WEAPON EFFECTS AND INDIVIDUAL INTENT TO DO HARM: INFLUENCES ON THE ESCALATION OF VIOLENCE*

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In order to assess the roles of weapons and offender intentions in the outcomes of potentially violent events, we analyze more than 2,000 incidents described by offenders. We advance the study of weapons effects through a within-person analysis that lets us control for all time-stable characteristics of the offenders. Thus, we address the concern that relationships between type of weapon and incident outcome may be spurious because individuals with a greater propensity to do harm are more likely to use guns. Findings indicate that weapons have independent effects that differ across the stages of an event.

KEYWORDS: Guns, violence, situation.

As debates over the merits of gun control have raged over the years, one fundamental question has remained both central to those debates and unresolved. In popular terms, the question might be expressed as, "Do guns kill people or do people kill people?" In more technical terms, we can ask whether a "weapon instrumentality effect" (Cook, 1991:13) exists, whereby weapon type contributes independently to the outcome of potentially violent situations. If such an effect exists, it can be argued that the harm done by interpersonal attacks could be lessened through gun control because reduced availability would either (1) decrease the likelihood of

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attacks occurring or (2) lead attackers to substitute less lethal weapons for guns.

At the heart of arguments over the existence of a weapon's instrumentality effect lies a stubborn methodological problem. If more harm is found to result from gun attacks than from attacks with other weapons, it is entirely plausible that the association can be explained by the confounding of weapon choice with the intentions of the assailant (Kleck, 1991:165–166). In other words, if those assailants who have the strongest intent to do serious harm are more likely to choose guns over other weapons to carry out their attacks, then a spurious relationship between weapon type and attack outcome would be produced. The difficulty of adequately controlling for assailant intentions has been a major stumbling block in resolving this issue.

SPECIAL CHARACTERISTICS OF GUNS

Those suggesting a "weapon instrumentality effect" have considered several aspects of guns that distinguish them from other weapons and imply that firearms can increase both the likelihood and lethality of attacks (Cook, 1991; Kleck, 1997). Although some attention has been given to the technical features of guns (Zimring, 1972), more attention has been focused on the physical or the psychological effort and energy required to use guns. Cook (1982) stressed the requirements of physical effort in observing that guns are more likely to be used in homicides involving older attackers and younger victims and in homicides involving females killing their male partners. Kleck (1997:221) described the view that guns require less psychological effort: "Guns provide a more impersonal, emotionally remote, and even antiseptic way of attacking others, and could allow some attackers to bypass their inhibitions against close contact with their victims."

The lesser effort requirements associated with gun use imply that gun availability will allow some attacks to be made that would not have otherwise occurred. Persons who, because of size or strength limitations or because of emotional antipathy to violence involving physical contact, would refrain from an attack with a knife or club might be more confident and more willing to attack if a gun was available. The greater ease of gun use also implies that gun attacks will lead to more serious outcomes. Persons who lack substantial physical and psychological strength might attack with weapons other than guns but then not be able to make the sustained effort required to produce serious injury. Guns do not require sustained effort; thus, those same persons would be able to do more damage to victims if they instead had a gun.

EFFECTS OF GUNS

Most of the empirical research on weapons effects has concentrated on the latter implication of weapon differences—that seriousness of attack outcomes will vary by weapon type. More specifically, research has typically focused on the likelihood of death resulting from an attack. Thus, the proportion of attacks resulting in death has been examined for attacks committed with different types of weapons. Zimring (1968), for example, compared gun and knife assaults in Chicago and found that gun assaults were five times as likely to have a lethal outcome as knife assaults. Comparing attacks made with large- and small-caliber guns, Zimring (1972) found that large-caliber weapons attacks were more likely to result in the death of the victim. Cook (1987) compared outcomes of robberies committed with different weapons and found that gun robberies had a fatality rate three times higher than knife robberies and ten times higher than robberies committed with other weapons. Research on the outcomes of attacks has thus shown that guns are more lethal than are other weapons.

Kleck and McElrath (1991) have emphasized the importance of analyzing weapons effects across all stages of "threatening situations." In analyses of a data set that combined National Crime Survey (NCS) data with FBI Supplemental Homicide Reports, they considered the relationship of weapon type to whether threat situations ended in attacks, whether attacks resulted in injury, and whether injuries resulted in death. Arguing that weapons serve different functions and help accomplish different goals at these distinct stages, they suggest that studies that focus on one stage alone or that combine the stages into a single analysis may produce misleading results.

Kleck and McElrath (1991) found that weapons effects did differ with the stage of the situation. Both guns and knives made attacks less likely; that is, the situation was more likely to end with only a threat when these weapons were involved. In discussing these results, they stress that one function of these weapons is to allow the aggressor to achieve other goals besides harming the person—goals that might include gaining compliance with a demand, producing fear in the person, or enhancing the aggressor's reputation for toughness. Therefore, in a conflict situation, the presence of guns and knives can have the seemingly paradoxical effect of making actual attacks less likely. Cook (1980) found similar results for robbery incidents. Attacks were less likely in robberies when the offender used a gun or knife to make threats than when other weapons or no weapons were used.

In analyses of only those events in which attacks occurred, Kleck and McElrath (1991) found that injuries were less likely in attacks made with

guns. This result presumably occurred because gun attacks include situations in which the aggressor shot at the respondent but missed and because missing the target is more likely in the context of gun attacks than in the context of attacks with knives, other weapons, or hands and feet. When only attacks in which injuries occurred were considered, results were consistent with earlier research; death was much more likely to result when the injuries were caused by guns.

In order to determine the net effect of guns on the probability of death in threatening situations, Kleck and McElrath (1991) estimated a single equation using the full sample of incidents. With this analysis, the authors (p. 687) concluded that the overall probability of the victim's death was increased by 1.4% when a handgun was present; they concluded that "the violence-increasing and violence-suppressing effects of gun possession and use almost exactly cancel each other out, making the net effect on the likelihood of the victim's death very close to zero."¹

OFFENDER INTENTIONS

The policy implication of a "weapon instrumentality effect" is that reducing the presence of guns in conflict situations would result in fewer serious injuries and deaths. Opposing that view, Wolfgang (1958:83) contended that homicides would not be prevented by the absence of firearms, because "the offender would select some other weapon to achieve the same destructive goal." According to this position, the "destructive goal" of the offender is considered as important, if not more important, to the outcome of a violent event than is the particular weapon used. In a critique of research on weapons effects, Kleck (1991) observed that part of the difference in death attributed to weapon type is probably due to the more serious intentions to harm on the part of those who use the more serious weapons. He supported this assertion with a reanalysis of Wright and Rossi's (1986) prison survey data, showing that those inmates who used a gun in the offense for which they were incarcerated had a higher number of self-reported lifetime assaults and arrests than did those who had not used guns (Kleck, 1991). He concluded that gun users, on average, have a greater willingness to inflict harm than did those who do not use guns and that therefore "weapons effects" may be spurious.

A key theoretical construct in understanding the role of guns is thus

^{1.} Arguing that Kleck and McElrath's results would be more appropriately expressed as ratios rather than percentages, Alba and Messner (1995) estimated that the chances of an attack resulting in death are 44 times greater when a gun is used compared with no weapon, three times greater compared with a knife, and six times greater compared with some other weapon.

offender intent to injure.² Yet the research literature on weapons effects shows scant attention to and no direct measurement of this important construct. Researchers who have addressed intention to do harm have instead studied presumed correlates of intent.

