

ABSTRACT

Title of Thesis: GUN ACCESS AND FEMICIDE: A DIFFERENTIAL IMPACT
OF FIREARMS ON INTIMATE KILLINGS

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Studies of intimate partner homicide have repeatedly suggested that gun accessibility increases the risk that a confrontation between intimates will end in the death of one partner, usually the woman. In the larger arena of gun accessibility research, experts have posited opposing conclusions about how gun accessibility affects the risk of homicide in the population overall. This thesis is an attempt to build a bridge between literature linking gun access to increased intimate partner homicide and literature exploring the effect of gun availability on homicide in general. Based on previous research, the current study poses the two hypotheses: (I) Gun accessibility is a stronger predictor of intimate partner homicide than non-intimate partner homicide and (II) Gun accessibility is a stronger predictor of intimate partner homicide of women than intimate partner homicide of men. My analysis is consistent with hypothesis II and offers no support for hypothesis I.

GUN ACCESS AND FEMICIDE: A DIFFERENTIAL IMPACT OF FIREARMS
ON INTIMATE KILLINGS

by

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CHAPTER 1: INTRODUCTION

Researchers in the field of intimate partner homicide (e.g. Saltzman, Mercy, O'Carroll, Resenberg, & Rhodes, 1992; Campbell et al., 2003) have determined that gun accessibility increases the risk that a confrontation between intimates will end in homicide. However, researchers in the field of gun accessibility have reached opposing conclusions about how gun accessibility affects the risk of homicide in the population overall (e.g., Kleck & McElrath, 1991; Duggan, 2001). In general, gun access experts pay little attention to evidence developed in the violence against women / intimate partner homicide field. Likewise, those who research guns' contribution to violence against women rarely acknowledge the general guns and crime debate. These research disciplines are conducting parallel lines of study with minimal communication between each other. The thesis that follows is an attempt to build a bridge between literature linking gun access to increased intimate partner homicide and literature exploring the effect of gun availability on homicide in general.

Research on the influence of firearm availability on homicide is extensive and inconclusive. In general, researchers have examined the issue as if firearm availability wielded the same influence across all homicide types. However, empirical evidence indicates that gun access presents a differential risk of death depending on the relationship of the persons involved in a given confrontation. For

example, Kleck and McElrath (1991) concluded that gun involvement in threatening situations between strangers was associated with only a 1.4 percent increase in the risk of a fatal outcome. By contrast, Saltzman, et al. (1992) concluded that gun involvement in confrontations between persons well known to each other was associated with a 12-fold increase in the risk of death.

Many authors interested in understanding intimate partner homicide agree that a gun kept in a household where domestic violence occurs increases the risk that the violence will end in homicide (Campbell et al., 2003; Bailey et al., 1997; Block & Christakos, 1995; Smith, Moracco & Butts, 1998). Even gun rights activists (Kopel, 1992) acknowledge that gun availability effects may be more pronounced in cases of intimate partner homicide than in other homicide types. But as yet, no study of which I am aware has undertaken specifically to explore whether there is a differential impact of firearm access on intimate partner homicide or homicide of women, who are disproportionately victims of intimate partner homicide. In 2002, the latest year for which data are available, 1,202 of the 1,590 victims of intimate partner homicide were women (Bureau of Justice Statistics, 2004).

This issue is of theoretical importance because the objective of general theory in criminology is to convince the academic community that distinctions among different types of crime are unnecessary and can be counter-productive (Gottfredson & Hirschi, 1990). General theorists attempt to show that all criminal behavior can be traced to the same origins. Critics of general theory claim that power dynamics and the social role expectations for males and females are important influences on crime

and cannot be ignored by theorists (Miller & Burak, 1993). This study will address one aspect of this dispute, the relationship between firearms and gendered killings.

In this thesis I examine the differential impact of gun availability on homicide rates for men and women in intimate and non-intimate relationships. First, I review studies that examine the likelihood of lethal outcomes associated with gun use and availability. Second, I introduce evidence that suggests that femicides and intimate partner homicides should be analyzed separately from all homicides. In particular, I suggest that firearm availability may play an important role in intimate partner homicides of women. This effect, if it exists, could have been missed by previous researchers using the overall homicide rate as an outcome variable. Because intimate partner homicides make up about ten percent of homicides in the U.S., effects unique to this type of homicide may not have been detected in previous research. Finally, I provide hypotheses that will test whether gun availability effects are the same across homicides of men and women and between those within intimate and non-intimate relationships. State-level average homicide rates across the years 1994 to 1998 are used for analysis.

