any additional injuries other than rape itself, using the largest and perhaps best body of survey data available, the data collected for the NCVS from 1992 to 2002.

We have encountered several problems in the course of conducting the research. One of the most serious problems involving the NCVS is the underreporting of rape victimizations and certain SP actions. It is well known that victims are reluctant to report sexual crime victimizations, particularly when the offenders are intimate (Bachman 1998). The underreporting of sexual assaults causes serious problems for researchers who conduct multivariate analyses because the resulting small sample sizes make standard errors so large that it is almost impossible to find significant effects of SP actions on the outcomes of crime.

Likewise, victims might be less likely to report incidents involving certain forms of SP actions such as weapon use (Kleck and Gertz 1995; 1998), or those involving failed self-protections, or those without injury (Hindelang and Gottfredson 1976). Further, the NCVS does not record important circumstantial factors that can influence victimization outcomes, such as

victim's alcohol consumption (Ullman et al. 1999) and relative physical power of victims and offenders (Felson 1996). Thus, even with the most sophisticated quantitative analysis, it is very difficult to fully control for the context that can affect the choice of victim SP and the outcome of crimes.

We found that most SP actions, both forceful and non-forceful, significantly reduce the risk of rape completion. In particular, SP actions such as “attacking without weapons,” “struggling,” “run away/hide,” “warning” appear to reduce the risk of rape more than 80 percent compared to nonresistance. The findings clearly do not support the argument that forceful SP actions are not as effective as nonforceful SP actions. Further, our analyses of interaction effects indicated that effects of SP actions on rape completion did not vary depending upon conditions such as whether the offender was a sexual intimate, whether the offenders was under the influence, whether there were multiple offenders, whether incidents occurred at home, or at night. We could not find significant effects of particular SP actions on injury or serious injury because of the rarity of rape incidents and certain SP actions, and because injuries beyond rape in such incidents are also uncommon. In particular, serious injuries in rape incidents were too infrequent to conduct any meaningful multivariate analysis.

Nevertheless, we did obtain meaningful information from simple cross tabulations between each SP actions and injury rates, and from multivariate analysis of assault incidents involving female victims. The cross tabulation findings indicate that victim resistance is associated with much less risk of rape completion compared to nonresistance, to have no association with nonsexual injury, and to be associated with only slightly more risk of serious injury. Even if one made the extreme assumption that SP actions alone caused the slightly higher rate of serious injury than no SP, the difference is very small, especially considering the

large favorable effects of SP on rape completion. Therefore, even without the results of the multivariate analysis that controlled for other circumstantial factors, the simple crosstabulation findings indicate that resistance in general appears to be wiser course of action than nonresistance.

The results of the multivariate analyses of assault incidents involving female victims further supported these conclusions. In assault incidents, most SP tactics appear to reduce the risk of injury and serious injury compared to nonresistance. The only SP actions that appear to significantly raise the risk of injury and serious injury were ambiguous, and non-forceful, tactics: “stalling/cooperation,” and “screaming from pain or fear.” Thus, we found no evidence that female victims’ forceful SP actions are more dangerous than non-forceful SP actions.

Based on the best available evidence, we believe that rape victims’ self-protection actions significantly reduce the probability of rape completion and do not significantly affect the risk of serious injury.

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Table 1. Frequency, Rape Completion Rates, and Injury Rates of Self-Protection (SP) Strategies

SP Strategy	Rape						
	Frequency	% Raped	% Raped After SP	% Injured Injured**	% Injured After SP**	% Seriously Injured**	% Seriously Injured After SP**
V attacked O with gun; fired gun	0	-	-	-	-	-	-
V threatened O with gun	1	100.0	0.0	0.0	0.0	0.0	0.0
V attacked O with other weapons (knife, etc.)	4	25.0	0.0	100.0	0.0	0.0	0.0
V threatened O with other weapon (knife, etc.)	4	25.0	0.0	25.0	0.0	25.0	0.0
V attacked O without weapon (hit, kicked, etc.)	100	49.0	40.7	49.5	33.3	6.0	6.8
V threatened without weapon	7	57.1	60.0	42.9	25.0	25.0	25.0
V struggled, ducked, blocked blows, held onto property	279	49.8	34.4	45.5	28.1	6.1	6.8
V chased, tried to catch or hold O	2	50.0	100.0	0.0	0.0	0.0	-
V yelled at O, turned on lights, threatened to call police	135	45.2	37.5	50.4	43.3	8.1	10.6
V cooperated, or pretended to (stalled, did what they asked)	56	82.1	70.6	39.3	53.8	8.8	27.3
V argued, reasoned, pleaded, bargained, etc.	162	69.8	60.7	44.4	44.6	5.6	16.7
V ran or drove away, or tried; hid, locked door	89	34.8	19.5	38.9	22.0	2.2	0.0
V called police or guard	29	41.4	28.6	62.1	35.7	6.9	0.0
V tried to attract attention or help, warn others (cried out for help, called children inside)	31	45.2	42.9	67.7	68.8	6.5	20.0
V screamed from pain or fear	90	66.7	57.6	64.0	62.5	10.0	19.0
V took other SP actions	71	63.4	25.0	29.6	9.1	4.2	0.0
Any self-protection actions	556	54.5	34.5	40.8	26.3	4.3	5.2
No self-protection actions	177	88.1	-	24.9	-	2.8	-
Total Incidents*	733	62.9	11.0	36.9	8.0	4.0	1.4

Table 1 (Continued). Frequency and Injury Rates of Self-Protection (SP) Strategies

Type of SP	Sexual Assault**					Assaults				
	Fre- quency	% Injured	% Injured After SP	% Ser- iously Injured	% Ser- iously Injured After SP	Fre- quency	% Injured	% Injured After SP	% Ser- iously Injured	% Ser- iously Injured After SP
V attacked O with gun; fired gun	0	-	-	-	-	8	12.5	12.5	0.0	0.0
V threatened O with gun	2	0.0	0.0	0.0	0.0	45	33.3	5.9	0.0	0.0
V attacked O with other weapons (knife, etc.)	4	100.0	0.0	0.0	0.0	82	57.3	12.9	4.8	1.8
V threatened O with other weapon (knife, etc.)	11	9.1	0.0	9.1	0.0	79	35.4	5.0	3.8	0.0
V attacked O without weapon (hit, kicked, etc.)	144	36.8	19.8	4.1	3.6	909	56.3	9.0	4.1	1.3
V threatened without weapon	12	33.3	16.7	15.4	16.7	181	33.1	7.1	2.2	0.7
V struggled, ducked, blocked blows, held onto property	400	37.5	18.8	4.5	3.6	1,970	60.7	13.4	5.2	2.4
V chased, tried to catch or hold O	5	0.0	0.0	0.0	0.0	100	38.0	11.3	3.0	2.6
V yelled at O, turned on lights, threatened to call police	251	33.9	19.2	4.4	4.3	1,354	35.2	8.2	3.7	1.1
V cooperated, or pretended to (stalled, did what they asked)	68	39.7	54.5	8.7	23.5	154	26.6	8.6	3.9	4.0
V argued, reasoned, pleaded, bargained, etc.	234	37.2	27.7	4.7	10.4	1,250	28.2	9.4	2.2	0.6
V ran or drove away, or tried; hid, locked door	198	22.7	8.3	1.0	0.0	2,055	23.2	3.6	1.4	0.4
V called police or guard	58	37.9	12.8	3.4	0.0	1,334	23.5	3.2	1.8	0.2
V tried to attract attention or help, warn others (cried out for help, called children inside)	53	49.1	38.7	3.8	8.3	342	35.4	6.4	6.7	1.7
V screamed from pain or fear	105	59.0	52.4	9.4	16.7	411	79.1	27.5	10.9	6.5
V took other SP actions	189	13.8	1.5	1.6	0.0	1,856	17.7	3.1	0.0	0.2
Any SP16	1,013	26.8	11.7	2.7	2.2	8,704	30.0	5.0	2.2	0.6
No SP	265	19.2	-	2.3	-	3,531	20.2	-	2.3	-
Total Incidents*	1,278	25.2	5.6	2.5	1.0	12,235	27.2	2.9	2.2	0.3

* Total Incidents are small than the sum of SP actions because victims often employed multiple actions.

** Injuries other than rape itself.

TABLE 2. Rape Completion

Variable	Description	Odds Ratio (Coef./S.E.)		
		Raped	Raped AfterSP*	Raped After SP**
Victim's Self Protection				
V attacked O with gun; fired gun		-	-	-
V threatened O with gun		-	-	-
V attacked O with other weapons (knife, etc.)		0.00 (0.00)	17.70 (0.00)	0.00 (0.00)
V threatened O with other weapon (knife, etc.)		0.23 (-0.98)	29.17 (0.00)	5.31 (0.00)
V attacked O without weapon (hit, kicked, etc.)		0.35 (-3.83)	1.82 (0.99)	0.20 (-3.70)
V threatened without weapon		2.47 (0.73)	4*10 ⁸ (0.00)	2*10 ⁹ (0.00)
V struggled, ducked, blocked blows, held onto property		0.38 (-4.72)	1.11 (0.20)	0.15 (-5.31)
V chased, tried to catch or hold O		0.00 (0.00)	-	-
V yelled at O, turned on lights, threatened to call police		0.40 (-3.45)	0.72 (-0.57)	0.40 (-1.82)
V cooperated, or pretended to (stalled, did what they asked)		2.96 (2.42)	4.45 (1.74)	1.41 (0.46)
V argued, reasoned, pleaded, bargained, etc.		1.27 (0.93)	4.53 (2.88)	1.27 (0.55)
V ran or drove away, or tried; hid, locked door		0.28 (-4.27)	0.39 (-1.30)	0.13 (-3.66)
V called police or guard		0.57 (-1.02)	-	0.84 (-0.17)
V tried to attract attention or help, warn others (cried out for help, called children inside)		0.47 (-1.51)	0.07 (-2.14)	0.14 (-2.07)
V screamed from pain or fear		1.96 (1.98)	4.02 (1.87)	4.61 (2.35)
V took other SP actions		1.05 (0.14)	1.62 (0.59)	0.19 (-2.44)
Power Difference between V and O				
O age 15-29 and V either under 15 or 30 or older		1.47 (1.14)	1.94 (0.94)	1.12 (0.23)
Number of O – number of V		1.43 (2.06)	1.70 (1.27)	1.62 (1.70)
O was male		1.71 (0.55)	2*10 ⁸ (0.00)	1.35 (0.24)
Offender Weapons and Attack				
O had gun		1.04 (0.07)	2.55 (1.00)	1.18 (0.26)
O had knife		1.05 (0.10)	14.76 (2.02)	2.43 (1.10)
O had sharp object		1.09 (0.05)	0.00 (0.00)	0.00 (0.00)
O attacked V		3*10 ⁹ (0.00)	1*10 ⁹ (0.00)	5*10 ⁹ (0.00)

BOLD p<0.01 (two-tailed), **Italic** 0.01<0.05 (two-tailed)

* Not including No-SP group; Calling the Police is the reference point.