In one of the earliest studies addressing intentions to do harm, Zimring (1968) employed several indirect measures to argue that many homicides do not involve unambiguous lethal intentions. He presented data on Chicago homicides showing that most involved acquaintances, that most resulted from altercations, that most victims were wounded by a single shot rather than by multiple gunshots, and that a majority of situations involved alcohol use. Zimring (1968:724) concluded "that many homicides are related to variable states of intention and that a significant proportion do not result from an attack committed with the single-minded intention to kill." According to his thesis, it follows that if less lethal weapons were to be substituted for firearms, fewer deaths would result. In other words, if many who commit homicide do not have the clear "destructive goal" posited by Wolfgang, potentially violent situations might be terminated prior to a death occurring, but for the presence of guns.

In their study designed to isolate weapons effects at different stages of threatening situations, Kleck and McElrath (1991:681) also used several indirect measures to control for offender motivation, "broadly conceived as how willing and able (apart from weaponry possession) aggressors were to attack and injure victims." Assuming that males, persons age 12-29, and blacks have a greater willingness to aggress than do others because those groups commit more acts of violence and more serious violence, they included variables for offender sex, age, and race. They also included variables for type of crime because "robbers, rapists, and burglars have longer and more serious records of prior violence than simple assaulters and are therefore more willing to use violence in a sample incident" (pp. 681-682). With these variables included, Kleck and McElrath (1991) still found that if a victim was wounded, that victim was more likely to die if the wounds were inflicted by a gun. The authors asserted, however, that the omission of direct measures of motivation would bias the gun coefficients in a positive direction, and that "the slight apparent net positive effect of guns on the death outcome would be reduced-and could easily disappear altogether-if motivation was properly measured and controlled" (p. 688).

A different approach to controlling for offender intention was used by

^{2.} Tedeschi and Felson (1994:163–165) make a distinction between intentions and motivations. Intentional actions are those expected to produce intermediate outcomes of value that ultimately produce terminal outcomes. Individuals intend to do certain things because they are motivated by a more general goal.

Felson and Messner (1996). Asserting that offenders in a pure assault are more likely than are offenders in a robbery to have a lethal intent, they used type of crime as a proxy for offender intention to do harm and examined the interaction between weapon type and crime type in affecting the likelihood of death resulting from violent attacks. What they expressed as a "compensation hypothesis" mirrors the earlier position of Wolfgang (1958). According to this hypothesis "offenders who are determined to kill the victim will be likely to do so regardless of the type of weapon they use" (Felson and Messner, 1996:525). Based on their assumptions about the motivations involved in robbery and assault, weapon instrumentality effects should be greater in robberies (where there is less lethal intent) than in assaults. In other words, the motivations of offenders involved in assaults are more lethal, so they do whatever is needed to kill their victim, regardless of what weapon is available. But because robbers are not so strongly motivated to kill, the likelihood of their killing the victim is considerably lower if they do not possess lethal weapons. The compensation hypothesis was not supported by the data; instead, Felson and Messner found that gun and knife effects were stronger in pure assaults than in robberies. This analysis was limited, however, by small sample sizes; in particular, their sample contained only 13 robberies with death as an outcome.

Offender intention to do harm has thus far been indirectly measured by victim-offender relationship, alcohol use, type of crime, number of gunshot wounds, and sex, age, and race of offender. With the exception of the number of gunshot wounds, these indicators are so broad they could serve (and have served) as indicators of a myriad of constructs. The looseness of fit between constructs and indicators is evidenced by the fact that Felson and Messner (1996) assumed that offenders in pure assaults are more motivated to do harm than are offenders in robberies, whereas Kleck and McElrath (1991) assumed that robbers are more willing to use violence.³

Researchers studying weapons effects have recognized the importance of controlling for offender intent to harm, but the adequacy of measures used to date is questionable. One reason for poor measurement has been the reliance on secondary analysis of data sets not designed to address the issue of offender motivation. Both Kleck and McElrath (1991) and Felson and Messner (1996) analyzed data sets created by combining data from the National Crime Victimization Survey (NCVS) with data from the Uniform Crime Reports Supplemental Homicide Reports. One data source relies on self-reports of the victims of crime, and the other relies on official

^{3.} Kleck and McElrath (1991) did appreciate the ambiguity of the crime measure, noting that robbers have goals besides hurting victims, and could be less likely to attack and cause injuries.

police records. Neither is intended for nor well designed for assessing offender intentions and motivation.

THE CURRENT STUDY

In the current study, we analyze more than 2,000 violent and potentially violent events described by offenders in order to assess the roles of weapons and offender intentions in the outcomes of those events. We advance the study of weapons effects through a within-person analysis that lets us control for all time-stable characteristics of the offenders. By asking whether the same individual does more harm when he has a gun than when he does not, we directly address the concern that relationships between the type of weapon used and the outcome of an incident may be spurious-due to individuals with a greater propensity to do harm being more likely to make guns their weapons of choice (Kleck, 1991). By controlling for all stable characteristics of the individuals, which would include a history of violence, general temperament or personality traits, and any neuropsychological disorders, we rule out the possibility of such spurious relationships. We additionally control for situation-specific intent to do harm by controlling for the individual's self-reported intent to harm another in the context of a particular incident.

We control for offender intentions in order to rule out potentially spurious weapons effects, but also in order to consider the possible interaction between weapons and intentions. Felson and Messner (1996) suggested such an interaction when they conducted separate analyses of robberies and assaults, assuming that the two crimes represented differing levels of intent to do harm. We believe that Zimring's (1968) work on the ambiguity of lethal intent suggests that the type of weapon will play a larger role in determining the outcome of an event when the aggressor is not highly motivated to do harm. As Zimring asserts, the technical properties of guns create the potential for great harm without sustained effort on the part of the aggressor. An aggressor with some motivation to attack but without the intentions to do serious harm, if attacking with a knife or stick, would probably not make the effort required to produce serious injuries. Pulling the trigger of a gun, however, could be accomplished with much less effort, and thus might result in injuries disproportionate to the aggressor's intent to harm. A highly motivated offender, on the other hand, would be expected to exert a level of effort great enough to compensate for the lack of a gun (Felson and Messner, 1996; Wolfgang, 1958) and thus accomplish serious injuries regardless of the type of weapon involved.

As Kleck and McElrath (1991) have demonstrated, considering different stages of conflict situations is important for understanding weapons effects. We believe it is particularly important to focus on the early stages of these situations. Kleck and McElrath (1991) analyzed NCS data, which include victims' reports of threats and attacks made against them. Conflict situations that have the potential for violence encompass a broader range of behaviors than do just threats. Insults, menacing looks, gestures, pushing, shoving, and grabbing are some of the actions that may be involved in the escalation of conflicts to violence. The recently redesigned NCVS (implemented since the analysis done by Kleck and McElrath) attempts to elicit descriptions of a broader range of events by explicitly mentioning grabbing, punching, and choking and by asking respondents to mention any such incident even if they are not sure it is a crime (see Bachman and Taylor, 1994).