CHAPTER 2: LITERATURE REVIEW

A great deal of empirical research effort has been devoted to examining the effects of firearm availability on homicide and other crimes. These studies typically reach one of two conclusions: (1) *gun availability does not affect crime rates* (Kates, 1990; Kates & Polsby, 2000; Kleck, 1990; Kleck & McElrath, 1991), or (2) *high gun availability leads to increased crime*, particularly homicide, because compared to injuries inflicted by other weapons, gun injuries are more likely to cause death (Zimring & Hawkins, 1997; Duggan, 2001, Kellerman & Reay, 1986).

A related body of research (e.g. Campbell et al., 2003) shows that gun access is an important determinant of outcomes in violent situations involving female victims. However, these studies focus exclusively on gendered homicide issues, and do not attempt to relate their conclusions to the larger arena of guns and violence research. Evidence which suggests guns pose a unique threat to women encourages a research strategy that analyzes female victims as a distinct group, as opposed to analyzing weapons effects for homicides of both genders simultaneously. Because females comprise less than a quarter of all homicide victims (Bureau of Justice Statistics, 2004), risk factors unique to them may be overlooked if they are not considered separately from men. In the next section I examine evidence used to support the positions that gun availability does not affect crime rates, that gun

availability increases homicide rates and that women are particularly vulnerable to gun availability effects.

More Guns or Fewer Guns, Same Crime

The straightforward perspective in support of the position that firearm availability does not affect rates of violent crime was offered by Kates (1990, p. 187), who stated: “[D]eterminants of the relative amount of violence in nations are sociocultural and institutional. The effects of such basic determinants cannot be offset by any gun control strategy, no matter how well crafted and rigorous.” He argued that a person who wanted to commit a crime with a gun but could not obtain one would choose another weapon to accomplish the same goal.

In addition to this principled viewpoint on gun access and crime, one plain fact strengthens the belief that widespread gun availability is not the primary antecedent of high homicide rates in the US. During the period 1973 to 1997 the stock of handguns in the U.S. increased each year. Homicide rates, on the other hand, rose and fell during this period, in a seemingly unrelated pattern (Kates & Polsby, 2000). If gun availability was the primary determinant of homicide rates, one would expect that homicide rates would have risen in tandem with the firearm stock.

The fact that gun availability rates are not directly correlated with homicide rates is not proof that easy firearm access does not contribute to elevated homicide rates. It is possible that convenient access to firearms has aggravated homicide rates over time while other social and economic forces were the primary antecedents of fluctuations in homicide rates overall. If changes in homicide rates are determined

primarily by social and economic conditions, the *magnitude* of those changes may be related to gun availability. Although gun availability itself may not cause an increase or decrease in homicide, it could augment the homicidal consequences of social and economic hardships.

Kleck and Patterson (1993) sought to determine the effects of gun ownership and gun control laws on violent crime. The average rates of suicide, homicide, aggravated assault, robbery, rape and fatal gun accidents in 170 large U.S. cities between 1979 and 1981 (Kleck & Patterson) were the dependent variables. The extent of legal gun control measures in place in each city and multiple measures of gun prevalence along with an assortment of control variables were independent variables. The results of this study indicated that gun control laws did not affect gun prevalence rates and that gun prevalence rates did not affect violence rates, with the possible exception of suicide. However, the evidence also indicated that some gun control measures did affect crimes rates. Specifically, laws that required gun licensing and purchase permits were significantly related to a decrease in homicide rates.

In another widely cited work, Kleck and McElrath (1991) concluded that gun use in a conflict between strangers increased the risk of victim death by only 1.4 percent. In general, they argued, aggressors arm themselves with guns for one of three reasons: to obtain money, sexual gratification, or to terrorize and dominate a victim. An offender need only brandish a gun in such situations in order to achieve these goals. Furthermore, many offenders who use firearms do *not* want to kill their victims. Because a gunshot wound is likely to cause death, offenders with firearms

are in what Kleck and McElrath described as a “kill or do not attack at all” situation (1991, p. 673), and often chose not to attack rather than risk victim death.