** Including No-SP group; No Self-protection is the reference point.

TABLE 2. Rape Completion (Continued)

Variable	Description	Raped	Raped After SP*	Raped After SP**
Victim Characteristics				
	Child in the victim's household	1.04 (0.18)	2.03 (1.35)	1.55 (1.32)
	V owned the house	0.79 (-1.11)	0.20 (-2.86)	0.32 (-3.18)
	V had a job last week or for 2 weeks last 6 months	0.60 (-2.29)	0.44 (-1.49)	0.61 (-1.43)
	V was 65 or older	0.07 (-2.53)	-	0.09 (-1.83)
	V was married	1.34 (0.80)	3.40 (1.40)	1.46 (0.66)
	V had high school diploma or higher	1.24 (0.99)	1.89 (1.32)	1.22 (0.57)
	V was black	0.53 (-1.69)	0.09 (-2.28)	0.23 (-2.20)
	V was Asian	3.12 (1.39)	5*10 ⁹ (0.00)	1*10 ⁹ (0.00)
	V was Hispanic origin	0.75 (-0.77)	1.22 (0.28)	0.81 (-0.40)
	Number of victimization in last six months	1.02 (0.79)	0.86 (-1.22)	1.01 (0.60)
Offender Characteristics				
	O was gang member	0.73 (-0.74)	6.18 (1.44)	1.88 (0.90)
	O was on substance (alcohol or drugs)	0.67 (-2.01)	0.67 (-0.84)	0.69 (-1.12)
	O was V's sexual intimate	1.52 (1.43)	1.34 (0.37)	1.67 (1.14)
	O was V's family member	0.74 (-0.56)	3.99 (1.20)	0.98 (-0.02)
	O was V's acquaintance (no family, work acquaint.)	0.94 (-0.26)	1.57 (0.81)	0.94 (-0.18)
	O was V's work acquaintance	0.80 (-0.40)	0.55 (-0.34)	2.83 (1.06)
	O was Black	2.39 (2.05)	2.02 (0.67)	1.67 (0.71)
	O was White	1.89 (1.86)	0.86 (-0.21)	0.87 (-0.27)
	O was repeat O	0.95 (-0.18)	0.42 (-1.15)	0.59 (-1.33)
Incident Circumstances				
	Incident occurred in rural	2.00 (2.36)	0.61 (-0.75)	0.83 (-0.41)
	Incident occurred in urban	0.95 (-0.23)	0.57 (-1.04)	0.45 (-2.14)
	Incident occurred at home	2.03 (2.37)	6.25 (2.62)	3.62 (2.72)
	Incident occurred near home	1.89 (2.20)	4.48 (2.19)	2.53 (2.01)
	Incident occurred in public place which may have security	0.97 (-0.06)	0.00 (0.00)	0.53 (-0.88)
	Incident occurred with others present	0.55 (-2.13)	0.41 (-1.35)	0.40 (-2.14)
	Constant	75.87 (0.00)	0.00 (0.00)	0.00 (0.00)
	Sample Size	673	208	358
	-2Log-Likelihood	671	157	313

TABLE 3. Self Protection and Nonsexual Injury.¹

Self Protection Strategy	Odds Ratio (Coef./S.E.)								
	Rape			Sexual Assault ⁴			Assault ⁵		
	Injury	Injury After SP ²	Injury After SP ³	Injury	Injury After SP ²	Injury After SP ³	Injury	Injury After SP ²	Injury After SP ³
V attacked O with gun; fired gun	-	-	-	-	-	-	0.65	1.54	0.29
							(-0.42)	(0.26)	(-0.79)
V threatened O with gun	-	-	-	0.00	0.00	0.00	1.74	2.09	0.76
				(0.00)	(0.00)	(0.00)	(1.14)	(0.83)	(-0.32)
V attacked O with other weapons (knife, etc.)	6*10 ⁹	0.00	0.00	7*10 ⁹	0.00	0.00	1.32	1.47	<i>0.36</i>
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(1.09)	(0.87)	(-2.43)
V threatened O with other weapon (knife, etc.)	0.24	174.92	6.11	0.18	0.00	0.00	0.82	0.94	<i>0.25</i>
	(-0.86)	(0.00)	(0.00)	(-1.15)	(0.00)	(0.00)	(-0.61)	(-0.09)	(-2.22)
V attacked O without weapon (hit, kicked, etc.)	1.77	2.95	1.85	1.46	1.89	1.27	1.48	1.17	0.25
	(2.16)	(1.68)	(1.33)	(1.69)	(1.42)	(0.67)	(4.70)	(0.83)	(-8.42)
V threatened without weapon	0.49	0.04	0.15	0.52	0.11	0.29	1.07	1.38	0.75
	(-0.67)	(-0.64)	(-0.69)	(-0.71)	(-0.53)	(-0.51)	(0.30)	(0.80)	(-0.77)
V struggled, ducked, blocked blows, held onto property	1.86	1.69	1.05	1.97	2.36	1.12	2.01	1.73	0.40
	(3.19)	(0.99)	(0.14)	(4.10)	(2.22)	(0.39)	(11.06)	(3.83)	(-8.08)
V chased, tried to catch or hold O	0.00	-	-	0.00	0.00	0.00	1.04	1.75	0.64
	(0.00)	-	-	(0.00)	(0.00)	(0.00)	(0.14)	(1.27)	(-1.12)
V yelled at O, turned on lights, threatened to call police	1.22	2.34	1.58	0.92	1.35	0.96	0.89	1.33	0.57
	(0.80)	(1.54)	(1.02)	(-0.43)	(0.76)	(-0.13)	(-1.31)	(1.74)	(-3.89)
V cooperated, or pretended to (stalled, did what they asked)	0.63	3.79	0.97	0.98	5.46	2.38	2.34	4.87	1.88
	(-1.32)	(1.27)	(-0.04)	(-0.06)	(2.30)	(1.42)	(2.72)	(3.67)	(1.49)
V argued, reasoned, pleaded, bargained, etc.	1.21	2.07	1.63	1.38	2.80	1.78	0.97	2.86	1.00
	(0.82)	(1.28)	(1.13)	(1.66)	(2.52)	(1.74)	(-0.27)	(6.55)	(0.00)
V ran or drove away, or tried; hid, locked door	1.16	1.16	0.78	0.92	1.06	0.55	0.69	0.89	0.17
	(0.52)	(0.24)	(-0.47)	(-0.37)	(0.13)	(-1.42)	(-4.91)	(-0.66)	(-12.05)
V called police or guard	2.62	-	0.31	3.15	-	0.57	0.83	-	0.19
	(1.82)	-	(-1.26)	(2.60)	-	(-0.68)	(-1.87)	-	(-8.23)
V tried to attract attention or help, warn others (cried out for help, called children inside)	1.27	3.22	2.72	1.27	1.97	1.98	1.08	0.93	0.58
	(0.51)	(1.31)	(1.37)	(0.62)	(0.95)	(1.17)	(0.48)	(-0.23)	(-1.83)
V screamed from pain or fear	3.31	5.31	6.29	3.40	4.41	5.62	4.31	2.75	2.41
	(3.98)	(2.16)	(3.01)	(4.56)	(2.66)	(3.55)	(9.65)	(4.49)	(3.94)
V took other SP actions	0.90	0.86	0.40	<i>0.5</i>	0.24	0.09	0.79	1.26	0.18
	(-0.33)	(-0.13)	(-0.94)	(-2.33)	(-1.60)	(-2.90)	(-2.73)	(1.19)	(-10.43)
Sample Size	673	201	351	1,178	569	798	11,213	6,602	9,714
-2 Log Likelihood	747	139	314	1,054	254	476	7,974	1,824	4,107

BOLD p<0.01 (two-tailed), *Italic* 0.01<0.05 (two-tailed)

1. All other variables are not shown
2. Not including No-SP group, Calling the Police is the reference point.
3. Including No-SP group, No Self-protection is the reference point.
4. Sexual assaults include completed rape, attempted rape, sexual attack with serious assault, sexual attack with minor assault, sexual assault without injury, unwanted sexual contact without force, verbal threat of rape, and verbal threat of sexual assault.
5. Assaults include aggravated assault with injury, attempted aggravated assault with weapon, threatens to assault with weapon, simple assault with injury, assault without weapon and without injury, and verbal threat of assault.

TABLE 4 Self Protection and Serious Nonsexual Injury.¹

Self Protection Strategy	Odds Ratio (Coef./S.E.)								
	Rape			Sexual Assault			Assault		
	Serious Injury	Serious Injury After SP ²	Serious Injury After SP ³	Serious Injury	Serious Injury After SP ²	Serious Injury After SP ³	Serious Injury	Serious Injury After SP ²	Serious Injury After SP ³
V attacked O with gun; fired gun	-	-	-	-	-	-	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
V threatened O with gun	-	-	-	0.00 (0.00)	1*10 ¹²⁸ (0.01)	3*10 ⁵² (0.01)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
V attacked O with other weapons (knife, etc.)	0.00 (0.00)	3*10 ²⁵ (0.00)	2*10 ⁴² (0.00)	0.00 (0.00)	2*10 ¹⁰⁶ (0.01)	4*10 ⁷² (0.00)	0.88 (-0.24)	1.71 (0.47)	0.26 (-1.22)
V threatened O with other weapon (knife, etc.)	7.42 (1.08)	4*10 ⁷⁸ (0.00)	2*10 ⁴⁴ (0.00)	3.93 (0.83)	1*10 ⁶⁶ (0.00)	2*10 ²⁹ (0.00)	0.63 (0.67)	0.00 (0.00)	0.00 (0.00)
V attacked O without weapon (hit, kicked, etc.)	0.63 (-0.62)	8*10 ⁹ (0.00)	1*10 ¹⁰ (0.00)	0.59 (-0.78)	1*10 ⁹ (0.01)	896.14 (0.00)	0.96 (-0.23)	1.26 (0.43)	0.34 (-2.35)
V threatened without weapon	3.52 (0.82)	2*10 ¹⁶ (0.00)	1*10 ¹⁵ (0.00)	2.03 (0.50)	1*10 ⁸⁰ (0.01)	6*10 ⁵¹ (0.00)	0.75 (-0.55)	1.47 (0.34)	0.82 (-0.21)
V struggled, ducked, blocked blows, held onto property	1.78 (1.06)	0.00 (0.00)	0.00 (0.00)	1.92 (1.39)	1.11 (0.00)	0.00 (-0.00)	1.25 (1.56)	3.34 (2.95)	0.79 (-0.88)
V chased, tried to catch or hold O	0.00 (0.00)	-	-	0.00 (0.00)	1*10 ¹⁴ (0.00)	4*10 ²³ (0.00)	0.80 (-0.34)	2.38 (0.86)	1.76 (0.69)
V yelled at O, turned on lights, threatened to call police	1.86 (1.04)	1*10 ¹⁰ (0.00)	4*10 ²¹ (0.00)	1.48 (0.75)	0.10 (0.00)	5*10 ²⁷ (0.00)	0.99 (-0.04)	0.99 (-0.01)	0.59 (-1.36)
V cooperated, or pretended to (stalled, did what they asked)	3.69 (1.74)	4*10 ¹⁵ (0.00)	9*10 ¹³ (0.00)	4.76 (2.41)	0.00 (-0.00)	3*10 ⁶ (0.00)	2.46 (1.90)	51.62 (5.50)	9.97 (3.75)
V argued, reasoned, pleaded, bargained, etc.	1.51 (0.67)	1*10 ¹² (0.00)	1*10 ²² (0.00)	2.13 (1.40)	2*10 ³⁹ (0.03)	9*10 ³⁶ (0.04)	0.86 (-0.66)	1.21 (0.35)	0.56 (-1.27)
V ran or drove away, or tried; hid, locked door	0.38 (-0.98)	0.25 (0.00)	0.08 (0.00)	0.25 (-1.47)	0.00 (-0.00)	0.01 (0.00)	0.45 (-3.68)	0.62 (-0.90)	0.18 (-4.09)
V called police or guard	1.72 (0.49)	-	0.00 (0.00)	1.39 (0.32)	-	0.00 (-0.01)	0.72 (-1.37)	-	0.10 (-3.08)
V tried to attract attention or help, warn others (cried out for help, called children inside)	0.07 (-1.94)	0.00 (0.00)	0.00 (0.00)	0.21 (-1.48)	1*10 ⁶ (0.00)	9*10 ²² (0.01)	2.61 (3.58)	1.31 (0.30)	0.88 (-0.19)
V screamed from pain or fear	2.92 (1.54)	6*10 ⁷ (0.00)	9.79 (0.00)	2.88 (1.69)	1*10 ¹⁶ (0.01)	68.89 (0.00)	2.86 (5.07)	4.75 (2.68)	2.99 (2.36)
V did other response	0.96 (-0.05)	0.00 (0.00)	0.00 (0.00)	0.79 (-0.31)	0.00 (0.00)	0.00 (0.00)	0.48 (-2.64)	1.14 (0.22)	0.21 (-2.99)
Sample Size	673	170	314	1,178	534	756	11,213	6,509	9,621
-2 Log-Likelihood	149	.000	.000	188	.000	.000	1,887	289	858

BOLD p<0.01 (two-tailed), *Italic* 0.01<0.05 (two-tailed)

1. All other variables are not shown
2. Not including No-SP group, Calling the Police is the reference point.
3. Including No-SP group, No Self-protection is the reference point.

Biography of Authors

The principal investigator, Gary Kleck, is professor at the School of Criminology and Criminal Justice at Florida State University. He has published numerous books and research articles in journals such as *Criminology*, *American Journal of Sociology*, *American Sociological Review*, and *the Journal of Criminal Law and Criminology*. He is the winner of the Michael J. Hindelang Award of the American Society of Criminology for *Point Blank* (1993), awarded for making "the most outstanding contribution to criminology." He has completed various funded research projects, including "The Impact of Drug Enforcement on Urban Drug Use Levels and Crime Rates" awarded by the U.S. Sentencing Commission in 1995 and "Testing a Fundamental Assumption of Deterrence-Based Crime Control Policy" awarded by the Charles E. Culpeper Foundation in 1997. He is responsible for the research project including analysis of data and writing the report.

The second investigator, Jongyeon Tark, is a doctoral student at School of Criminology and Criminal Justice at the Florida State University and a police lieutenant with the Nation Police Agency in South Korea. One of his articles recently appeared in *Criminology*.