In the present study, we examine several stages of conflict situations in order to assess the role of weapons and offender intentions. In interviewing offenders, we obtained detailed reports of a broad range of potentially violent situations by asking respondents to describe not only incidents in which they attacked someone or were themselves attacked, but also incidents that they felt had a high risk for violence but in which actual violence did not occur. With these incidents, we replicate earlier work examining weapons effects on attack and injury, and in addition, we examine how weapons influence even earlier stages in the escalation of conflict such as insults and threats. We assess these weapons effects while controlling for all time-stable personal characteristics as well as situationspecific intent to do harm.

METHODOLOGY

SAMPLE AND PROCEDURES

Respondents were 704 newly incarcerated males who were convicted of felonies and sentenced to serve at least one year in prison in a midwestern state correctional system. We selected a sample of an intake cohort, soliciting participation from two out of every three inmates admitted to the diagnostic and evaluation unit of the state correctional system over a 14-month period from November 1997 through December 1998. Of the inmates we contacted, 90.37% agreed to participate. The refusals include inmates who would not meet to have the study described. The participants were paid \$5.00 for completing the interview. Trained doctoral students served as interviewers. Interviews, which were conducted in private visiting rooms, lasted between one and five hours. All interviews were conducted using laptop computers. Interviewers read the questions and entered responses into the laptop. Probes were used or questions were reworded if the respondent did not seem to understand the question.

SELF-REPORTS

Although questions are often raised about the reliance on offender selfreports, we believe that they provide an important source of incident data that should not be ignored. First, they provide access to a much broader range of incidents than do official records. Many of the violent incidents in our sample were never reported to the police; incidents sampled from police records would generally be more serious incidents involving injury and would be less likely to include instances of mutual combat. Incident reports obtained through the NCVS provide fewer details about interactions occurring during incidents, rely on respondent's observations of an assailant's weapon (thus are not able to take into account the role of weapons that are possessed but not brandished), and provide a limited sample of incidents of conflict that do not result in violence (only those in which explicit threats are made). Neither official records nor victim surveys provide any information about intentions of an assailant, and both provide very limited information on the personal characteristics of assailants. As with most questions, a triangulation of methods is important for studying weapons effects. We believe offender self-reports are particularly valuable for addressing the questions raised in the current study. Because of concerns about the accuracy of memory, we concentrate on a relatively short recall period and employ a technique that has been demonstrated to improve the validity of retrospective accounts.

EVENTS HISTORY CALENDAR

Research indicating that personal memories are organized as "autobiographical sequences" (Bradburn et al., 1987) suggests that the use of events history calendars (EHC—also known as life history calendars) can facilitate recall by tapping into that organization. Caspi et al. (1996) and Belli (1998) describe how this methodology builds on advances in survey methodology to obtain reliable retrospective reports of life events.

First, the EHC asks respondents to report about streams of events rather than about isolated events and thus builds on cognitive research about how memory is organized (Bradburn et al., 1987). Sequential cueing takes advantage of memories that are organized chronologically (Barsalou, 1988; Belli, 1998). Because respondents are asked about many life domains, the method also uses *parallel cueing*, which relies on associations among domains across different life periods (Belli, 1998; Conway, 1996). A third type of cueing involved in the EHC method is *top-down cueing*. This type of cueing aids recall by using memories about broad periods in an individual life as cues for remembering general events in those periods, which then serve as cues for more specific events. In general, the EHC "contextualizes events by connecting them to other events; less-easily remembered events may then be more reliably recalled when connected to other more memorable life events" (Caspi et al., 1996:104).

Finally, as Caspi et al. (1996) note, the EHC typically involves the use of visual aids. A calendar, on which relevant life events are entered, allows "the interviewer and the respondent to work together to resolve apparent inconsistencies in the course of data collection."

VALIDITY OF EHC DATA

EHC techniques have been used to collect data related to a wide range of life events, including spells of depression (Kessler and Wetherington, 1991), the course of psychopathology (Lyketsos et al., 1994), the timing of marriage, cohabitation, employment and the receipt of welfare (Furstenberg et al., 1987), and patterns of drug use and family formation (Yamaguchi and Kandel, 1985).

Evidence of the validity of retrospective data collected through event history calendars is available from several studies that have used the EHC within a longitudinal research framework. Freedman et al. (1988) found that 91% of respondents gave identical answers about 1980 school attendance (whether attending school in a particular month) in 1980 interviews and 1985 interviews, whereas 83% gave identical responses about employment. In a similar study, Caspi and Amell (1994) used an event history calendar to obtain retrospective data about monthly life events that had been concurrently reported three years earlier in their longitudinal study of young adults in Dunedin, New Zealand. They compared reports of whether the respondent was living with parents, cohabiting with a partner, the primary caregiver for a child, attending school, involved in job training, employed, and searching for employment or receiving unemployment benefits. More than 90% of the reports matched the first interview.

An important recent study (Belli et al., 2001) compared the EHC methodology with traditional standardized question lists in a randomized experiment with a subset of respondents from the 1997 Panel Study on Income Dynamics (PSID). Respondents were asked about events that occurred two years earlier, about which they had been questioned in an earlier core PSID interview. In comparison to the gold standard of the earlier reports, the EHC method resulted in substantial improvements over traditional questioning in a number of domains. For example, the authors found that relative to the gold standard, a change in residence was underreported by 6.2% with traditional questioning methods but by only 1.6% with the EHC. In inquiring about the number of jobs held, the traditional questioning method led to the proportion of individuals who held two or more jobs in 1996 being underreported by 9.4% and led to the proportion who held one job being overreported by 8.2%. In contrast, the proportions obtained in the EHC condition matched the earlier reports almost exactly. Correlations between reports obtained in the experimental period with the earlier, gold-standard reports of earned income, weeks unemployed, weeks away from work due to personal illness, and weeks away due to the illness of another differed considerably for the two methods. Correlations with the gold standard obtained using the EHC reports varied from r = .6 to r = .9, whereas those obtained using traditional questioning methods varied between r = .15 and r = .75.

Taken together, these studies provide strong evidence for the benefits of the event history calendar for retrospective interviewing. As the experiment by Belli et al. (2001) was conducted with telephone interviews, and thus did not provide visual aids to the respondents, we might expect even larger differences between the EHC and traditional methods when respondents are able to view the calendar. The studies also suggest that using the EHC approach produces accurate retrospective reports when respondents are asked to recall events that occurred as much as two to five years previously. Of particular relevance for our study, the research has also demonstrated that "even 'demographically-busy' young adult respondents can accurately recall monthly events" (Caspi et al., 1996:105).

Previous research with offenders using more traditional methods has indicated fairly good validity of the self-reports of criminal histories relative to official records (Chaiken and Chaiken, 1982; Mande and English, 1988, both of which used calendars but with a limited number of categories) and of the self-reports of violent incidents relative to police reports of those incidents (Felson et al., 1985). Use of the detailed event history calendar methodology is expected to significantly enhance the validity of these kinds of reports.