Kleck & McElrath (1991) analyzed assaults reported in the National Crime Survey from 1979-1987 and the 1982 Supplemental Homicide Report. Specifically, they examined the effect of the aggressor’s weapon (gun, knife, or other weapon) on the chance a victim was attacked, injured, or died in a threatening situation. They found that when guns were involved, the probability of victim attack and injury decreased. If an injury was inflicted by a gun, death was more likely to result than if the injury was caused by some other weapon. The authors concluded that the increased risk of death when a gun is present is almost zero, due in large part to the attack inhibiting influence of guns.

In assessing the conclusions of this study it is very important to note that cases of violence between persons known to each other were intentionally excluded from analysis. Intimate partners are in a unique position to illicit strong emotional responses from one another and they were not examined in Kleck and McElrath’s study. The idea that such crimes are more sensitive to weapon availability effects is supported by a study which used similar methodology, but studied only violence among intimates as opposed to strangers (Saltzman et al., 1992). This study will be examined in detail in a subsequent section.

Some authors have even found evidence to support the conclusion that increased gun accessibility *reduces* homicide. In a highly influential study of gun accessibility and crime Lott and Mustard (1997) used county-level data from 1977

through 1992 to examine the relationship between crime rates and permissive concealed-carry laws. The laws in question are known as “shall issue” laws. They mandate that any person, who applies for a permit to carry a concealed firearm, shall be issued one without discretion.¹ Prior to the passage of such laws, many urban jurisdictions refused to issue concealed-carry permits to persons who could not demonstrate a special need to carry a concealed weapon. Such laws were passed in 10 states during the study period and were in effect in 8 others prior to 1977.

Lott and Mustard concluded that shall issue laws had a dramatic crime-suppressing effect. They reported that homicides fell by 7.65 percent in counties that introduced shall issue statutes, while rapes and aggravated assaults declined by 5 and 7 percent, respectively. An increase in crimes of stealth such as auto theft was coincident with the decline in violent crimes. The authors suggest that these results show that criminals are less willing to confront victims if they fear the victim might be carrying a weapon and therefore turn their criminal agenda towards activities where the probability of a face-to-face encounter with a victim is very low. This study leads to the conclusion that increased gun access leads to decreased crime; however, Lott and Mustard’s findings have been largely discredited (National Research Council, 2004).

¹ unless the applicant has a criminal record or significant mental illness

More Guns, More Homicide

Cook and Ludwig (2003), in summarizing research on gun availability and crime, wrote that many studies have contributed to “the belief that while guns do not contribute much to the overall volume of crime, they do make it more lethal” (p.13). I turn now to studies which report heightened homicide rates in the presence of heightened gun ownership.

An important analysis by Duggan (2001) showed a link between increases in gun ownership and increasing homicide rates. Evidence from this research also indicated that gun ownership was related to rates of other crimes, but to a much lesser extent than homicide. Duggan noted that unreliable estimates of gun ownership by locality nationwide are an impediment to conclusive research on gun availability and crime. To overcome this drawback, he proposed that gun ownership at both the state and county level can be measured using the proxy of subscriptions to *Guns & Ammo* magazine.

He claimed that the *Guns & Ammo* subscription rate is a valid proxy for gun ownership because it is highly correlated with other gun ownership indicators. *Guns & Ammo* subscriptions are more common in areas that have relatively more gun shows, where there are relatively more gun suicides and accidental gun deaths, where NRA membership is higher, and where the demographic make-up of the population is typical of gun owners (e.g. white males in rural areas). Duggan also found that the *Guns & Ammo* subscription rate was directly related to the rate of gun ownership (as determined by the General Social Survey, which asks respondents if they own a gun).

Using the gun ownership proxy and data on homicide provided by the National Center for Health Statistics, Duggan found that a 10 percent increase in state gun ownership is associated with a 2 percent increase in homicide. Because the proxy measure allowed him to look at changes over time, Duggan was able to determine that the increase in gun ownership was followed the next year by increased homicide, refuting the alternative hypothesis that the observed relationship was due to increased homicide motivating individuals to purchase guns. Duggan also examined the relationship between gun ownership and robbery, assault, rape, burglary, larceny and auto theft. He found that most of those relationships were not statically significant, with the exceptions of small effects for larceny and rape.