**Draft Final Technical Report:
The Impact of Victim Self-Protection
on Rape Completion and Injury**

The Analysis of Existing Data Program,
National Institute of Justice

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Introduction

Rape and sexual assault are prevalent in America. According to the National Crime Victimization Survey (NCVS), “persons age 12 or older experienced an average annual 140,990 completed rapes, 109,230 attempted rapes, and 152,680 completed and attempted sexual assaults between 1992 and 2000” (Rennison 2002, p. 1). Other research has estimated that approximately 20% of all women will be raped at some point through their lives (Koss 1993).

It is well known that rape can cause long-term physical and emotional trauma to victims, including fear, anxiety, suspicion, confusion, anger, and even suicidal behaviors (Burgess and Holmstrom 1979; Kilpatrick, Resick, and Veronen 1981). It has also been found that completed rapes cause more psychological problems for victims than attempted rapes, and that completed rapes involving additional physical injury cause even more posttraumatic stress disorder (Kilpatrick et al. 1981).

Despite the prevalence of rape and sexual assaults, and its traumatic impact on American women, prior researchers and law enforcement agencies have failed to provide practical and uniform self-protection advice to potential victims (Ullman 1997). While some researchers have suggested that resistance in general is effective in avoiding completion of the rape and additional injury (Ullman and Knight 1995), others argue that resistance can be dangerous, depending upon the situation (Bachman et al. 2002). Because of this mixed advice, prospective victims are left to decide for themselves which are the most appropriate strategies to adopt in sexual assaults.

Prior Research

Research on the impact of self-protection (SP) began in the context of the feminist movement (Searles and Berger, 1987). While conventional authority advised that women should

limit their mobility, depend upon men, or cooperate with the offender to prevent victimization, feminists argued that women should fight back or actively resist offenders (Brownmiller, 1975). This not only prevented victimization but also promoted mobility and independence. Further, doing so may also reduce self-blame, guilt, and self-derogation that passive female victims often suffer after the incident (Meyer and Taylor, 1986; Mezey and Taylor, 1988). Consequently, it became vital to properly evaluate the impact of victim SP in criminal events, particularly those involving female victims.

Researchers have generally agreed that female victims' resistance is effective for avoiding rape completion (Cohen 1984; Marchbanks et al. 1990; Kleck and Sayles 1990; Ullman, 1998; Ullman and Knight 1992; Zoucha-Jenson and Coyne 1993). Controversy remains, however, concerning the impact of resistance, especially forceful resistance, on whether the victim suffers any additional injuries other than rape itself (Ullman 1997). Some scholars have argued that victim resistance to rape offenders, especially forceful resistance, is useless and even dangerous because it provokes offenders to attack the victim (e.g., Brecklin and Ullman 2001; Cohen 1984; Griffin and Griffin 1981; Marchbanks, Liu and Mercy 1990). Others have concluded that resistance is generally either beneficial and at least does not increase the risk of injury (Kleck and Sayles 1990; Ullman and Knight 1991; 1995; Zoucha-Jensen and Coyne 1993).

(Table 1 about here)

Table 1 summarizes the findings and methods of research on rape and resistance published in the past twenty-five years. Variation in the findings of these studies is due in part to defects of methodology and data. For example, many studies are based on small nonprobability samples of crimes, typically local convenience samples of incidents known to authorities, such as those reported to a single local law enforcement agency (Ullman 1998;

Ullman and Knight 1992; Zoucha-Jensen and Coyne 1993), those involving college students at a single campus (Amick and Calhoun 1987; Ullman 1999; Levine-MacCombie and Koss 1986), victims who sought help from particular rape crisis centers (Atkeson et al. 1989; Cohen 1984; Ruback and Ivie 1988), offenders incarcerated in a single institution or handled by a single treatment facility (Ullman and Knight 1992; 1993), or self-selected volunteer subjects (Bart 1981; Bart and O'Brien 1985).

There are biases in convenience samples of crimes that come to the attention of the authorities, biases that bear directly on the apparent effectiveness of victim defensive actions. In particular, victims tend not to report to the police less serious crimes and those in which they suffered no injuries or property loss (U.S. Bureau of Justice Statistics 1985). Thus, samples of crimes known to the authorities necessarily tend to disproportionately exclude cases in which victim actions were effective in preventing injury or property loss. As Hindelang and Gottfredson (1976) pointed out decades ago, at the very dawn of victim resistance research, this systematic censoring of crimes thereby yields samples of crimes that contribute to underestimating the effectiveness of self-protection. Likewise, incidents reported to victim crisis centers or treatment facilities are likely to suffer from similar censoring of crimes with better outcomes for victims, since the consequences of successfully resisted crimes are likely to be less traumatic for victims, who would therefore be less likely to seek treatment or counseling.

Apparent conflicts in findings of studies may also be attributable to the failure of most researchers to establish the sequence of protective actions and injury. As Sarah Ullman (1998, 179) has noted, where one does not have information on the sequence of resistance and injury, one cannot draw conclusions about whether resistance provoked injury, since a positive association may be primarily due to crimes in which injury provoked resistance from previously

nonresisting victims. Nearly all researchers who have found positive associations between injury and self-protection actions, and concluded that resistance provoked offenders into attacking victims, failed to establish whether self-protective (SP) actions preceded or followed the offender's inflicting of injury (e.g., Griffin and Griffin 1981; Block and Skogan 1986; Ruback and Ivie 1988; Atkeson et al. 1989; Marchbanks, Lui, and Mercy 1990; Brecklin and Ullman 2001). In these studies, crimes where a victim was in fact injured before doing something to resist are effectively treated as cases in which resistance provoked injury. In contrast, the few studies that established the injury-SP sequence have generally found that all or most types of resistance either reduce the risk of subsequent injury or have no net effect one way or the other (Quinsey and Upfold 1985; Ullman and Knight 1992). Although the redesigned National Crime Victimization Survey (NCVS) since 1992 provided researchers with information on the injury-SP sequence, no researchers have properly utilized the injury-SP sequence information on rape and sexual assault studies, though some recent researchers have used the information in studies of (nonsexual) assault cases (Thompson et al. 1999; Bachman et al. 2002).

Another problem in rape/sexual assault resistance research is the use of crude two- or three-category typologies of resistance actions. Most researchers simply divide victims into those who resisted or did not resist, or distinguish only physical (“forceful,” “direct,” “combative”) resistance from nonphysical resistance (e.g., Block and Skogan 1985; Marchbanks et al. 1990; Ullman 1998). These scholars have generally concluded that physical resistance increased the risk of injury while it reduced the likelihood of rape completion. Although the pre-1986 NCVS distinguished eight types of self-protective actions, and the post-1986 NCVS provides information on 16 types, even researchers using these rich sources of information have lumped different types of victim actions into a few broad categories. For example, Brecklin and

Ullman (2002) combined the 16 relatively specific protective measure provided in the NCVS data into four categories: “forceful physical, non-forceful physical, forceful verbal, non-forceful verbal responses.” Unlike prior researchers, they found that non-forceful physical responses and non-forceful verbal responses are associated with increased risk of injury (though also reduced risk of rape completion), while forceful physical and verbal responses were not significantly associated with the outcomes of victimization.

Making the most of the NCVS detail on protective actions, Kleck and Delone (1993) separately assessed all eight distinct categories of self-protection that were coded in the pre-1986 NCVS and found that some forceful responses appeared to reduce the risk of injury while others did not, and that some non-forceful responses appeared to be effective while others, such as attempting to get help, seemed to increase the risk. Different forms of physical resistance can even have effects of opposite sign. Thus, important differences in impact can be lost by combining protection strategies into unduly broad categories.

Another problem lies in the fact that some researchers of rape and sexual assault studies have used less sophisticated statistical technique. While some researchers have used multivariate techniques such as logistic regression or probit analysis (e.g., Brecklin and Ullman 2001; Marchbanks et al. 1990; Kleck and Sayles 1990), others have employed techniques such as analysis of variance or chi-square methods applied to simple cross-tabular data (e.g., Cohen 1984; Amick and Calhoun 1987; Ullman et al. 1999; Ullman and Knight 1995; Zoucha-Jensen and Coyne 1993). Bivariate statistics do not allow researchers to control for potential confounding variables, making it harder to determine whether associations involving self-protective actions are due to causal effects of victim resistance or to effects of correlated but uncontrolled variables.

The use of less sophisticated techniques and the absence of statistical controls is consequential because, as many researchers have pointed out, the choice of resistance actions and injury outcome are strongly correlated with other variables such as types of offender attack or threat (Ullman and Knight 1992), victim and offender alcohol consumption (Brecklin and Ullman 2001), and victim-offender relationships (Atkeson et al. 1989; Levine-MacCombie and Koss 1986). Most studies, however, did not control for some potentially confounding variables. The standard solution to complex correlations between variables is to measure and statistically control for as many suspected confounders - correlates of protective actions that affect crime outcomes - as possible.

Research Methods

Our goal was to conduct an analysis that responds to Ullman's (1997, p. 177) call for improved research: "larger, representative community studies are needed in which a broader range of situational factors, resistance strategies, and assault outcomes are assessed." Specifically, we aim to avoid the aforementioned flaws of past research, and to (a) examine a large national probability sample of crimes, (b) take account of the sequence of victim protective actions and injury in appropriate ways, (c) control for many potentially confounding correlates of defensive actions, and (d) separately assess the full set of 16 specific victim actions coded in the post-1992 NCVS on the outcomes of crimes.

Sample

The data for this study are taken from the National Crime Victimization Survey (NCVS), covering incidents that occurred in the United States from 1992 through 2002 (U.S. Dept. of Justice 2004). Only data gathered since 1992 was used because this was when the NCVS began to record the sequence of victim actions and injury. Rape, sexual assault, and assault incidents

involving female victims were selected according to the NCVS Type of Crime (TOC) typology. Rape incidents include only rape and attempted rape cases, and sexual assault incidents include verbal threat of rape and all other types of sexual assaults incidents, as well as attempted rape and rape incidents. Rapes and other sexual assaults were separately analyzed because rape completion might not be as relevant in general sexual assault incidents, where the intentions of offenders may be different. In addition, physical assault cases (not including sexual assault) were separately analyzed in order to measure the impact of SP on injury in general. The comparison allowed us to examine whether the effect of SP varied in different types of crime incidents.

The NCVS is an ongoing national household survey conducted by the U.S. Census Bureau that questions all persons 12 years old or older residing in a large national probability sample of housing units. The NCVS uses a rotating panel design in which stratified multistage samples of U.S. housing units are randomly selected, and residents of the sampled units are interviewed every six months, over a three and a half year period, about their victimization experiences during the preceding six months. Most interviews are conducted by telephone but some are conducted face-to-face. The total unweighted sample size utilized in this study is 733 rapes, 1,278 sexual assaults, and 12,235 assault incidents.

Incidents were weighted using a modified version of the NCVS Incident Weight, which reflected the differing probabilities of selection into the sample of different cases. If used unmodified, this weight inflates the apparent sample size up to estimated population totals, deceiving statistical software into believing that there are millions of crimes in the sample, and distorting significance tests such that even very weak associations appear to be highly significant. To avoid this, in each sample analyzed, the mean value of the original Incident Weight variable

was computed. A new weight variable was then created that, for a given crime incident, equaled that case's Incident Weight divided by the mean of the Incident Weight in the sample being analyzed. Since the average value of this new weight would be one, apparent sample sizes was exactly equal to the actual unweighted sample size, and significance tests were not distorted.

(Table 2 about here)

Table 2 lists the variables included in the analyses, along with their means and standard deviations. Most variables are binary, indicating the presence or absence of an attribute. The dependent variables measure whether the victim (1) suffered completion of rape, regardless of when it occurred (RAPED), (2) suffered completion of rape after taking some self-protective action (POSTRAPE), (3) suffered any nonsexual injury (i.e., injury beyond the rape itself), regardless of when it occurred (NOSEXINJ), (4) suffered any nonsexual injury after taking some self-protective action (PONOSEXI), (5) suffered any serious nonsexual injury, regardless of when it occurred (NOSEXSR), or (6) suffered any serious nonsexual injury after taking some self-protective action (PONSEXSR). Since our dependent variables were all binary variables, we used logistic regression to estimate models. In addition to estimating equations for rape incidents, we estimated separate equations for sexual assaults incidents and assault incidents in order to determine whether the effects of protective actions differ by crime type.

It is clear that injury that occurred before SP action cannot be the result of SP action. Unfortunately, however, many prior researches effectively treated such injuries as the consequence of SP actions. As discussed, RAPED, NOSEXINJ, NOSEXSR are injury variables that do not consider temporal order of SP and injury, like those used in less satisfactory past research. Our major focus, however, is on rape suffered after taking some self-protective action (POSTRAPE), injury after taking self-protective actions (PONOSEXI), and serious injury

suffered after taking self-protective actions (PONSEXSR). These variables code injuries as potentially the outcome of SP actions only if injury came after SP actions, because protective actions taken after the victim is injured could not have affected whether that injury was inflicted.