We used a detailed life history calendar to gather month-by-month data about respondents' lives for the three-year period before the arrest that led to their incarceration. In order to improve recording accuracy, we computerized all calendar data elements, but we still used a paper calendar of the type described by Caspi et al. (1996) to provide the respondent with visual aids to structuring his recall. We started the calendar section of the interview by asking questions about living arrangements (city, whom living with, safety of neighborhood), marital status and birth dates of children, and employment. These contextual features of a person's life seem to be those most helpful in providing a temporal framework as respondents begin to recall events in their lives.

Although not the focus of this paper, the calendar techniques were used to also collect detailed information about incarceration, correctional supervision, legal and illegal income, school, military service, intimate partnerships, gang membership, routine leisure activities, gun possession, alcohol and drug use, and involvement in nonviolent crimes. These details also helped to establish the frame of reference for questions about incidents of violence and avoided violence.

INCIDENT REPORTS

For incidents of violence and avoided violence, we first defined a category carefully and then asked the respondent if any such events occurred during the calendar period and, if so, in which months, and how many in each month. After incidents were entered on the three-year calendar, respondents were asked to give detailed descriptions for the most recent events (up to ten of each type). First, we asked the respondent to describe, in his own words, what happened, and the interviewer typed the narrative into the laptop. Once the basic narrative was recorded, the interviewer then used a structured instrument to elicit the particular details of the incident.

For each incident report, we obtained information on the setting of the event, the numbers and relationships of participants, actions of participants during the event, and outcomes of the event. We obtained details about any weapons either carried or used during the incident, and we asked questions about the respondents' intent to do serious harm in the situation. In the case of a series of incidents so similar that respondents could not recall details of each incident, respondents were asked to give details of the most recent event in the series. We included only that most recent incident in these analyses.

VIOLENT INCIDENTS

The first category we asked about was assaults committed by the respondent. We asked if he had been involved in any physical confrontation in which he attacked another person. Following the NCVS redesign (Bachman and Taylor, 1994), which was intended to ensure that victims reported incidents that they might not define as crimes, we specifically asked respondents to tell us about such confrontations, whether they considered them to be crimes, and to include incidents involving partners or family members, and incidents such as bar fights or street fights. We then specified that they should tell us about any incident in which they attacked someone with a weapon (such as a gun, a knife, a baseball bat, a frying pan, scissors, or a stick), in which they threw something such as a rock or a bottle at someone, in which they punched or slapped someone, in which they choked or kicked someone, or in which they did something like throwing someone to the ground or against a wall. They were told not to include incidents that involved only pushing or shoving.

Next, we asked about incidents in which the respondent was attacked by someone else (in any of the ways described for the first category) but did not himself attack the other person. Again, the respondent was told to include incidents involving partners or family members and to include incidents whether or not he believed them to involve criminal acts. Although for the larger study we also asked respondents to describe incidents involving robberies, we do not analyze those data in this paper because we believe their dynamics are different from those involving assaults. Most important, we believe that offenders have different goals in assaults and robberies. Material gain is the primary goal behind robberies, whereas a wider array of goals, such as the humiliation of a target or the infliction of physical punishment, are assumed to be associated with assaults. Second, the patterns of interactions between individuals are likely to differ for the two types of incidents. Gun robberies tend to follow a typical pattern. whereby the robber controls the interaction in order to obtain compliance and property from a victim (Cook, 1986, 1987), whereas assaults are more likely to involve mutual combat and to stem from a greater variety of interactions and disputes.

Avoided Violence

After asking about violent incidents, we then asked the respondent about incidents in which there was a high risk of violence but actual violence by or against the respondent was avoided; i.e., the respondent neither attacked another person nor was himself attacked by someone. In pilot work with an advisory group of offenders, we explored different ways of asking about such incidents; we settled on a method that gave some specific cues about these kinds of incidents but also relied on the respondents' judgments of the likelihood of violence occurring. We thus asked the respondent to report incidents in which:

he pushed, grabbed, or threatened someone or was pushed, grabbed, or threatened by another; incidents in which he witnessed a physical attack or grabbing, pushing, or threats and thought he might become involved; incidents in which another person encouraged him to become involved in violence; incidents in which he was so angry he could have hurt someone; and any other incidents in which he felt there was a high risk of violence.

Where a line is to be drawn between violent incidents and those in which violence is avoided involves a somewhat arbitrary decision. We chose to categorize incidents involving only the physical actions of pushing and grabbing as avoided rather than as violent incidents. This decision was largely based on our sampling strategy. Because we were asking respondents to describe only the ten most recent incidents of each type, we wanted to ensure that we obtained an adequate sample of more serious physical attacks. We were concerned that individuals who were involved in serious attacks might also be involved in a relatively large number of more minor incidents (involving such actions as pushing and shoving), and that if such incidents were included in our definition of violent incidents, they would dominate the descriptions we obtained. We would argue that for the purposes of the current analysis, where the line is drawn is less important than that it be clearly drawn.

Using the instructions described here, we found that respondents had little difficulty describing events of avoided violence, the early stages of which were similar to the violent incidents they described. They were able to provide a similar level of detail, and offered cogent explanations of why violence did not occur in the situation (Horney and Roberts, 1999). These explanations included intervention by third parties, explicit avoidance strategies, and lack of opportunity, among others. Selected examples of respondents' descriptions of avoided violence incidents are provided in the Appendix.

As with violent incidents, memory problems were most apparent for series incidents. As has been found with the NCVS (Bureau of Justice Statistics, 1994), if a certain type of incident occurs frequently and close together in time, respondents may have trouble clearly separating the details of one incident from those of another. We found they would typically describe one incident and then report that there were a number of incidents that were "just like that one." As noted above, in those instances, we asked for details of the most recent incident and did not include other incidents in "the series" in the analyses.

Although incidents of avoided violence are not as precisely defined as are violent incidents, the same is true for threats that are reported in the NCVS. Thus, the early stage outcomes of violent incidents in the analyses of Kleck and McElrath (1991) are also more subjectively defined than are the later stages outcomes. For avoided violence, we believe the subjective element is particularly appropriate. Although individuals may have different criteria for defining an event as one in which violence was avoided, it is the individuals, with their different life experiences, who are best able to judge the risk of particular situations. Our primary goal was to obtain descriptions of conflict situations that did not escalate to physical blows or worse.

MEASURES

DEPENDENT VARIABLES

This project focuses on two important situational outcomes of conflict situations: (1) whether the respondent physically attacks or attempts to physically attack an opponent; and (2) the opponent's resulting injuries. For the first variable, all incidents recorded as avoided violence incidents are "no attack" incidents. In addition, violent incidents in which the respondent was attacked but did not attack in return are also coded as "no attack." Threats, even with guns or knives, are not counted as attacks. Incidents are coded as "attack" incidents if the respondent physically attacked the opponent or attempted to attack, as in taking a swing but missing, or as in shooting at, but missing, the opponent.

Two measures of opponents' injuries are employed. Both are necessarily based on the respondent's reports. The first measure simply indicates whether the respondent injured the opponent. The second is a dichotomous measure of seriousness, indicating whether the opponent's injuries were minor or serious. In reports of the opponent's injuries, responses were coded as opponent did not receive medical attention; opponent lived, but respondent did not know whether medical attention was received; respondent believed that the opponent received medical attention; opponent was hospitalized; opponent received other medical attention; opponent died. For the present analyses, we considered data to be missing if the respondent did not know whether medical attention was received, and we collapsed the other categories to create a dichotomous variable. Opponent injuries are considered severe if the respondent indicated that the opponent died, the opponent was hospitalized, or the opponent received other medical attention. Opponent injuries are coded nonsevere if the respondent indicated that the opponent received no medical attention.