Duggan's research findings are in accord with a position advocated by Zimring and Hawkins (1997). The two authors posited that the influence of gun availability is not strongly connected to the level of general crime in the U.S., but it is connected to the occurrence of homicide. Unlike Kleck and McElrath (1991), Zimring and Hawkins claim that many criminals who use guns are willing to risk killing their victims. When attacks do occur, Zimring and Hawkins believe that offenders who attack with guns are not necessarily more intent on killing their victims than offenders who attack with other weapons. If an offender is ambivalent about the welfare of the victim and attacks only to complete the task of securing the victim's property, the victim is much more likely to die if that attack was carried out with a gun as opposed to some other weapon. Therefore, increasing the chances that offenders will attack with guns is likely to increase the fatality of attacks.

Seminal research on weapons effects without controls for victim-offender relationship found a 5-fold increase in the chance of death if the victim's wounds were inflicted with a gun (Zimring, 1968). The sample for this research was criminal homicides and serious, non-fatal assaults that occurred in Chicago from 1965 to 1967. This study was unique in that Zimring measured the assailant's intent to kill by evaluating the number and location of wounds inflicted. Multiple wounds and wounds to more serious areas of the body such as the head, neck and torso were considered evidence of earnest intent to kill. He found no evidence to suggest the gun attacks were more likely to be executed in earnest than attacks committed with knives or other weapons. Zimring observed that a large majority of homicides occurred during arguments. He proposed that altercations which turn deadly are "situations where the intention is more apt to be ambiguous rather than single-minded" (1968, p. 723).

Another of the more noteworthy works that adds substantiation to the conclusion that gun access is associated with an increased risk of homicide found that guns kept in the home were 4.6 times more likely to be used in a criminal homicide than for self-defense (Kellerman & Reay, 1986). In examining all 743 firearm-related deaths that occurred in King County, Washington from 1978 through 1983, the authors found that more than half of these deaths occurred in the residence where the weapon was kept. They discovered that a gun kept in the home was far more likely to be used against a resident than an intruder. Because over 80 percent of the residence homicides studied resulted from arguments, Kellerman and Reay (1986) proposed

that firearms in homes where domestic violence is periodic may pose an increased risk of death to both partners.

The Special Case of Female Murder Victims

Femicides are different than other types of homicide in four important ways. First, women and men are typically killed in different places. Women are more likely to be killed in a home than anywhere else; standing in sharp contrast to men who are most likely to be killed on the street (Rosenfeld, 1997). Second, women and men are killed by different types of people. Women are most likely to be killed by an intimate partner or close family member; whereas men are most likely to be killed by strangers or acquaintances (World Health Organization, 2002; Rosenfeld, 1997). According to the Supplemental Homicide Report for the years 1977 to 1998, in cases where the victim and assailant's relationship was known, 50.3 percent of murdered women between the ages of 18 and 40 were killed by a current or former intimate partner. During the same period only 7.2 percent of 18 to 40-year-old male homicide victims were killed by intimate relations. Third, women and men are killed under different circumstances. Compared to men, women are more frequently killed in the context of a continuing abusive relationship (World Health Organization, 2002; Smith, et al., 1998). Finally, guns play a different role in homicides of men and women. Guns kept in the home have been repeatedly identified as a risk factor for homicide of women but not of men (Campbell et al, 2003; Smith et al., 1998). Furthermore, when a murder does occur in the home, women are more likely to be killed with a gun than are men (Bailey et al., 1997).

Research suggests that the most deadly homicide situation for a woman is leaving a controlling partner, especially if she is leaving to join a new partner (Campbell et al., 2003; Kellerman & Mercy, 1992). A male batterer may try to prevent a girlfriend or wife from leaving by using whatever means available. If a gun is available, he may choose it, providing the means with which to exert the ultimate control with minimal effort. As Saltzman et al. (1992) suggest, “intimate and family assaults are often the impulsive result of violent arguments rather than premeditated acts. For such [family and intimate assaults] access to lethal weapons may be an important determinant in the incident’s outcome.” (p. 3043). The proportion of intimate partner homicides carried out with the earnest intent to kill is unknown. However, previous research indicates that when assaults are committed with guns, death is a more likely outcome than when other weapons are employed (Zimring & Hawkins, 1997; Kleck & McElrath, 1992).

Evidence from research conducted by Saltzman et al. (1992) showed lethality effects of firearms that were much more pronounced than those reported by Kleck and McElrath. Saltzman and colleagues studied weapons effects in cases of assault between intimate partners or family members. The study examined police records of all reported family and intimate assault in 1984 in Atlanta, Georgia. The sample consisted of 142 non-fatal incidents and 23 homicides, with weighted estimates for non-fatal injury categories used in analysis to compensate for unreported assaults.