The NCVS does not address the possibility of complex sequences in which multiple different types of defensive actions are taken and injury occurs after one victim action but before another type of action. Rather, all victims who were injured and used protective actions are simply coded by interviewers as to whether protective actions (in general) were taken before, during, or after suffering injury. We treated victims who were injured after victim actions as having suffered post-resistance injury. In some incidents, victims described their SP actions and injury as occurring at the same time, i.e. victims were unable to say whether their protective actions came before or after injury. We treated these incidents as missing on the post-SP injury variables. Victims could be coded for as many of these sequences as were appropriate, and therefore might be coded as having suffered injury before, during, and after defensive action. For the purpose of coding post-protection injury, we treated victims who were injured both before and after victim actions, or both during and after SP actions, as having suffered post-SP injury, thereby favoring the hypothesis that resistance increases the victim's risk of injury.

The types of injuries recorded in NCVS are: (1) raped, (2) attempted rape, (3) sexual assault other than rape or attempted rape, (4) knife or stab wounds, (5) gun shot, bullet wounds, (6) broken bones or teeth knocked out, (7) internal injuries, (8) knocked unconscious, (9) bruises, black eyes, cuts, scratches, swelling, chipped teeth, and (10) other injuries. Rape completion was measured using the contrast between raped vs. attempted rape (categories 1 and 2), while additional injury was based on categories (3) to (10). The exact cut-off between serious and minor injury is necessarily subjective and somewhat arbitrary, but we used the fairly

conventional one adopted in past research using NCVS data: the last two categories (9 and 10) were treated as minor injuries, the rest (3-8) as serious.

The independent variables of primary interest were 16 binary variables denoting whether the victim took a given type of protective action (2=action was taken, 1=action was not taken). Victims could be coded as having used as many or as few of these strategies as they reported, and those who did nothing to resist would simply be coded 1 on all 16 protection variables. Because there was no variable included in the models that explicitly denoted that victims did nothing to protect themselves, “no self-protection” was the omitted protection category, which serves as a point of comparison for all specific protective actions. Thus the coefficient of each protection variable reflects how much more or less likely a given outcome was for victims who took that action, compared to victims who did nothing to resist, other things being equal.

NCVS respondents reporting victimization were asked: “Did you do anything with the idea of protecting YOURSELF or your PROPERTY while the incident was going on?” (U.S. Bureau of Justice Statistics 2003a). The sixteen SP actions that interviewers code, based on victims’ responses to this question, are shown in Table 2. Some categories of self-protective actions might not be regarded as resistance. For example, it is unlikely that victims “chase” the offender to prevent rape completion. The purpose of such an action is more likely to be to inflict punishment on the offender, hold him for police, or (where relevant) to recover victim’s property. Likewise, SP actions could include either cooperating or pretending to cooperate with the offender. Genuine cooperation might seem to be indistinguishable from nonresistance, but since cooperating and pretending to cooperate are grouped together in the NCVS, victims in this category must be coded as having taken some kind of protective action, since some of them “stalled” to protect themselves. Note that cooperating or pretending to cooperate may have the

same harmful, or less helpful, effects that nonresistance appears to have. That is, it may signal to the offender that continuing their assault is likely to be fairly risk-free.

Another problematic category of “self-protective action” coded in the NCVS is “screamed from pain or fear” (this is the full verbatim description that appears in the NCVS interview schedule – U.S. Bureau of Justice Statistics, 2000:147). Responses coded as fitting this category of victim response were provided in the context of the introductory statement asking about protection, and so these behaviors are treated as self-protection in the NCVS. But they could also be viewed as virtually involuntary responses to threat or injury itself, rather than actions intended to prevent further injury or property loss. Ambiguity arises because, after the initial protection question is asked, those who respond “No” are nevertheless asked the more ambiguous follow-up question, “Was there anything you did or tried to do about the incident while it was going on?” Thus, some victims who described what they did during the incident, after they answered “No” to the first question, then “Yes” to the second one, were not necessarily claiming that the action was taken for protective reasons. Nevertheless, since screaming from pain might well influence whether the perpetrator inflicts further injury, and screaming from fear might influence whether any injury is inflicted in the first place, we included this action in the models. Readers should, however, note that any positive associations between this victim behavior and injury may merely reflect the fact that injury often causes victims to scream from pain, and threat of an attack could make them scream from fear. Even with information on SP-injury sequence, one must still consider the possibility that victims may scream from fear just before an injury is inflicted. Such a case could appear to support the view that screaming provokes offender attack, even if it actually has no effect.

It was not practical to assess the impact of combinations of specific protective measures. There are 57,527 possible combinations of 16 different measures. Even testing just one percent of these combinations would inevitably yield many misleadingly “significant” findings due to the huge number of hypothesis tests performed. Further, any subset of those combinations selected for inclusion in the models would be arbitrary, given the absence of either past research on the effects of combinations of victim actions or relevant theory that specifies which combinations would be most likely to affect, for good or ill, the outcomes of crimes. In any case, only 37.6 percent of all rape victims used more than one type of SP (21.4 percent used two types, 8.6 percent used three, and 7.6 percent used more than three). Further, when we examined the correlations among SP actions, we found no correlations even as large as 0.2, and only four exceeding 0.1, out of 120 total bivariate correlations. Thus, there appears to be no pronounced clustering of SP actions in the minority of cases where multiple actions were taken.

Other independent variables included in our models measure characteristics of the victims, offenders, and circumstances that might influence the outcomes of the incidences, and that might also be correlated with the willingness or ability of victims to use each defensive action. First, three variables are included to reflect power advantages that offenders had over victims. ADVAGEOF is coded higher when one or more offenders are in their physical prime ages (age 15-29) and the corresponding victim(s) are not of this age range, i.e. there is likely to be a power advantage to the offender based on age and associated physical fitness. ADVNUM equaled the number of offenders minus the number of victims, which reflects any numerical advantage of offenders. MALEOFDC is coded higher when one or more offenders are male, who are stronger than female victims. Other variables measure whether offenders possessed weapons

during the incident (OHADGUN, OHADKNIF, OHADSHAP) and whether offenders actually attacked victim (OFDATCK).

Ten other variables measured attributes of victims that are mostly self-explanatory. They were included because they reflect the willingness and capability of the victim to protect themselves and possibly different levels of risk of getting injured. For instance, victims older than 65 are easier for the offender to injure because of their physical frailties and inability or disinclination to retaliate.

Eight other variables measured attributes of offenders, as perceived by victims, as well as the relationship between victim and offender. Intimate offenders such as family members and sexual intimates may be more inclined to inflict harm on the victim because hostility has had time intensify in the course of extended emotional interaction. Alternatively, emotional bonds might inhibit the offender's aggression. Emotional intimacy might also influence the willingness and capability of victims to protect themselves – victims might be reluctant to direct forceful actions at intimates.

Other independent variables measure the circumstances of the incident. ATHOME, NEARHOME, and SECUPUB reflect the degree of safety for the victim in terms of their familiarity with the setting and the possibility of gaining assistance from others. ATHOME reflects whether the crime occurred in the victim's home, while NEARHOME reflects whether the incident occurred in the immediate area around the home, such as the yard, garage, and very close streets. SECUPUB stands for a secure public place that may have capable guardians, including restaurants, banks, other commercial places, offices, factories, or school buildings and property. Variables indicating an urban or rural setting (RURAL, URBAN) reflect population density of the setting and thus the likelihood that there would be other people around who could

serve as allies to the victim, intervening or summoning police. The presence of bystanders (OTHRPRES) might discourage offender aggression but it could also provoke it in aggressors who perceived a need to deter the victim from eliciting assistance from those potential allies.

Findings

FREQUENCY AND INJURY RATES OF PROTECTIVE ACTIONS

Table 3 shows how often NCVS crime victims reported using the various types of victim protective actions and the share of victims using each method who experienced a completed rape (vs. an attempted rape) and the share who suffered any other, nonsexual, injuries. Readers should not interpret these figures as measures of the relative effectiveness of the various resistance tactics, since simple differences in injury rates reflect more than just differences in the effects of victim actions. With this caveat in mind, these figures show that while many crime victims are injured, resisting victims are less frequently and less seriously injured after taking any kind of protective action than non-resisting victims. In 556 rape/attempted rape incidents where victims resisted in some way, 54 percent of the rape attempts were completed, only 19 percent of rape attempts were completed after the victim took SP actions, 26 percent involved the victim suffering some other (nonsexual) injury after taking SP actions, and 5 percent involved the victim suffering a serious nonsexual injury. In contrast, among the 177 incidents involving victims who did not resist, 88 percent of incidents resulted in rape completion, 25 percent of such incidents resulted in a nonsexual injury, and 2.8 percent resulted in serious nonsexual injury. Overall, victim SP during rape attempts was associated with significantly lower risks of rape completion and with slightly higher risk of serious nonsexual injuries as compared to taking no SP actions. These figures imply that resistance during rape attempts could have provoked offenders to inflict further (serious) injuries to victims in no more than 2.4 percent of rape

incidents (the 5.2% post-SP serious injury rate among resisting victims, minus the 2.8% “baseline” serious injury rate that prevailed among nonresisting victims).

Similar patterns were found in sexual assault and assault incidents. For 1,278 sexual assault incidents (including rape incidents) involving female victims, only 11.7 percent of incidents involved victims who were non-sexually injured after resisting offenders and 2.2 percent of incidents involved victims who were seriously injured after resisting. Among non-resisting victims, the rate of non-sexual injury was higher. For 265 incidents involving non-resistance, 19.2 percent of incidents involving victims who did not resist resulted in victim injury and 2.3 percent of such incidents resulted in serious victim injury. Thus, resistance did not appear to add the risk of injury beyond this “baseline” level of danger. Recalling that victim resistance appeared to be associated with substantially lower risk of sexual injury such as rape completion, virtually the same pattern was found in assault incidents. For 12,235 assault incidents involving female victims, only five percent of incident involved victims who were injured after resisting offenders and only 0.6 percent of resisting victims were seriously injured after resisting (such assault incidents claimed just 0.4 % of all assaults with female victims. Non-sexual violent crime is nevertheless inherently dangerous, given that even among non-resisting victims, 20 .2 percent were injured and 2.3 percent were seriously injured. Given the already dangerous “baseline” risk, the rates of post-injury and post-serious injury in assault incidents among resisting victims can be regarded as quite low, and does not support the idea that resistance provoked offenders to inflict further injury on victims.

These conclusions can be drawn even before performing complex multivariate tests because even if one were to make the extreme assumption that all cases of post-SP injury were incidents in which resistance alone caused the offender to hurt the victim, it would still be

accurate to conclude that resistance rarely causes the victim to suffer further injury. In reality, it is highly unlikely that all crime victims who resisted and then were injured suffered those injuries because they resisted, since some offenders were surely determined to hurt their victims regardless of whether the victims resisted. Thus, the post-SP injury percentage is properly viewed as an upper limit on the share of crimes in which protective actions could have provoked offenders into attacking.

These simple injury rates, however, cannot tell us whether resistance actually reduces risk of injury – perhaps victims resist only in situations that were already relatively safe or resist only offenders who appeared unlikely to hurt them. Nor can these figures tell us which protective actions are relatively more effective, inconsequential, or counterproductive. To address these issues, analyses using multivariate controls are needed.

While this extremely low rate of post-SP injury is good news for crime victims, it creates statistical problems for assessing the relative effectiveness of different protective strategies for avoiding injury, since it means that there is very little variation on dependent variables measuring post-SP injury. It is harder to predict very rare outcomes, and estimates of the impact of a given variable will necessarily be unstable even in fairly large samples because they are based on so few cases with the outcome of interest. This problem is aggravated when analyses are confined to subsamples pertaining to specific crime types, especially the less frequent ones such as rape incidents, and is even more severe with regard to estimating effects of the rarer SP actions. Thus, for example, despite the very large NCVS total samples, there are few rapes with post-SP injury, and also only a handful with armed resistance. This means that estimates of the effects of armed resistance on post-SP injury in rape will be dependent on a few cases and correspondingly unstable.

In response to this problem, we decided to indirectly assess the effects of female victims using various forms of SP by analyzing larger NCVS samples pertaining to more common types of crimes. Thus, we analyzed the broader category of “sexual assaults,” which encompasses other forms of sexual assault as well as rapes and attempted rapes, and also analyzed all assaults involving female victims. To the extent that SP effects among female victims of these crimes resemble those prevailing in rapes, they shed light on victim resistance in rapes. The last two panels of Table 3 show the injury rates for each SP action in the sexual assault and general assault samples.