INDEPENDENT VARIABLES

Two variables of major interest in this study are respondent weapon possession and weapon use. For all incidents, respondents were asked whether they had any weapon during the incident and, if they did, what kind of weapon. For any attacks that occurred, they were asked about weapon use. We measured weapon possession as either gun possession, other weapon possession, or no weapon possession. Similarly, attacks were classified as gun attacks, other weapon attacks, or no weapon attacks. If a respondent possessed both a gun and some other weapon, gun possession was coded. Similarly, if the respondent attacked with a gun and with another (or no) weapon, a gun attack was coded.

The second critical independent variable believed to directly affect attack and injury outcomes is the respondent's intent to do harm. For all incidents, respondents were asked whether they intended to seriously injure the opponent, and their response is the basis for a dichotomous measure of situation-specific intent.

SITUATION-LEVEL CONTROL VARIABLES

Although the focus of this study is on how the respondent's weapon

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possession or use affected outcomes of conflict situations, we control for two other variables that are likely to influence outcomes and may be related to both gun use and intent to harm. A dichotomous variable is added to indicate whether the opponent had a gun during the incident, and another is added to indicate whether the respondent was using alcohol or drugs at the time of the incident.

DESCRIPTIVE STATISTICS

Table 1 presents descriptive statistics on the incidents used to estimate the effects of weapons in each of the three stages of an incident. We started with a sample of 2,085 incidents. The 56% of those incidents in which the respondent attacked or attempted to attack someone comprise the next sample of 1,157 incidents that we use to assess how different weapons used in the attack are related to the likelihood of the opponent being injured. Opponents were injured in 695 (60%) of those incidents, but due to the restrictions we placed on the measure of injury seriousness, 403 cases were used to estimate the effects of weapons on the likelihood that opponents sustained severe injuries.

Independent Variables	Stage of Incident			
	Likelihood of Attack (N = 2085)	Likelihood of Injury (N = 1157)	Likelihood of Severe Injury (N = 403)	
Attack	1172 (56%)			
Opponent Injured		695 (60%)		
Opponent Severely Injured			181 (45%)	
Intent	561 (27%)	443 (38%)	164 (41%)	
Respondent Gun Possession	299 (14%)			
Respondent Other Weapon Possession	204 (10%)			
Respondent Gun Attack		94 (8%)	26 (6%)	
Respondent Other Weapon Attack		179 (16%)	72 (18%)	
Respondent Drug and Alcohol Use	1395 (67%)	827 (72%)	302 (75%)	
Opponent Gun Possession	266 (13%)	114 (10%)	35 (9%)	

Table 1. Descriptive Statistics for Incidents Analyzed

Five hundred forty-three inmates described the incidents used to estimate the effects of weapons on the probability of a respondent attack. On average, each respondent described 3.8 incidents. Four hundred twentythree inmates described the incidents that involved attacks and 231 inmates described the incidents used in the analysis of injury seriousness.

ANALYSIS

Because we collected data on incidents that were nested within individuals, the use of ordinary regression techniques would not be appropriate. In order to address the lack of independence in incident reports, we use hierarchical linear modeling (HLM) (Bryk and Raudenbush, 1992) for our analyses. HLM separates within-person and between-persons models, as in repeated-measures analysis of variance. Equation (1) presents the basic elements of the within-person models used in our analyses. Because we have dichotomous outcome variables, we use a nonlinear hierarchical model that takes the following form:

Within person model (level 1):

$$\log_{n}[odds(Y_{ii} = 1)] = \beta_{0i} + \beta_{1i} (X_{ii}), \tag{1}$$

where *i* is the index for persons, *j* is the index for incidents, and *X* is an explanatory variable that varies across incidents for at least some of the respondents. As indicated by the subscript *i*, the parameters β can take different values for different individuals. β_{0i} is the individual's intercept, which will be the fitted value of the dependent variable when *X* equals 0 and β_{1i} reflects the relationship between the outcome and the predictor variable *X*.

In HLM, the individual-level parameters from the within-person model serve as dependent variables for the between-persons model, leading to a separate equation for each parameter:

Between persons model (level 2):

$$\beta_{0i} = \gamma_{00} + \mu_{0i}, \qquad (2)$$

$$\beta_{1i} = \gamma_{10}. \tag{3}$$

The coefficients of the within-person model become outcomes in the between-persons model, implying that the effects of situational variables may vary across individuals. In the general HLM model, situational effects could be modeled as a function of between-person differences, i.e., relatively stable characteristics of individuals. In this study, however, our primary interest is in controlling for between-persons differences rather than in modeling them; therefore, we do not include individual-level explanatory variables.

In Equation (2), the person-specific error term, μ_{0i} , means that the between-persons model treats β_{0i} as a random effect (i.e., as having meaningful variance across individuals). The error term in Equation (2) allows for random variation in individuals' average likelihood of attacking, injuring opponents, and seriously injuring opponents. Equation (3) does not contain an error term. We treat β_{1i} as a fixed effect because there is no a priori reason to assume that the effects of situation-level variables vary across individuals.

The estimate of the impact of the situational variable X that is captured

by γ_{I0} in Equation (3) represents the combined effects of differences between individuals in their average situational circumstances and withinperson change across incidents in these situational circumstances (Bryk and Raudenbush, 1992:117–123).

In order to focus specifically on within-person change, the models must be modified in two ways. First, the values of X in Equation (1) are transformed into deviations from each individual's mean, calculated across all incidents:

$$X^*_{ij} = X_{ij} - \bar{X}_i.$$

The second modification concerns the between-persons model. The individual means are entered as covariates in the model for overall individual differences [the within-person intercept, Equation (2)] (Bryk and Raudenbush, 1992:122; Horney, et al., 1995:662):

$$\beta_{0i} = \gamma_{00} + \gamma_{01} (X_i) + \mu_{0i}.$$

With these modifications, γ_{01} represents the effects of between-persons differences in average situational circumstances (e.g., some people, on the average, possess guns more than others when involved in conflict incidents), whereas γ_{10} in Equation (3) represents the effects of within-person change in situational circumstances (e.g., an individual possesses a gun in some incidents but not in others). Our analysis extends the simple model presented above by including several situational circumstances rather than the single X in the example.

A within-person analysis obviously limits the analysis to individuals who report more than one incident. Three-quarters of our sample met this criterion. Although such a strategy somewhat limits the generality of results, we chose this analysis because of the tremendous advantage of having respondents serve as their own controls.

RESULTS

Three sets of models were used to estimate the effects of firearms on our three dependent variables: (1) the probability of a respondent attack; (2) the probability of an opponent injury given a respondent attacked; and (3) the probability of a severe opponent injury given an opponent was injured. For each of these three dependent variables, we assessed: (1) weapons effects without controlling for the respondent's intent to seriously injure an opponent (labeled model 1); (2) weapons effects controlling for our dichotomous measure of intent to seriously injure (labeled model 2); and (3) the effects of interactions between intent and type of weapon possessed or used in an attack (labeled model 3). In all models presented, the excluded weapon category was "no weapon present" (or "no weapon used"), and so coefficients of weapons variables reflect the effects of guns or other weapons relative to situations in which the respondent had no weapon.