Consistent with the findings of Kleck and McElrath (1991), this study indicated a tendency for firearm involvement to decrease the risk of injury. But, more intriguingly, Saltzman et al. (1992) found that the risk of fatality was 12 times greater

in those incidents where the perpetrator was armed with a gun as opposed to another weapon or no weapon. The authors discuss this finding in terms of homicidal intent. They contend that a substantial proportion of intimate killers do not have homicidal intent and that many such killings arise from anger in spontaneous quarrels and involve no planning on the killer's part.

Further evidence from research on homicide of women in the home bolsters the distinction between intimate and non-intimate killings (Bailey et al., 1997). Using a matched-pairs design, risk factors for homicide of women in the home were computed for 398 homicides which occurred in 3 metropolitan counties between 1987 and 1992. Comparison subjects were recruited from the same neighborhoods where the homicide victims lived and were matched based on age, sex and race.

Two distinct groups of homicide victims emerged in the analysis: those who were killed by an intimate or first-degree relative (spouse, sibling, parent or child) and those who were killed by strangers, acquaintances, or more distant relatives. The risk factors that were identified for intimate or family homicide were illicit drug use by household member, previous domestic violence, and having one or more guns in the home. The risk factors for stranger/acquaintance/other homicide were living alone and victim criminality. Since a gun kept in the home was associated with intimate partner, but not stranger perpetrated femicide, Bailey et al.'s (1997) research suggests that gun access in the home exacerbates violence between intimates but does not have the same influence on violence between non-intimates.

Other researchers of intimate violence have pointed out connections between homicide, firearms and alcohol. Smith et al. (1998), after examining the intimate

partner homicides that occurred in South Carolina in 1989, identified gun availability and alcohol as “critical correlates” of intimate partner homicide (p. 414). More corroboration for the view that alcohol unites with guns kept in the home to produce dangerous conditions for women was provided by a study of intimate partner homicides in Chicago (Block & Christakos, 1995). Examining homicides that occurred over a 29 year period, the authors found that a majority of women were killed in a residence, many were killed with a firearm and many incidents were alcohol related. They concluded, “an effective prevention strategy for intimate homicide of women (but not for men or gay couples) would be to reduce the availability of firearms in the home, especially handguns” (p.15).

Ownership of a handgun may be related to violence-propensity variables not included in some of the studies previously mentioned. These latent variables could be responsible for the homicide-gun link uncovered in the research already discussed. A study by Campbell et al. (2003) provided the means with which to isolate the effects of gun access from a wide range of individual and relationship characteristics that may also contribute to the probability of a femicide. The study was designed to identify risk factors for femicide in abusive relationships. Subjects of this research were 220 female victims of intimate partner homicide and 356 female victims of intimate assault. Proxy informants for the murdered women provided details about the deceased’s relationship with her killer. Even when accounting for many relationship and individual characteristics, abusers with access to guns were shown to be 5.38 times more likely to kill their partners than abusers without access to guns.

The authors examined many possible variables that could contribute to the risk of homicide, they were: demographic characteristics of the abuser; victim and abuser employment status and educational attainment; general risk factors for homicide (e.g. substance abuse, condition of mental health, gun access, previous arrests); relationship status (e.g. married, separated, cohabitating, victim and abuser had a biological child in the home); level of attempted control over the victim and verbal aggression by the abuser; previous threats or stalking behavior by the abuser; and severity of physical abuse before the worst instance of abuse or actual homicide.

The analysis revealed that the following variables significantly increased the risk of homicide (in order from highest risk to lowest): (1) abuser had access to a gun, (2) abuser was highly controlling and the couple had separated after living together, (3) the abuser was unemployed and not seeking a job, (4) abuser was not highly controlling and the couple had separated after living together, (5) the abuser had previously threatened the victim with a weapon, (6) the abuser had previously threatened to kill the victim, (7) the victim had a child by a previous partner in the home, and (8) abuser was highly controlling and the couple were currently living together. Protective qualities against femicide also materialized in this analysis. Chances of femicide decreased if the abuser had been previously arrested for domestic violence or the couple never lived together.