Multivariate Results

Rape Completion

Table 4 displays findings from the logistic regression analysis assessing the impact of each SP action on whether rapes are completed or are unsuccessful attempts. The first column presents findings similar to those reported in most past research, in that they show the association between protective actions and rape completion, without respect to whether rape completion preceded or followed resistance. The results are somewhat mixed but show an understandable pattern. Most SP strategies are associated with lower risk of rape completion, and four of these associations are statistically significant. The effective strategies were mostly physical or forceful SP actions such as "attacking offender without weapon," "struggling," and "running away." Some SP strategies are, on the other hand, associated with higher risk of rape completion. They include "(pretend to) cooperation" and "screaming from fear." As discussed earlier, these strategies may not even be regarded as genuine resistances. Thus, without considering the temporal sequence between SP and rape, most strategies seems to reduce the risk of rape completion.

(Table 4 about here)

The conclusion however may not be correct because one cannot know for sure whether SP increased the likelihood of rape completion without knowing the sequence between them. The second column presents the finding that addresses the problem of sequence. Here the dependent variable denotes whether the victim was raped after taking protective actions. Victims were coded 2 if they took SP actions and were injured after doing so, and were coded 1 if they took SP actions and were not injured after doing so, the latter group including those who were injured only before taking SP actions. This method permits comparisons of effectiveness among the 16 SP actions, but not between a given SP action and taking no SP actions at all. Cases in which victims took no SP were not included in the second column models because the concept of post-SP injury is undefined for victims who took no SP actions. Thus, the result from the second column describes only victims who took some kind of protective action, and address the question: "Among victims who did something for protection, which actions were relatively more effective in averting subsequent rape, beyond any injury that may have already been inflicted before the victims took defensive action?"

Since nonresisting victims were excluded, we could not treat them as the excluded reference group. We selected "called the police" as the omitted category because it is sometimes presented as the officially recommend course of action for victims, and thus can serve as a useful point of comparison. The effectiveness revealed in the second column therefore should only be understood in a comparative context, i.e., compared to "called the police." Note that the effect of "called the police" was negative or favorable in reducing rape completion in the first column. We could have selected the worst strategies (e.g., cooperation or screaming from fear) as the omitted points in order to arbitrarily make the odds ratios of other SP variables look favorable. An odds

ratio over one then can only be understood as indicating that the effect of the strategy is not as effective as calling the police.

Despite the different dependent variable, we found a similar pattern in the second column as in the first column. The effectiveness of most SP actions revealed by odds ratio was not statistically different from the presumably effective strategy of calling the police. "Trying to attract attention to help/cried out for help" was even associated with lower risk of rape than the omitted category. It was only "arguing/reasoning/pleading" that was associated with higher post-SP rape than calling the police, meaning that they were not as effective as the omitted strategy. Note that this is the second-most common type of SP action taken by rape victims (first column, Table 3). As in the first column, "cooperation" and "screaming from fear" also appeared to be less effective than the reference point, although the difference was not statistically significant.

An alternative way to perform the post-SP rape completion analysis is to include "no-SP" cases, i.e., crimes in which the victim did not take any SP actions. We estimated models in which post-SP rape was coded 2 if (a) the victim took some SP actions and was raped afterwards, or (b) took no SP and was raped. This variables was coded 1 if (a) the victim took SP actions and was not raped, (b) took SP action and was raped, but before SP actions, or (c) took no SP action and was not raped. Cases in which the victim reported that SP actions and injury occurred simultaneously were treated as missing, since it was impossible to establish SP-injury sequence in these incidents.

The alternative analysis might be necessary because some people might want to know the effectiveness of SP strategies as compared to no resistance. The analysis is based on the assumption that nonresistance can provoke an offender into attacking, just as victim resistance might. Passivity can send the message that the offender is free to attack or rape with little risk or

difficulty. In fact, motivated offenders might look for such a victim because she is an easy target (Tedeschi and Felson 1994). All cases were included in this analysis, and 'no-SP' was treated as the excluded SP category. Thus, the odds ratio for SP variables can be interpreted as reflecting a comparison between each SP and taking no SP actions.

The third column in Table 4 presents the results of this analysis. The odds ratios are directly comparable to those of first column because no-SP cases were included in the sample and no-SP is the omitted category in both analyses. This comparison directly establishes the effects of taking account of the sequence of injury and SP actions, since this is the only difference between the first column models and those of the third column. The results are essentially the same. Most SP actions are associated with a lower risk of rape completion as compared to nonresistance, many of them significantly so. The most effective methods of SP include “run/hide,” “get help,” “struggling,” and “attacking without weapon.” These SP actions appear to decrease the risk of rape more than 80 percent compared to no SP. Only the ambiguous category of “screaming from pain or fear” is associated with a significantly higher risk of rape completion than nonresistance it was associated with a risk of rape completion more than four times as high as that of nonresistance. These findings support prior research that found that most SP actions were effective in reducing the risk of rape completion.

Non-Sexual Injury

Some scholars have suspected that even though SP might reduce the risk of rape completion, it might increase the risk of other physical injuries by angering the rapist into inflicting additional injuries. Table 5 presents findings from analyses of the impact of each SP action on whether the offender inflicted physical injury on the victim beyond rape itself. Here the

dependent variables reflect only non-sexual injuries, i.e. those other than rape, attempted rape, or the verbal threat of rape.

Since rape is an extremely traumatic experience that many victims would not want to discuss, it is hard to obtain sufficient numbers of incidents to obtain stable multivariate estimates, even when researchers use the largest available survey samples, those of the NCVS. Thus it should be emphasized that the relatively small samples make some standard errors so large that it is almost impossible to achieve statistical significance for coefficients, particularly those of the rarer SP variables such as those for various forms of armed resistance.

The results presented in Table 5 show associations between protective actions and non-sexual injury in rape incidents, without respect to whether injury preceded or followed resistance. These results at first glance seem to support the idea that some SP actions increase the risk of physical injury. "Attacking without weapons," "struggling "and" screaming from pain/fear" are associated with higher injury rates compared to nonresistance. These results, however, are misleading because they do not take into account the temporal sequence between SP action and injury. Thus, the positive associations might reflect the possibility that victims who are injured in the first place are more likely to attack the offender, struggle, or scream.

The results appearing in the second column take into account the temporal sequence between SP and injury, because the dependent variable is nonsexual injury inflicted after SP. The no-SP cases are excluded from this analysis, and the omitted reference category is "calling the police." The effects of most SP variables were not significantly different from those of calling the police, in part because of the reduced sample size (n=201) resulting from the exclusion of no-SP cases. Only "screaming from fear" was associated with a higher risk of injury than calling the police. Other SP actions that seem to be correlated with higher injury

risks than calling the police were non-forceful actions like “cooperation,” “struggling,” and “argue/reason/plead” The coefficients of these variables almost reach statistical significance even with small sample sizes. In sum, there was no evidence that forceful resistance is more dangerous than non-forceful resistance, once temporal sequence is taken into account.

The results shown in the third column do reflect the comparison between each SP action and no-SP. The odds ratios are directly comparable to those of first column because no-SP cases were included in the sample and served as the omitted category in both analyses. The results are mixed and without clear patterns. About half of the odds ratios are bigger than one, indicating a higher risk of injury compared to no-SP, and about half are smaller than one. In part because of small sample sizes, only one SP variable, “screaming,” had a statistically significant association, indicating a higher risk of injury than nonresistance. Perhaps, it is currently impossible to find statistically significant effects of SP actions in rape because the sample sizes are so small and injury inflicted after SP is so rare, even in the largest available body of survey data.

(Table 5 about here)

The middle panel of Table 5 displays estimates of models pertaining to sexual assaults, while right-most panel of Table 5 shows estimates of models concerning assaults. The sexual assault and assault analyses reveal clearer patterns of SP effects, perhaps because of the larger sample sizes and more stable estimates that they afford. Most SP variables, both forceful and non-forceful, are associated with lower risks of injury, many of them significantly so. The most effective SP actions include “ran away/hid,” “called the police,” “attacked without weapon,” “attacked with non-gun weapon,” and “threatened with non-gun weapon.” These SP actions appear to reduce by half the risk of injury compared to nonresistance. Both forms of resistance with a gun -“attack with a gun” and “threat with a gun”- are also associated with lower risk

compared to no SP, although the differences are not statistically significant. As with rape and sexual assault incidents, only “screaming” is associated with a significantly higher risk compared to nonresistance.

The results contradict scholars who have concluded that forceful resistance is often dangerous because it provokes offender to inflict further injury, especially for female victims (Bachman and Carmody 1994; Bachman et al. 2002; Marchbanks et al. 1990). These earlier findings were probably an artifact of the failure to address SP-injury sequence, since these scholars effectively treated injury preceding SP as if it could be a consequence of SP.

Serious Non-Sexual Injury

As was evident in Table 3, less than a quarter of the injuries inflicted in rape, sexual assault, and assault crimes are more serious than bruises and cuts. Yet since serious injury may be what many victims fear the most from criminal victimizations, separately focusing on such injuries is especially important. Specifically, victims might fear that even though some SP actions may avert rape completion, they may do so at the expense of increasing the risk of suffering other types of serious injury. Therefore, we also assessed the effects of resistance on more serious injury, beyond rape completion. In these analyses, victim who suffered more serious injuries after taking protective actions were coded 2, and those who suffered no injuries other than rape, minor injuries, or only injuries before taking protective actions were coded 1.

Only 8 percent of all rape incidents involve injury following SP actions, and only 1.4 percent involves serious injury following SP actions. Consequently, the estimates concerning serious post-SP injury, reported in Table 6, are presented in the spirit of exploratory study and should be read in conjunction with Table 3 information on the frequency of each defensive action.

The first column shows estimates of the association between protective actions and serious non-sexual injury to the victim, without respect to whether injury preceded or followed resistance. Because of the small sample size and the rarity of serious injury, no SP actions were significantly associated with serious injury, although many coefficients were positive, implying that research with larger sample size might produce significant positive effects of SP actions on serious injury. Since serious injury was rare even in the larger categories of sexual assault (n=1,278) and assaults (n=12,235), finding a pattern across different crime types was still difficult. Nevertheless, it might be reasonable to believe that some SP variables such as “cooperation” and “screaming from pain/fear” are associated with higher risk of serious injury. These SP actions were almost significantly associated with higher risk of serious injury in rape incidents, and significantly so in sexual assault or assault incidents. Yet these results are not only mixed but also misleading because we did not take into account the temporal sequence between SP action and serious injury, as discussed earlier.

The estimates in the second column of Table 6 are based on a model that addresses the temporal sequence between SP actions and serious injury – the dependent variable is serious injury after SP, and the omitted SP category is “called the police.” Since we excluded incidents involving victims who employed no SP actions and those who could not determine the order of injury and SP actions, the sample size became even smaller (n=170). As a result, no coefficient was significantly associated with serious injury among either rape incidents or sexual assaults. In fact, most t-ratios (i.e., the coefficient/standard error) reached zero, indicating a standard error so large that it was impossible to discuss the effects of SP variables. Attending to assault incidents, however, several SP actions were associated with a higher risk of serious injury compared to calling the police. They were all non-forceful SP actions, and included

“struggling,” “cooperation,” and “screaming from fear/pain.” Again the results can only mean that those SP actions are less effective than widely recommended course of calling the police, and do not mean they increase the risk of serious injury compared to taking no-SP.

The third column model in Table 6 presents the comparison between each SP action and no-SP, which corresponds to the third column model in Table 4 and 5. The coefficients are directly comparable to those of first column because no-SP cases were included in the sample and served as the omitted category in both sets of analysis. Here again, it is virtually meaningless to discuss the coefficients because of large standard errors of coefficients both in the sample of rape incidents and in the sample of sexual assaults. In assault incidents, however, a meaningful pattern was found. When temporal sequence between SP actions and serious injury was taken into account, many SP variables were associated with lower risk of serious injury than no-SP. In particular, “attacking without weapon,” “run away/hide,” and “called the police” are significantly associated with lower risks of serious injury. They appear to reduce the risk of serious injury somewhere from 66 percent (attacking without weapon) to 90 percent (called the police). On the other hand, the ambiguous category of “cooperation” and “screaming from fear/pain” appear (perhaps misleadingly) to increase the risk of serious injury almost ten times and three times, respectively. These results evidently contradict scholars who have asserted that forceful resistance is more dangerous than non-forceful SP because it increases the risk of serious injury to female victims.

Are the Effects of Protective Actions Contingent on Other Conditions?