LIKELIHOOD OF ATTACK

We begin with the effects of weapons on the likelihood of an attack occurring. First, we consider the prediction that the effects of weapon possession on the likelihood of a possessor attacking an opponent will depend on his intent to seriously injure an opponent. Two interaction terms were included in the model, one representing the interaction between gun possession (relative to no weapon) and intent, and the other representing the interaction between other weapon possession (relative to no weapon) and intent. Our prediction was not supported by the data. The results of model 3 in Table 2 show that neither interaction term was significant. The effects of firearm possession and other weapon possession on the probability of a possessor's attack are not conditioned by the possessor's intent to injure. In addressing the role of these two variables, we thus examine models 1 and 2, in which the interaction terms are excluded. For the complete model (model 2), we also present the odds ratios corresponding to the logistic coefficients.

We find, not surprisingly, that the probability of an attack by the respondent is lowered when the opponent possesses a gun. In addition, drug or alcohol use by the respondent at the time of the incident is associated with an increase in the likelihood he will attack.

As expected, individual intent to seriously injure an opponent in a situation is significantly related to the likelihood that the respondent will attack. A comparison of models 1 and 2 illustrates, however, that the effects of gun possession and other weapon possession do not appear to be confounded with intent to seriously injure an opponent. Model 2 shows that, compared with situations in which the respondent did not possess any weapon, both gun possession and other weapon possession increase the chances that the possessor will attack, regardless of the respondent's intent to injure. There is a fivefold increase in the odds of an attack in incidents in which the respondent had a weapon other than a gun, and more than a twofold increase when the respondent had a gun. To directly compare gun possession to other weapon possession, we made other weapon possession the omitted category and re-estimated model 2. The difference between guns and other weapons was statistically significant ($\gamma = -.78$; se_y = .29; p < .05).

The increase in the likelihood of attack with any weapon present is contrary to the findings of Kleck and McElrath (1991), who reported that any weapon made an attack less likely. Because Kleck and McElrath excluded nonstranger cases from their analyses, we conducted a similar analysis in

	Model 1 (no intent)	N (1odel 2 intent)	Model 3 (interactions)
Fixed Effects	γ^{\dagger}	γ^{\dagger}	Odds Ratio	γ^{\star}
Within Person				
Drug/Alcohol Use	.39*	.33*	1.39	.33*
	(.14)	(.14)		(.14)
Opponent Gun Possession	93*	-1.05*	0.35	-1.04*
	(.19)	(.20)		(.20)
Intent		1.25*	3.48	1.26*
		(.15)		(.15)
Gun Possession	.98*	.83*	2.3	.81*
	(.20)	(.21)		(.21)
Other Weapon Possession	1.76*	1.61*	4.99	1.60*
	(.24)	(.25)		(.25)
Gun Possession × Intent				74
				(.46)
Other Weapon Possession × Intent				.07
				(.58)

Table 2.Estimated Effects of Weapon Possession on the
Likelihood that a Respondent Attacked an
Opponent

[†] standard errors in parentheses

* p < .05.

order to determine whether the sample composition could explain the difference in outcomes. When we restricted our analysis to cases involving strangers, the results (available from the authors) did not differ in any important ways from those we obtained with the total sample.

LIKELIHOOD OF CAUSING INJURY

In Table 3, we present the analyses for the likelihood that the respondent injured his opponent(s). As with the findings for the likelihood of attack, the results for model 3 reveal that the effects of guns and other weapons on the chances of a target being injured are not conditioned by the attacker's intent to seriously injure. Therefore, we consider models 1 and 2, in which the interaction terms are excluded. A comparison of these models again demonstrates that weapons effects do not dramatically change as a result of including a measure of intent in the model. Even though an injury is more likely when the attacker intends to seriously injure his opponent, there appear to be weapons effects that are independent of the attacker's intent to injure.

Relative to attacks without a weapon, there was a significant decrease of 58% in the odds of an injury when the respondent attacked with a gun.

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	Model 1 (no intent)	N (Aodel 2 (intent)	Model 3 (interactions)
Fixed Effects	γ*	γ^{\dagger}	Odds Ratio	γ [†]
Within Person				
Intent		.65*	1.92	.66*
		(.18)		(.18)
Gun Attack	76*	86*	0.42	85*
	(.32)	(.33)		(.33)
Other Weapon Attack	.71*	.58*	1.78	.58*
	(.24)	(.24)		(.24)
Gun Attack × Intent				.43
				(.78)
Other Weapon Attack × Intent				.12
				(.62)

Table 3. Estimated Effects of Attacks on the Likelihoodthat a Respondent Injured an Opponent

[†] standard errors in parentheses

* *p* < .05.

An attack with a weapon other than a gun, in contrast, produced a 78% increase in the odds of an injury. Again, we re-estimated model 2 using other weapon attacks as the omitted category in order to directly compare gun attacks to other weapon attacks. In relation to other weapon attacks, gun attacks significantly reduce the chances an opponent will be injured ($\gamma = -1.44$; se_y = .37; p < .05).

Kleck and McElrath (1991), who also found that guns made injury less likely, suggested that the result reflects the fact that those who attack with guns often shoot and miss the opponent, whereas attacks with other weapons or with no weapons are more likely to hit the mark. Such an explanation could also imply that gun attacks are often made under circumstances in which other kinds of attacks would be less feasible. In order to explore this possibility, we analyzed the narratives respondents provided for those incidents in which gun attacks occurred but no one was injured. Four researchers independently read the 57 narratives that fit these criteria and judged whether an attack with another weapon would have been possible in the situation. For 49% of those incidents, there was complete agreement that an attack was only possible with a gun. For 70% of the incidents, three of the four researchers agreed that a gun was necessary in order to make an attack in that situation. Ninety-three percent of the incidents that involved shooting and missing occurred outside; those attacks that were judged to be possible only with a gun included shooting from inside a house at someone outside, shooting from a car at someone outside

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the car, shooting from the street at someone in a moving vehicle, and shooting at someone a considerable distance away. In these kinds of situations, it seemed highly unlikely that an attack could have been made with a knife, a blunt object, or a fist.

LIKELIHOOD OF CAUSING A SERIOUS INJURY

Finally, we were interested in understanding how type of weapon affects the severity of injuries that opponents sustain. The evidence presented for model 3 of Table 4 demonstrates that the effects of type of weapon used in an attack on injury severity do not depend on the attacker's intent to seriously injure an opponent. We thus again consider models 1 and 2, in which the interaction term is excluded, to examine the effects of type of attack and intent to injure. A comparison of the models indicates that gun effects and other weapon effects do not change in any meaningful ways when intent to injure is controlled.

	Model 1 (no intent)	N (Iodel 2 intent)	Model 3 (interactions)
Fixed Effects	γ*	γ*	Odds Ratio	$\gamma^{\dot{\tau}}$
Within Person				
Intent		.79*	2.21	.81*
		(.36)		(.37)
Gun Attack	4.27*	4.15*	63.27	4.25*
	(1.27)	(1.27)		(1.33)
Other Weapon Attack	1.54*	1.52*	4.56	1.60*
	(.49)	(.50)		(.51)
Gun Attack × Intent				.75
				(2.70)
Other Weapon Attack × Intent				1.90
				(1.45)

Table 4.Estimated Effects of Attacks on the Likelihood
that a Respondent Seriously Injured an Opponent

[†] standard errors in parentheses

* p < .05.

The use of a gun had an especially strong association with a serious injury occurring; the logistic coefficient of 4.15 corresponds to a sixtyfold increase in the odds of a serious injury in incidents in which the respondent attacked with a gun. Attacks with weapons other than guns also significantly increased the chances that the target would sustain serious rather than minor injuries. A direct comparison of gun attacks and other weapon attacks found that guns were associated with a fourteenfold

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increase in the odds of a serious injury occurring (y = 2.63; se_y = 1.32; p < .05).⁴

These patterns are very similar to findings reported on weapon lethality (Felson and Messner, 1996; Kleck and McElrath, 1991; Zimring, 1968), but they represent mostly nonlethal outcomes (the sample includes only nine cases with fatal outcomes), thus, extending the generality of previous research. More important, the weapons effects found here are within-person effects, and are net of the individuals' self-reported intent to do harm in the specific situation.

DISCUSSION

Our primary aim in this paper was to replicate previous work on weapons effects while adding controls for the weapon possessor's intent to do harm. The absence of adequate controls in previous research has left many open questions about weapon instrumentality effects. Whereas guns have been shown to make death more likely when injuries result from assaults, it has not been clear whether the gun effect is due to the characteristics of the particular weapon or due to the characteristics of the person who chooses to use such a weapon (Kleck, 1991). In order to address the problem of a selection artifact, we controlled for individual intent to harm in two ways. First, and more important, a hierarchical analysis of incidents nested within persons allowed us to control for all stable individual differences because each respondent effectively served as his own control. The weapons effects we find reflect the outcomes that occurred when the same individual faced various conflict situations with different weaponry; thus, weapons effects cannot be explained away as selection artifacts. Even if individuals with a history of violence or with a particular personality trait, or even with a neuropsychological deficit, are more likely to choose guns as their weapons, this association could not explain the fact that the same individuals produce different outcomes when they have guns and when they do not.

Our second control for individual intent to harm addresses the possibility that individuals have different intentions in specific situations and that when they form a more serious intent to do harm, they are more likely to choose to use a gun. We thus, in addition to controlling for stable

^{4.} In order to determine whether findings were related to the way that we measured serious injuries, we estimated these models with an alternative way of collapsing the dependent variable. In this alternative manner, severe injuries included death and hospitalization, whereas nonsevere injuries included other medical attention and no medical attention. The pattern of results mirrors that reported in Table 4 and suggests that findings are not dependent on the way that we collapsed the severity of the injurydependent variable. These results are available from the authors.

between-persons differences, controlled for within-person, situation-specific intent by including the respondent's self-reported intent to do harm in a particular incident. Contrary to Kleck and McElrath's (1991) expectation, the main effects of weapons did not disappear when individual differences and situation-specific intent to do serious harm were controlled. Effects for guns and other weapons were slightly smaller, but both were still statistically significant. Our findings thus suggest that weapon instrumentality effects exist. In other words, the type of weapon present or used in a conflict situation has an independent influence on the outcomes of those situations.

Like Kleck or McElrath (1991), we found the weapons effects to be complex and to depend on the stage of a conflict. In analyzing incidents involving injuries, we found those injuries were more likely to be serious when weapons were used in the attack. Our results provide an important extension of previous research, which has focused primarily on the lethality of guns relative to other weapons (Cook, 1980; Kleck and McElrath, 1991; Zimring, 1968). Our sample of incidents involved few lethal outcomes; yet, we still found that guns led to more serious outcomes independent of all person characteristics as well as of the measure of situationspecific intent to injure.

Research on the seriousness of nonlethal injuries is important for an understanding of the net effects of firearms in society (see Cook and Ludwig, 2000), and future research should strive for better measures of seriousness. In the current study, we were limited to the assailant's assessment of the injury suffered by an opponent.⁵ Respondents might not be in a position to know exactly what happened to a target of their attack. We took a conservative approach in our analysis by excluding the incidents in which the respondent was unable to report what happened to his opponent as a result of being injured. We also repeated the analyses with the outcome variable collapsed different ways and found essentially the same results. Although the consistency with previous research gives us confidence in the validity of the results, it will be important for future researchers to obtain better injury data, such as might be collected from hospital records or from collateral victim reports.

The seemingly paradoxical finding that gun attacks were less likely to result in injury than were attacks made either with some other weapon or

^{5.} Kleck (personal communication) has pointed out that respondents may simply judge injuries to be more serious because they were committed with guns. Although we believe such a bias might exist in the general public, our respondents represent a population unusually experienced with guns and their effects. Kleck (1997) has suggested that many offenders do not seek treatment for gunshot wounds because they are not serious. We suspect that a population of offenders would then be less likely than others to overestimate the seriousness of gunshot wounds.

with no weapon is also in agreement with the earlier findings of Kleck and McElrath (1991), who attributed the result to an assailant's greater likelihood of missing an opponent when attacking with a gun. Examination of our incident narratives revealed that many gun attacks did miss their mark and that the majority of these incidents involved attacks that could not have been made readily with a weapon such as a knife. These findings emphasize the importance of asking whether attacks would have occurred at all in these situations if the assailants had not possessed guns at the time.

What is probably our most intriguing finding is relevant to this question. Our analysis of weapons effects on the likelihood of attack produced results at odds with Kleck and McElrath's (1991) earlier results. Whereas they found that the possession of both guns and knives made attacks less likely, we found that when a respondent possessed a gun or other weapon he was more likely to attack an opponent than when he did not have a weapon in his possession. In comparison to weapons other than a gun, however, the possession of a gun made an attack less likely. We addressed one difference between the two studies by reanalyzing our data with nonstranger cases excluded, but still found that any weapon made an attack more likely.

Other differences distinguishing the two studies could possibly account for the contradictory findings. The Kleck and McElrath study included robberies, confrontational burglaries, and rapes as well as assaults (however, their separate analyses for the "non-felony" incidents found essentially the same results). Additionally, their measure of presence of a weapon depended on the victim's report; thus, it would indicate display of a weapon or at least possession that would in some way be evident to the victim rather than simple possession.

We suspect, however, that the discrepancy in findings is most likely to be a result of how stages of the conflict were defined. Kleck and McElrath used NCS incident-based data, in which respondents report any threats, attempted attacks, and attacks that were made against them. For their analyses, anything beyond a threat was categorized as an attack. In contrast, we asked respondents to describe incidents in which they attacked or attempted to attack another person and to describe incidents that they perceived to have a high risk for violence (there were threats, insults, shoving or pushing, or extreme anger) but in which no physical attacks occurred. Our non-attack category was clearly a broader category than that defined by Kleck and McElrath.