It has been suggested that the effectiveness of different defensive actions may depend on a variety of conditions under which they are used. Researchers have explored whether effectiveness depends on the victim’s sex, whether the offender is an intimate of the victim

(Ruback and Ivie 1988; Bachman et al. 2002), offense location (home/nonhome, indoor/outdoor), and offender intoxication, with highly inconsistent results (Bachman et al. 2002: 140). Although there was no strong a priori rationale for testing any one interaction, we tested each of these possibilities by forming multiplicative interaction terms between each of the sixteen protection variables and each of the aforementioned variables on which protective effects supposedly depend, and including each set of 16 multiplicative terms (involving a single conditioning variable) in the post-SP rape completion models. Thus, for example, when we tested whether SP actions interact with whether the crime occurred in the victim's home (ATHOME), the model included ATHOME x GUNATAACK, ATHOME x GUNTHREAT, and so on, in addition to the rest of the variables shown in Tables 4-6. Or, when we tested for whether SP actions interact with whether the offender was a sexual intimate (OSEXINTI), the model included OSEXINTI x GUNATAACK, OSEXINTI x GUNTHREAT, and so on, in addition to the rest of the variables shown in Tables 4-6. Specifically, five possible interactions of SP and circumstantial variables were tested. We examined whether the effects of each SP action differ depending on the V-O relationship, particularly, when the victim and offender(s) are sexual intimates (e.g., Rouback and Ivie 1986; Bachman et al. 2002), the offender(s)' alcohol consumption, location of the incident (at home or not), time (night or not), and the number of offenders (multiple offenders or not).

In the post-SP rape completion models, the coefficients of these interaction terms were rarely significantly different from zero. No more than one out 16 interaction variables had a significant coefficient in any one model, and one would expect one coefficient to be "significant" at the .05 level solely as a result of chance, due to the large number of hypothesis tests. Further, the signs of the coefficients were as likely to be contrary to theoretical expectations as consistent

with them. On the whole, the effects of victim actions on injury do not appear to significantly vary depending on victim or victim-offender relationship, crime location, offender intoxication, time, or the number of offenders.

Conclusions

Rape is a traumatic but nevertheless not rare victimization for American women. It is useful to provide evidence-based, practical advice to millions of potential victims as to which courses of action (or inaction) are most likely to prevent rape completion and accompanying injury. Researchers have generally agreed that female victims' resistance is effective for avoiding rape completion (Cohen 1984; Marchbanks et al. 1990; Kleck and Sayles 1990; Ullman, 1998; Ullman and Knight 1992; Zoucha-Jenson and Coyne 1993). The current work is an attempt to cast light on the question of whether victim resistance, especially forceful resistance, affects whether the victim suffers any additional injuries other than rape itself, using the largest and perhaps best body of survey data available, the data collected for the NCVS from 1992 to 2002.

We have encountered several problems in the course of conducting the research. One of the most serious problems involving the NCVS is the underreporting of rape victimizations and certain SP actions. It is well known that victims are reluctant to report sexual crime victimizations, particularly when the offenders are intimate (Bachman 1998). The underreporting of sexual assaults causes serious problems for researchers who conduct multivariate analyses because the resulting small sample sizes make standard errors so large that it is almost impossible to find significant effects of SP actions on the outcomes of crime.

Victims are also less likely to report some forms of SP action such as weapon use. Weapon possession, especially in public places, is often unlawful. Thus, many cases of armed

resistance are probably not reported to the NCVS because this would entail confessing to a crime (Kleck and Gertz 1994; 1997; Ludwig 2000, 376; Kleck and Kates 2001). One might speculate that victims might be embarrassed to report actions that failed to prevent harm or made things worse. On the other hand, it is known that victims are less likely to report incidents without injury or property loss, which is the set of incidents within which successful defensive actions would be found (Hindelang and Gottfredson 1976; Felson et al. 1999).

Other limitations arise because of the design of NCVS itself. For instance, some researchers have suggested that both victims' and offenders' alcohol consumption affects the outcome of victimizations. Victims' alcohol consumption however is not recorded in the NCVS (Ullman et al. 1999). Likewise, the physical sizes or power of offenders and victims are not included in the current NCVS, though relative physical power is an important factor that can influence victimization outcomes (Felson 1996). Thus, even with the most sophisticated quantitative analysis, it is very difficult to fully control for the context that can affect both the choice of victim SP and the outcome of crimes.

Despite the limitations involving the data, we found that most SP actions, both forceful and non-forceful, significantly reduce the risk of rape completions. Particularly, such SP actions as "attacking without weapons," "struggling," "run away/hide," "warning" appeared to reduce the risk of rape more than 80 percent compared to nonresistance. These findings clearly do not support the argument that forceful SP actions are not as effective as nonforceful SP actions. Further, we conducted auxiliary analyses with additional interaction variables and found that effects of SP actions on rape completion did not vary depending upon conditions such as whether the offender was a sexual intimate, whether the offenders was under the influence, whether there were multiple offenders, whether incidents occurred at home, or at night. We could not find

significant effects of particular SP actions on injury or serious injury because of the rarity of rape incidents and certain SP actions, and because injuries beyond rape in such incidents are also uncommon. In particular, serious injuries in rape incidents were too infrequent to conduct any meaningful multivariate analysis.

Nevertheless, we obtained meaningful information from simple cross tabulations between each SP actions and injury rates, and from multivariate analysis of assault incidents involving female victims. The cross tabulation findings indicate that rape incidents are inherently dangerous situations since even incidents involving non-resisting victims resulted in rape completion in almost 90 percent of the incidents, additional injury in 24.9 percent of the crimes, and serious injury in 2.8 percent of the cases. On the other hand, among victims who resisted, only 19.1 percent of the incidents resulted in rape completion, 26.3 percent ended in some nonsexual injury, and 5.2 percent ended in serious injury. In sum, victim resistance was associated with much less risk of rape completion compared to no SP, and to have no association with nonsexual injury, and to be associated with only very slightly more risk of serious injury. Even if one made the extreme assumption that SP actions alone caused the slightly higher rate of serious injury than no SP, the difference is very small, especially considering the large favorable effects of SP on rape completion. It is conceivable that some people might regard rape completion as a less serious injury than other types of serious injury such as “knife or stab wounds,” “gun shot, bullet wounds,” “broken bones or teeth” “internal injuries,” or “knocked unconscious,” but rape completion is surely a more traumatic injury than any other serious injuries. Therefore, even without the results of the multivariate analysis that controlled for other circumstantial factors, the simple crosstabulation findings indicate that taking SP actions in general appear to be wiser course of action than nonresistance.

The results of the multivariate analyses of assault incidents involving female victims further supported these conclusions. In assault incidents, most SP tactics appear to reduce the risk of injury and serious injury compared to nonresistance. SP actions that appear to significantly reduce the risk of injury and serious injury include “attacking without weapon,” “threatening without weapon,” “run away/hide,” and “called the police.” The only SP actions that appear to significantly raise the risk of injury and serious injury were ambiguous, and non-forceful, tactics: “stalling/cooperation,” and “screaming from pain or fear.” Thus, we found no evidence that female victims' forceful SP actions are more dangerous than non-forceful SP actions. These results were shown only in the spirit of exploratory research because it was not clear whether the effects of such SP actions would be the same in rape incidents as in assaults in general, yet we are not aware of any reason why the effects of female victims' resistance would have substantially different effects on physical injury across the crime types, especially as they are all dangerous violent crimes. Further, we believe that in the absence of evidence, prospective rape victims would find this information helpful in making their own decisions as to what forms of SP actions they might take if victimized.

We will have to wait for larger bodies of better data to confirm whether female victims' self-protection actions decrease the risk of injury, in addition to reducing the likelihood of rape completion. In the meantime, we must base conclusions on the best data currently available, such as the NCVS data. Based on the best available evidence, we believe that rape victims' self-protection actions significantly reduce the probability of rape completion and do not significantly affect the risk of serious injury.

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Table 1: Prior Research on Victim Resistance and Rape

Study	Sample Source	N	Sample Type ^b	Statistical Methods	Control for SP-Injury Sequence	V/O relationship *SP Interaction	Typology for SP actions	Findings ^a		
								Rape Completion	Injury	Serious Injury ^c
Brecklin and Ullman (2001)	NCVS 1992-96	362	P ^d	Logistic	No	Stranger or not	Forceful Physical SP Non forceful Physical SP Forceful Verbal SP Non forceful Verbal SP	- - (sig) - +	+ + (sig) + + (sig)	+ (sig) + (sig) + +
Ullman et al. (1999)	College Students Self-Report 1984-85	3,187	NP	Hierarchical Regression	No	No	Victim Resistance Scale	+ (sig)		
Ullman (1998)	Police Report 1979, 1981	2,201	NP	Chi-Square	Yes	Stranger or not	Forceful physical SP Fleeing Forceful verbal resistance	- (sig) - (sig) - (sig)	+ (sig) + + (sig)	
Ullman and Knight (1995)	Police and court Reports 1959-89	147	NP	ANOVA	No	No	Forceful fight Flee or push O away Scream or yell Plead, beg, attempt to reason	± ^e ± ± ±	± ± ± ±	
Zoucha-Jensen and Coyne (1993)	Police Records 1988-89	150	NP	Chi-Square	No	No	Physical SP Forceful Verbal SP Nonforceful Verbal SP Running/Fleeing	- (sig) - (sig) + (sig) - (sig)	No significant effects ^f	

a. Sign of association between SP action and outcome.

b. P denotes probability sample; NP denotes non-probability sample.

c. Studies examined whether victim received medical treatments.

d. Not weighted.

e. Mixed findings.

f. Authors did not report coefficients and sign.

Table 1 (Continued).

Study	Sample Source	N	Sample Type	Statistical Methods	Control for SP-Injury Sequence	V/O relationship *SP Interaction	Typology for SP actions	Findings		
								Rape Completion	Injury	Serious Injury
Ullman and Siegel (1993)	ECA Survey	240	P	ANOVA	No	Intimate Acquaints Stranger	Physical SP Verbal SP	- (sig) - (sig)		
Ullman and Knight (1992)	Police and Court Records 1959-89	274	NP	ANOVA	Yes	No	Forceful fight Flee or push away Scream or yell Plead, beg, attempt to reason	- (sig) - - (sig) -	+ - + +	
Marchbanks et al. (1990)	NCS 1973-82	851	NP	Logistic	No	No	Forceful SP Non-Forceful SP	- (sig) - (sig)	+ (sig) + (sig)	+ +
Kleck and Sayles (1990)	NCS 1979-85	242	P	Probit	Yes	No (Stranger Only)	Weapon SP Physical SP Threat SP Get Help No Forceful SP Other SP	- (sig) - - - (sig) - (sig) -	+ + (sig) + (sig) + - +	
Atkeson et al. (1989)	Rape Crisis Center Interview	116	NP	Discriminant Function Analysis	No	No	Physical SP Verbal SP	- +	+ +	
Siegel et al. (1989)	ECA Survey	3,132	P	Logistic	Yes	No	Physical SP Verbal SP	+ -	± ±	
Ruback and Ivie (1988)	Rape Crisis Cent. Record 1982-84	2,526	NP	OLS	No	Stranger Or not.	Physical SP Verbal SP	-	+ (sig)	

Table 1 (Continued).

Study	Sample Source	N	Sample Type	Statistical Methods	Control for SP-Injury Sequence	V/O relationship *SP Interaction	Typology for SP actions	Findings		
								Rape Completion	Injury	Serious Injury
Amick and Calhoun (1987)	College Survey	206	NP	ANOVA	No	No	Clear Non-consent	- (sig)		
Block and Skogan (1986)	NCS 1973-79	347	P ^a	Logistic	No	No	Forceful Physical SP Non-forceful SP	+ - (sig)	+ (sig) -	
Levine-MacCombie and Koss (1986)	College Survey	231	NP	Discriminant Function Analysis	No	No	Active SP (running away, scream)	-		
Lizotte (1986)	NCS 1972-75	970	P	Logistic	No	No	Forceful SP Weapon SP	- (sig) - (sig)		
Quinsey and Upfold (1985)	Police Report	136	NP	Chi-Square Regression	Yes	Yes	Physical SP Verbal SP	- (sig) - (sig)	- -	
Cohen (1984)	Interview	127	NP	Chi-Square	No	No	Physical SP Verbal SP Other SP	- -	+ (sig) + (sig)	
Griffin and Griffin (1981)	NCS 1973-74	242	P	Chi-Square Regression	No	No	Physical Attack SP Evasive SP	+ -	+ -	

a. Not weighted

TABLE 2. Variables in the Rape Analyses* (N=733).