We can only speculate as to how these methodological differences might affect the findings on weapons effects. However, our findings that weapons make attacks more likely suggest the importance of devoting further attention to conceptualizing the early stages of a conflict. The role that weapons play in the escalation of violence is at least as important, if not more important, than is the role they play in outcomes of violence. Kleck and McElrath's (1991) study represented a major advance by emphasizing the importance of considering the different stages of a conflict. We would argue, however, that their attempt to determine the "net effect" of guns on the probability of death through combining all their stages in a single equation is inappropriate. Such an analysis gives the misleading impression that the earliest stages of a conflict have been captured, and that all of the violence-facilitating and violence-suppressing effects of guns have been included. In fact, the data analyzed by Kleck and McElrath include only incidents that have already escalated to the threat stage. If the possession of weapons affects the likelihood of reaching that stage, then their analysis would be biased. We believe that in order to fully understand weapons effects, it is important to capture the broadest possible range of conflict situations.

Although our formal analysis begins with considering the likelihood of an attack occurring, given the respondent's presence in a high-risk situation, a complete understanding of the development of violent incidents will necessarily include determining what factors lead to entry into risky situations. One question posed to respondents in the current study allowed us to begin to explore this question. Those respondents who attacked an opponent with a gun and reported bringing a gun with them into a situation (as opposed to leaving to obtain one or obtaining one from someone else in the situation) were asked whether they would have entered the situation without the gun. For the 62 events that occurred away from the respondent's residence, 66% of the respondents indicated that they would not have entered the situation without a gun. This evidence implies that weapons play a role in the very earliest stages of conflict development and that studying these earliest stages, by determining, for example, how weapons influence the likelihood of entering high-risk situations, should be a priority for future research (see Ludwig, 2000).

Although we found main effects of weapon type at each stage of a conflict, our hypothesis that weapons effects would depend on an assailant's intent to seriously injure his opponent was not supported by the data. Interactions between intent and weapon variables were not statistically significant in any of the models we tested. We thus found no evidence of the highly motivated offender exerting a level of effort that would compensate for his possessing less effective weaponry or perhaps no weaponry. The differences we found between weapon types were the same for those who expressed the intent to do serious harm and for those who did not. Felson and Messner (1996) tested a similar interaction hypothesis by comparing weapons effects in robberies and assaults. Assuming that an offender's intent to do harm was greater in pure assaults than in robberies, they suggested that a compensation effect would be evidenced by a weaker effect of lethal weapons in the assault cases. However, as in the current study, their results did not support a compensation hypothesis.

The compensation hypothesis is at the heart of Wolfgang's assertion that the absence of firearms would not prevent homicides. The idea that a highly motivated assailant would simply choose another weapon and expend the extra effort required to carry out his lethal intent informs the claim that weapon substitution would undermine any gun control efforts. We did not find differences in weapons effects between those highly motivated to do harm and those not so highly motivated. We were limited to a dichotomous measure of intent, however, and it is possible that a more sensitive measure might produce different results. In addition to considering expressed intention to do harm, it may also be important to determine whether weapons effects differ with other characteristics of assailants, such as gender, size, strength, and previous experience with violence.

Particular arguments for gun control have corresponded to different stages of a conflict. The argument that total harm would be reduced if other weapons were substituted for guns emphasizes the lethality of guns. Guns are believed to produce more serious injuries and a greater likelihood of death than are other weapons because of their technical properties and because doing serious harm with a gun requires less strength and sustained effort on the part of an assailant. Our results, along with those of many other researchers, support this argument.

Another argument focuses on the earlier stages of conflict. According to this position, guns increase the likelihood of attack because they allow attacks to be made by individuals who would not otherwise possess the physical or psychological strength to make an attack without putting themselves in great danger; if other weapons were substituted, attacks would be less likely to occur. The implications of our study for this argument are less clear. Although we found that attacks are more likely when an individual has a weapon than when he possesses no weapon, attacks were less likely when that weapon was a gun. Such results might seem, at first glance, to imply that substitution of other weapons for guns would reduce the number of attacks made. However, this interpretation would not take into account other factors, besides physically harming an opponent, that might motivate the brandisher of a gun.

In addition to making attacks easier for those who lack the strength or endurance for attacking with other types of weapons, guns also make it easier for an individual to accomplish other goals (Felson and Messner, 1996; Kleck and McElrath, 1991; Tedeschi and Felson, 1994). Robbery is a case in which other goals are evident; previous research has consistently shown that robbers armed with guns are less likely to cause injuries than are robbers without guns (Block, 1977; Cook and Nagin, 1979; Luckenbill, 1980). Other conflict situations may also involve goals besides injuring an opponent. As Kleck and McElrath (1991:673) note, guns may play an important role in accomplishing these goals:

Those who want to frighten, humiliate, or dominate their victims can do so merely by pointing a gun without firing it. A combatant may be able to regain a favorable situational identity through the use of a weapon to control others and exact their unwilling obedience. With a gun assaulters can demonstrate to their victims, to themselves, and to any bystanders that they cannot be pushed around and that they must be granted respect or at least fear.

This point leads us to again stress the importance of studying the early stages of conflict and conflicts in which attacks do not occur. Understanding the motivations involved in assault situations and learning about other outcomes of conflict can help us to untangle the complex picture of weapons effects in relation to violence.

The current study does not provide a complete picture of the role of weapons in violent conflict. We do, however, provide evidence of weapons effects that exist regardless of individual differences among assailants and regardless of a person's situation-specific intent to do harm; we believe these results are important for understanding how situational factors contribute to violence in our culture. In addition, the study offers a new approach to exploring the impact of weapons in the early stages of conflict—a topic that is ripe for further research.

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APPENDIX

It was a friend of mine, and he came over to my house, and I owed him money for drugs. I told him that I would pay him back but I needed more time because no one had paid me for my drugs. He got mad and told me he would kick my ass, and he kind of approached me, and I took a .22 and pointed it at his head and told him to back off and that I would talk to him later. He backed off and asked if I had anything to give him. I gave him some jewelry and he took off and nothing really happened.

It was like he had this problem with me, and it only came out when we were drinking, and he wouldn't tell me what it was. He just swelled up on me and told me he was gonna kick my ass, and I avoided him, and I left them there and left them stranded. I was driving, so I just left. This was my girlfriend's brother, and I had too much respect for her to fight with him.

He pulled up in the car and said, "What's up folks?" He said, "You a Crip?" I said, "Why?" He said, "Cuz." I said, "Yeah," and he said, "I seen you throwing up cookies," and I was like, "Yeah?" He said, "I like that coat you have on," and I was still walking, and he was driving, and he said, "Give me your coat." And then he said, "Come here or I'm gonna shoot at you." And I stopped, and I saw a little space between these two buildings. I went on and ran through the buildings.

I was driving at school. I drove by fast and there was slush, and I wet a couple of guys but I did not notice it. They ran up and surrounded my car and kicked it and punched the windows. I pulled my gun and put it on my lap and they saw it. They did not run, but they backed off a bit. I rolled down my window and asked what the problem was. They said I wet them, and I apologized and said I did not do it on purpose. I asked what they wanted to do about it. They said no, they did not want to do anything about it because it was an accident. They left after I told them I was sorry.

I was at a bar after work and about got into it with the foreman. We just didn't care for each other. He was a lot younger than I was. I've worked construction all my life, and I thought I had some better ideas on how to do the job than his ideas, and we just got into it a little bit. It was just words and pushing a little bit. We were both trying to get the other to swing, and neither of us would. One of the other guys on the crew broke it up.