Variable	Description	Proportion
Dependent Variables		
RAPED	V was raped	0.62
POSTRAPE	V was raped after responding to offender.	0.34
NOSEXINJ	V was injured excluding (attempted) rape	0.37
PONOSEXI	V was injured excluding (attempted) rape after responding to O	0.26
NOSEXSR	V was seriously injured excluding (attempted) rape	0.04
PONSEXSR	V was seriously injured excluding (attempted) rape after responding to O	0.05
Independent Variables		
Victim's Self Protection		
GUNATAACK	V attacked O with gun; fired gun	0.00
GUNTHRET	V threatened O with gun	0.00
NOGUNATK	V attacked O with other weapons (knife, etc.)	0.00
NOGUNTHR	V threatened O with other weapon (knife, etc.)	0.00
NOWEPATK	V attacked O without weapon (hit, kicked, etc.)	0.14
NOWEPTHR	V threatened without weapon	0.01
STRUGGLE	V struggled, ducked, blocked blows, held onto property	0.38
CHASHELD	V chased, tried to catch or hold O	0.00
SCAREOFF	V yelled at O, turned on lights, threatened to call police	0.18
COPRSTAL	V cooperated, or pretended to (stalled, did what they asked)	0.08
ARGUE	V argued, reasoned, pleaded, bargained, etc.	0.22
RANHIDE	V ran or drove away, or tried; hid, locked door	0.12
CALLPOL	V called police or guard	0.04
GETHELP	V tried to attract attention or help, warn others (cried out for help, called children inside)	0.04
SCREAM	V screamed from pain or fear	0.12
OTHERS	V took other SP actions	0.10
Power Difference between V and O		
ADVAGEOF	O age 15-29 and V either under 15 or 30 or older	0.09
ADVNUM	Number of O – number of V (raw number)	-.08
MALEOFDC	O was male	0.98
Offender Weapons and Attack		
OHADGUN	O had gun	0.05
OHADKNIF	O had knife	0.06
OHADSHAP	O had sharp object	0.00
OFDATCK	O attacked V	0.98

TABLE 2. Variables in the Rape Analyses (Continued)

Variable	Description	Proportion
<u>Victim Characteristics</u>		
HADCHILD	Child in the victim's household	0.41
HOUSOWN	V owned the house	0.34
EMPLOYED	V had a job last week or for 2 weeks in last 6 months	0.60
OLD65	V was 65 or older	0.01
MARRIED	V was married	0.09
HIGHDIPL	V had high school diploma or higher	0.38
BLACK	V was black	0.19
ASIAN	V was Asian	0.02
HISPANIC	V was Hispanic origin	0.08
NUMVICEX	Number of victimization in last 6 months (raw number)	2.27
<u>Offender Characteristics</u>		
OFDGANG	O was gang member	0.06
OFDSUBST	O was on substance (alcohol or drugs)	0.48
OFDFAMIL	O was V' family member	0.03
OSEXINTI	O was V's sexual intimate	0.28
OFDACQNT	O was V's acquaintance (no family, work acquaint.)	0.26
OWORKACQ	O was V's work acquaintance	0.03
OFDBLACK	O was Black	0.26
OFDWHITE	O was White	0.63
<u>Incident Circumstances</u>		
RURAL	Incident occurred in rural	0.20
URBAN	Incident occurred in urban	0.41
ATHOME	Incident occurred at home	0.44
NEARHOME	Incident occurred near home	0.31
SECUPUB	Incident occurred in public place which may have security	0.06
OTHRPRES	Incident occurred with others present	0.20
<i>Other Variables eliminated in Logistic Analysis</i>		
ANYSD16	V responded in any of 16 type of action	0.76
TOTALSD	Total number of victim response	0.33
HOMINCOM	Income of the household (rank order)	6.61
YOUNG1529	V was 15 to 29 yr old	0.62
NUMOFD	Number of O (raw number)	0.13
YONGOFDC	O was 15 to 29 yr old	0.57
NIGHT	Incident occurred at night	0.72
AFTERNON	Incident occurred in the afternoon	0.09
SOUTH	Incident occurred in SOUTH	0.25
WEST	Incident occurred in WEST	0.18

Table 3. Frequency, Rape Completion Rates, and Injury Rates of Self-Protection (SP) Strategies

SP Strategy	Rape						
	Frequency	% Raped	% Raped After SP	% Injured**	% Injured After SP**	% Seriously Injured**	% Seriously Injured After SP**
V attacked O with gun; fired gun	0	-	-	-	-	-	-
V threatened O with gun	1	100.0	0.0	0.0	0.0	0.0	-
V attacked O with other weapons (knife, etc.)	4	25.0	0.0	100.0	0.0	0.0	0.0
V threatened O with other weapon (knife, etc.)	4	25.0	0.0	25.0	0.0	25.0	0.0
V attacked O without weapon (hit, kicked, etc.)	100	49.0	23.8	49.5	33.3	6.0	6.8
V threatened without weapon	7	57.1	33.3	42.9	25.0	25.0	25.0
V struggled, ducked, blocked blows, held onto property	279	49.8	17.5	45.5	28.1	6.1	6.8
V chased, tried to catch or hold O	2	50.0	0.0	0.0	0.0	0.0	-
V yelled at O, turned on lights, threatened to call police	135	45.2	16.7	50.4	43.3	8.1	10.6
V cooperated, or pretended to (stalled, did what they asked)	56	82.1	37.5	39.3	53.8	8.8	27.3
V argued, reasoned, pleaded, bargained, etc.	162	69.8	38.5	44.4	44.6	5.6	16.7
V ran or drove away, or tried; hid, locked door	89	34.8	0.0	38.9	22.0	2.2	0.0
V called police or guard	29	41.4	0.0	62.1	35.7	6.9	0.0
V tried to attract attention or help, warn others (cried out for help, called children inside)	31	45.2	11.1	67.7	68.8	6.5	20.0
V screamed from pain or fear	90	66.7	22.2	64.0	62.5	10.0	19.0
V took other SP actions	71	63.4	10.0	29.6	9.1	4.2	0.0
Any self-protection actions	556	54.5	19.1	40.8	26.3	4.3	5.2
No self-protection actions	177	88.1	-	24.9	-	2.8	-
Total Incidents*	733	62.9	11.0	36.9	8.0	4.0	1.4

Table 3 (Continued). Frequency and Injury Rates of Self-Protection (SP) Strategies

Type of SP	Sexual Assault**					Assaults				
	Fre- Quency	% Injured	% Injured After SP	% Ser- iously Injured	% Ser- iously Injured After SP	Fre- quency	% Injured	% Injured After SP	% Ser- iously Injured	% Ser- iously Injured After SP
V attacked O with gun; fired gun	0	-	-	-	-	8	12.5	12.5	0.0	0.0
V threatened O with gun	2	0.0	0.0	0.0	0.0	45	33.3	5.9	0.0	0.0
V attacked O with other weapons (knife, etc.)	4	100.0	0.0	0.0	0.0	82	57.3	12.9	4.8	1.8
V threatened O with other weapon (knife, etc.)	11	9.1	0.0	9.1	0.0	79	35.4	5.0	3.8	0.0
V attacked O without weapon (hit, kicked, etc.)	144	36.8	19.8	4.1	3.6	909	56.3	9.0	4.1	1.3
V threatened without weapon	12	33.3	16.7	15.4	16.7	181	33.1	7.1	2.2	0.7
V struggled, ducked, blocked blows, held onto property	400	37.5	18.8	4.5	3.6	1,970	60.7	13.4	5.2	2.4
V chased, tried to catch or hold O	5	0.0	0.0	0.0	0.0	100	38.0	11.3	3.0	2.6
V yelled at O, turned on lights, threatened to call police	251	33.9	19.2	4.4	4.3	1,354	35.2	8.2	3.7	1.1
V cooperated, or pretended to (stalled, did what they asked)	68	39.7	54.5	8.7	23.5	154	26.6	8.6	3.9	4.0
V argued, reasoned, pleaded, bargained, etc.	234	37.2	27.7	4.7	10.4	1,250	28.2	9.4	2.2	0.6
V ran or drove away, or tried; hid, locked door	198	22.7	8.3	1.0	0.0	2,055	23.2	3.6	1.4	0.4
V called police or guard	58	37.9	12.8	3.4	0.0	1,334	23.5	3.2	1.8	0.2
V tried to attract attention or help, warn others (cried out for help, called children inside)	53	49.1	38.7	3.8	8.3	342	35.4	6.4	6.7	1.7
V screamed from pain or fear	105	59.0	52.4	9.4	16.7	411	79.1	27.5	10.9	6.5
V took other SP actions	189	13.8	1.5	1.6	0.0	1,856	17.7	3.1	0.0	0.2
Any SP16	1,013	26.8	11.7	2.7	2.2	8,704	30.0	5.0	2.2	0.6
No SP	265	19.2	-	2.3	-	3,531	20.2	-	2.3	-
Total Incidents*	1,278	25.2	5.6	2.5	1.0	12,235	27.2	2.9	2.2	0.3

* Total Incidents are small than the sum of SP actions because victims often employed multiple actions.

** Injuries other than rape itself.

TABLE 4. Rape Completion

Variable	Description	Odds Ratio (Coef./S.E.)		
		Raped	Raped AfterSP*	Raped After SP**
Victim's Self Protection				
V attacked O with gun; fired gun		-	-	-
V threatened O with gun		-	-	-
V attacked O with other weapons (knife, etc.)		0.00 (0.00)	17.70 (0.00)	0.00 (0.00)
V threatened O with other weapon (knife, etc.)		0.23 (-0.98)	29.17 (0.00)	5.31 (0.00)
V attacked O without weapon (hit, kicked, etc.)		0.35 (-3.83)	1.82 (0.99)	0.20 (-3.70)
V threatened without weapon		2.47 (0.73)	4*10 ⁸ (0.00)	2*10 ⁹ (0.00)
V struggled, ducked, blocked blows, held onto property		0.38 (-4.72)	1.11 (0.20)	0.15 (-5.31)
V chased, tried to catch or hold O		0.00 (0.00)	-	-
V yelled at O, turned on lights, threatened to call police		0.40 (-3.45)	0.72 (-0.57)	0.40 (-1.82)
V cooperated, or pretended to (stalled, did what they asked)		2.96 (2.42)	4.45 (1.74)	1.41 (0.46)
V argued, reasoned, pleaded, bargained, etc.		1.27 (0.93)	4.53 (2.88)	1.27 (0.55)
V ran or drove away, or tried; hid, locked door		0.28 (-4.27)	0.39 (-1.30)	0.13 (-3.66)
V called police or guard		0.57 (-1.02)	-	0.84 (-0.17)
V tried to attract attention or help, warn others (cried out for help, called children inside)		0.47 (-1.51)	0.07 (-2.14)	0.14 (-2.07)
V screamed from pain or fear		1.96 (1.98)	4.02 (1.87)	4.61 (2.35)
V took other SP actions		1.05 (0.14)	1.62 (0.59)	0.19 (-2.44)
Power Difference between V and O				
O age 15-29 and V either under 15 or 30 or older		1.47 (1.14)	1.94 (0.94)	1.12 (0.23)
Number of O – number of V		1.43 (2.06)	1.70 (1.27)	1.62 (1.70)
O was male		1.71 (0.55)	2*10 ⁸ (0.00)	1.35 (0.24)
Offender Weapons and Attack				
O had gun		1.04 (0.07)	2.55 (1.00)	1.18 (0.26)
O had knife		1.05 (0.10)	14.76 (2.02)	2.43 (1.10)
O had sharp object		1.09 (0.05)	0.00 (0.00)	0.00 (0.00)
O attacked V		3*10 ⁹ (0.00)	1*10 ⁹ (0.00)	5*10 ⁹ (0.00)

BOLD p<0.01 (two-tailed), **Italic** 0.01<0.05 (two-tailed)

* Not including No-SP group; Calling the Police is the reference point.

** Including No-SP group; No Self-protection is the reference point.

TABLE 4. Rape Completion (Continued)

Variable	Description	Raped	Raped After SP*	Raped After SP**
Victim Characteristics				
	Child in the victim's household	1.04 (0.18)	2.03 (1.35)	1.55 (1.32)
	V owned the house	0.79 (-1.11)	0.20 (-2.86)	0.32 (-3.18)
	V had a job last week or for 2 weeks last 6 months	0.60 (-2.29)	0.44 (-1.49)	0.61 (-1.43)
	V was 65 or older	0.07 (-2.53)	-	0.09 (-1.83)
	V was married	1.34 (0.80)	3.40 (1.40)	1.46 (0.66)
	V had high school diploma or higher	1.24 (0.99)	1.89 (1.32)	1.22 (0.57)
	V was black	0.53 (-1.69)	0.09 (-2.28)	0.23 (-2.20)
	V was Asian	3.12 (1.39)	5*10 ⁹ (0.00)	1*10 ⁹ (0.00)
	V was Hispanic origin	0.75 (-0.77)	1.22 (0.28)	0.81 (-0.40)
	Number of victimization in last six months	1.02 (0.79)	0.86 (-1.22)	1.01 (0.60)
Offender Characteristics				
	O was gang member	0.73 (-0.74)	6.18 (1.44)	1.88 (0.90)
	O was on substance (alcohol or drugs)	0.67 (-2.01)	0.67 (-0.84)	0.69 (-1.12)
	O was V's sexual intimate	1.52 (1.43)	1.34 (0.37)	1.67 (1.14)
	O was V's family member	0.74 (-0.56)	3.99 (1.20)	0.98 (-0.02)
	O was V's acquaintance (no family, work acquaint.)	0.94 (-0.26)	1.57 (0.81)	0.94 (-0.18)
	O was V's work acquaintance	0.80 (-0.40)	0.55 (-0.34)	2.83 (1.06)
	O was Black	2.39 (2.05)	2.02 (0.67)	1.67 (0.71)
	O was White	1.89 (1.86)	0.86 (-0.21)	0.87 (-0.27)
	O was repeat O	0.95 (-0.18)	0.42 (-1.15)	0.59 (-1.33)
Incident Circumstances				
	Incident occurred in rural	2.00 (2.36)	0.61 (-0.75)	0.83 (-0.41)
	Incident occurred in urban	0.95 (-0.23)	0.57 (-1.04)	0.45 (-2.14)
	Incident occurred at home	2.03 (2.37)	6.25 (2.62)	3.62 (2.72)
	Incident occurred near home	1.89 (2.20)	4.48 (2.19)	2.53 (2.01)
	Incident occurred in public place which may have security	0.97 (-0.06)	0.00 (0.00)	0.53 (-0.88)
	Incident occurred with others present	0.55 (-2.13)	0.41 (-1.35)	0.40 (-2.14)
	Constant	75.87 (0.00)	0.00 (0.00)	0.00 (0.00)
	Sample Size	673	208	358
	-2Log-Likelihood	671	157	313

TABLE 5. Self Protection and Nonsexual Injury.¹

Self Protection Strategy	Odds Ratio (Coef./S.E.)								
	Rape			Sexual Assault ⁴			Assault ⁵		
	Injury	Injury After SP ²	Injury After SP ³	Injury	Injury After SP ²	Injury After SP ³	Injury	Injury After SP ²	Injury After SP ³
V attacked O with gun; fired gun	-	-	-	-	-	-	0.65	1.54	0.29
				(-0.42)	(0.26)	(-0.79)			
V threatened O with gun	-	-	-	0.00	0.00	0.00	1.74	2.09	0.76
				(0.00)	(0.00)	(0.00)	(1.14)	(0.83)	(-0.32)
V attacked O with other weapons (knife, etc.)	6*10 ⁹	0.00	0.00	7*10 ⁹	0.00	0.00	1.32	1.47	<i>0.36</i>
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(1.09)	(0.87)	(-2.43)
V threatened O with other weapon (knife, etc.)	0.24	174.92	6.11	0.18	0.00	0.00	0.82	0.94	<i>0.25</i>
	(-0.86)	(0.00)	(0.00)	(-1.15)	(0.00)	(0.00)	(-0.61)	(-0.09)	(-2.22)
V attacked O without weapon (hit, kicked, etc.)	1.77	2.95	1.85	1.46	1.89	1.27	1.48	1.17	0.25
	(2.16)	(1.68)	(1.33)	(1.69)	(1.42)	(0.67)	(4.70)	(0.83)	(-8.42)
V threatened without weapon	0.49	0.04	0.15	0.52	0.11	0.29	1.07	1.38	0.75
	(-0.67)	(-0.64)	(-0.69)	(-0.71)	(-0.53)	(-0.51)	(0.30)	(0.80)	(-0.77)
V struggled, ducked, blocked blows, held onto property	1.86	1.69	1.05	1.97	2.36	1.12	2.01	1.73	0.40
	(3.19)	(0.99)	(0.14)	(4.10)	(2.22)	(0.39)	(11.06)	(3.83)	(-8.08)
V chased, tried to catch or hold O	0.00	-	-	0.00	0.00	0.00	1.04	1.75	0.64
	(0.00)	-	-	(0.00)	(0.00)	(0.00)	(0.14)	(1.27)	(-1.12)
V yelled at O, turned on lights, threatened to call police	1.22	2.34	1.58	0.92	1.35	0.96	0.89	1.33	0.57
	(0.80)	(1.54)	(1.02)	(-0.43)	(0.76)	(-0.13)	(-1.31)	(1.74)	(-3.89)
V cooperated, or pretended to (stalled, did what they asked)	0.63	3.79	0.97	0.98	5.46	2.38	2.34	4.87	1.88
	(-1.32)	(1.27)	(-0.04)	(-0.06)	(2.30)	(1.42)	(2.72)	(3.67)	(1.49)
V argued, reasoned, pleaded, bargained, etc.	1.21	2.07	1.63	1.38	2.80	1.78	0.97	2.86	1.00
	(0.82)	(1.28)	(1.13)	(1.66)	(2.52)	(1.74)	(-0.27)	(6.55)	(0.00)
V ran or drove away, or tried; hid, locked door	1.16	1.16	0.78	0.92	1.06	0.55	0.69	0.89	0.17
	(0.52)	(0.24)	(-0.47)	(-0.37)	(0.13)	(-1.42)	(-4.91)	(-0.66)	(-12.05)
V called police or guard	2.62	-	0.31	3.15	-	0.57	0.83	-	0.19
	(1.82)	-	(-1.26)	(2.60)	-	(-0.68)	(-1.87)	-	(-8.23)
V tried to attract attention or help, warn others (cried out for help, called children inside)	1.27	3.22	2.72	1.27	1.97	1.98	1.08	0.93	0.58
	(0.51)	(1.31)	(1.37)	(0.62)	(0.95)	(1.17)	(0.48)	(-0.23)	(-1.83)
V screamed from pain or fear	3.31	5.31	6.29	3.40	4.41	5.62	4.31	2.75	2.41
	(3.98)	(2.16)	(3.01)	(4.56)	(2.66)	(3.55)	(9.65)	(4.49)	(3.94)
V took other SP actions	0.90	0.86	0.40	<i>0.5</i>	0.24	0.09	0.79	1.26	0.18
	(-0.33)	(-0.13)	(-0.94)	(-2.33)	(-1.60)	(-2.90)	(-2.73)	(1.19)	(-10.43)
Sample Size	673	201	351	1,178	569	798	11,213	6,602	9,714
-2 Log Likelihood	747	139	314	1,054	254	476	7,974	1,824	4,107

BOLD p<0.01 (two-tailed), *Italic* 0.01<0.05 (two-tailed)

1. All other variables are not shown
2. Not including No-SP group, Calling the Police is the reference point.
3. Including No-SP group, No Self-protection is the reference point.
4. Sexual assaults include completed rape, attempted rape, sexual attack with serious assault, sexual attack with minor assault, sexual assault without injury, unwanted sexual contact without force, verbal threat of rape, and verbal threat of sexual assault.
5. Assaults include aggravated assault with injury, attempted aggravated assault with weapon, threatens to assault with weapon, simple assault with injury, assault without weapon and without injury, and verbal threat of assault.

TABLE 6 Self Protection and Serious Injury.¹

Self Protection Strategy	Odds Ratio (Coef./S.E.)								
	Rape			Sexual Assault			Assault		
	Serious Injury	Serious Injury After SP ²	Serious Injury After SP ³	Serious Injury	Serious Injury After SP ²	Serious Injury After SP ³	Serious Injury	Serious Injury After SP ²	Serious Injury After SP ³
V attacked O with gun; fired gun	-	-	-	-	-	-	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
V threatened O with gun	-	-	-	0.00 (0.00)	1*10 ¹²⁸ (0.01)	3*10 ⁵² (0.01)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
V attacked O with other weapons (knife, etc.)	0.00 (0.00)	3*10 ²⁵ (0.00)	2*10 ⁴² (0.00)	0.00 (0.00)	2*10 ¹⁰⁶ (0.01)	4*10 ⁷² (0.00)	0.88 (-0.24)	1.71 (0.47)	0.26 (-1.22)
V threatened O with other weapon (knife, etc.)	7.42 (1.08)	4*10 ⁷⁸ (0.00)	2*10 ⁴⁴ (0.00)	3.93 (0.83)	1*10 ⁶⁶ (0.00)	2*10 ²⁹ (0.00)	0.63 (0.67)	0.00 (0.00)	0.00 (0.00)
V attacked O without weapon (hit, kicked, etc.)	0.63 (-0.62)	8*10 ⁹ (0.00)	1*10 ¹⁰ (0.00)	0.59 (-0.78)	1*10 ⁹ (0.01)	896.14 (0.00)	0.96 (-0.23)	1.26 (0.43)	0.34 (-2.35)
V threatened without weapon	3.52 (0.82)	2*10 ¹⁶ (0.00)	1*10 ¹⁵ (0.00)	2.03 (0.50)	1*10 ⁸⁰ (0.01)	6*10 ⁵¹ (0.00)	0.75 (-0.55)	1.47 (0.34)	0.82 (-0.21)
V struggled, ducked, blocked blows, held onto property	1.78 (1.06)	0.00 (0.00)	0.00 (0.00)	1.92 (1.39)	1.11 (0.00)	0.00 (-0.00)	1.25 (1.56)	3.34 (2.95)	0.79 (-0.88)
V chased, tried to catch or hold O	0.00 (0.00)	-	-	0.00 (0.00)	1*10 ¹⁴ (0.00)	4*10 ²³ (0.00)	0.80 (-0.34)	2.38 (0.86)	1.76 (0.69)
V yelled at O, turned on lights, threatened to call police	1.86 (1.04)	1*10 ¹⁰ (0.00)	4*10 ²¹ (0.00)	1.48 (0.75)	0.10 (0.00)	5*10 ²⁷ (0.00)	0.99 (-0.04)	0.99 (-0.01)	0.59 (-1.36)
V cooperated, or pretended to (stalled, did what they asked)	3.69 (1.74)	4*10 ¹⁵ (0.00)	9*10 ¹³ (0.00)	4.76 (2.41)	0.00 (-0.00)	3*10 ⁶ (0.00)	2.46 (1.90)	51.62 (5.50)	9.97 (3.75)
V argued, reasoned, pleaded, bargained, etc.	1.51 (0.67)	1*10 ¹² (0.00)	1*10 ²² (0.00)	2.13 (1.40)	2*10 ³⁹ (0.03)	9*10 ³⁶ (0.04)	0.86 (-0.66)	1.21 (0.35)	0.56 (-1.27)
V ran or drove away, or tried; hid, locked door	0.38 (-0.98)	0.25 (0.00)	0.08 (0.00)	0.25 (-1.47)	0.00 (-0.00)	0.01 (0.00)	0.45 (-3.68)	0.62 (-0.90)	0.18 (-4.09)
V called police or guard	1.72 (0.49)	-	0.00 (0.00)	1.39 (0.32)	-	0.00 (-0.01)	0.72 (-1.37)	-	0.10 (-3.08)
V tried to attract attention or help, warn others (cried out for help, called children inside)	0.07 (-1.94)	0.00 (0.00)	0.00 (0.00)	0.21 (-1.48)	1*10 ⁶ (0.00)	9*10 ²² (0.01)	2.61 (3.58)	1.31 (0.30)	0.88 (-0.19)
V screamed from pain or fear	2.92 (1.54)	6*10 ⁷ (0.00)	9.79 (0.00)	2.88 (1.69)	1*10 ¹⁶ (0.01)	68.89 (0.00)	2.86 (5.07)	4.75 (2.68)	2.99 (2.36)
V did other response	0.96 (-0.05)	0.00 (0.00)	0.00 (0.00)	0.79 (-0.31)	0.00 (0.00)	0.00 (0.00)	0.48 (-2.64)	1.14 (0.22)	0.21 (-2.99)
Sample Size	673	170	314	1,178	534	756	11,213	6,509	9,621
-2 Log-Likelihood	149	.000	.000	188	.000	.000	1,887	289	858

BOLD p<0.01 (two-tailed), *Italic* 0.01<0.05 (two-tailed)

1. All other variables are not shown
2. Not including No-SP group, Calling the Police is the reference point.
3. Including No-SP group, No Self-protection is the reference point.

Biography of Authors

The principal investigator, Gary Kleck, is professor at the School of Criminology and Criminal Justice at Florida State University. He has published numerous books and research articles in journals such as *Criminology*, *American Journal of Sociology*, *American Sociological Review*, and *the Journal of Criminal Law and Criminology*. He is the winner of the Michael J. Hindelang Award of the American Society of Criminology for *Point Blank* (1993), awarded for making "the most outstanding contribution to criminology." He has completed various funded research projects, including "The Impact of Drug Enforcement on Urban Drug Use Levels and Crime Rates" awarded by the U.S. Sentencing Commission in 1995 and "Testing a Fundamental Assumption of Deterrence-Based Crime Control Policy" awarded by the Charles E. Culpeper Foundation in 1997. He is responsible for the research project including analysis of data and writing the report.

The second investigator, Jongyeon Tark, is a doctoral student at School of Criminology and Criminal Justice at the Florida State University and a police lieutenant with the Nation Police Agency in South Korea. One of his articles recently appeared in *Criminology*.