Two cross-national studies (Killias, van Kesteren & Rindlisbacher, 2001; Leenaars & Lester, 2001) identified gun access effects on homicide of women but not men. Neither of these studies was looking specifically for information on gendered homicide. The findings about women and guns were addressed as side notes in both

works. Although intimate partner homicide was not examined in either of the two following studies, it is safe to assume that a large number of murdered women are murdered by current or former intimate partners. A report released by the World Health Organization (2002) stated that between 40-70percent of women murdered in countries from which data were available were killed by husbands or boyfriends.

In an analysis of gun ownership, violent crime and suicide in 21 nations, Killias, van Kesteren and Rindlisbacher (2001) found insignificant correlations across nations between firearm availability and total homicide or homicide with guns. The authors used data collected by the United Nations International Crime and Justice Research Institute (UNICRI) to measure gun availability. UNICRI conducts a household crime victimization survey called the International Crime Victimization Survey (ICVS) that includes questions about household gun ownership. The ICVS is similar to the National Crime Victimization Survey in the U.S., but is conducted with a much smaller sample of citizens. Although the Killias et al. (2001) study was not designed to look specifically for gender differences in homicide victimization, its results are pertinent to the topic at hand when looked at in more detail.

Killias et al. (2001) found that guns played a different role in male homicide than in female homicide. Guns kept in the home appeared to put women at a much greater risk of homicide than men. The correlation between gun ownership and homicide with a gun was found to be large and significant for female victims ($r = .61$, $p < .005$), while small and insignificant for male victims ($r = .21$). The authors explain this finding with situational factors. Relying on known conditions surrounding many femicides (i.e. offender is a former or current partner and the homicide arises from a

domestic dispute), the authors suggested that the relationship detected between gun ownership and homicide of women could be attributable to the coincidence of the locations of the conflict and the gun.

Leenaars and Lester's 2001 study of the impact of gun control in Canada support Killias et al.'s findings from the same year. Leenaars and Lester examined homicide data from 1969 to 1985 and found that after the passage of restrictive handgun legislation in Canada, firearm homicide rates for women decreased with no accompanying increase in homicide by other means (2001). The authors found no evidence of a similar decrease for male homicide victims.

Research on gun access and intimate partner homicide focuses heavily on women's risk of death from an armed male partner. Possible reasons for the stronger emphasis on females as victims as opposed to offenders in intimate homicide literature include women's low rate of violent offending in general (according to the Bureau of Justice Statistics, women comprised only 14 percent of violent offenders) and the higher rate of intimate homicide of females than males. Previous research has given no distinct indication that males are more vulnerable to intimate homicide when a gun is accessible. Female intimates appear to be at increased risk of intimate homicide due to firearm availability while males do not.

To summarize, prior research shows no consistent indication that gun availability is a substantial contributor to homicide rates overall. However, researchers of femicide and intimate partner homicide have shown that gun availability is a major contributor to these types of murder, but they have not addressed a comparison of intimate partner homicide to other types of homicide. I

am aware of no study to date that has specifically examined the differential impact of gun access on homicides of men and women or intimate versus stranger homicide.

CHAPTER 3: METHODS

The analysis that follows attempts to determine if access to firearms is more closely related to the murder of women compared to men or intimate partner homicides compared to other homicides. I use state-level data to conduct this analysis, because the independent variable of interest, gun availability, is available at the state level.

Hypotheses

The above discussion leads to the following hypotheses:

- I. State-level gun accessibility rates are a stronger predictor of intimate partner homicide than non-intimate partner homicide rates.
- II. State-level gun accessibility rates are a stronger predictor of the rate of intimate partner homicide of females than intimate partner homicide of males.

Data

Homicide rates. Demographic information on homicide victims and offenders (when they are known to police) as well as weapon of death, and relationship between the parties is provided by the FBI's Supplemental Homicide Report (SHR). Although suffering from some limitations, including incomplete data (Fox, 2004), the SHR has been used by many homicide researchers (e.g. Paulozzi et al., 2001; Dugan, Nagin & Rosenfeld, 2003; Kleck & McElrath, 1991). It is the only nationwide data source which provides information about the relationship of victim and offender (Puzone,

2000). I used this database for information on state-level homicide rates between the years 1995 and 1998.² During the four-year study period, the SHR reported information for 67,069 homicides. Seventy-seven percent of the victims were male. One hundred forty-seven cases (0.2 percent) were removed from analysis because the victim's sex was unknown.

Intimate partner homicides were so defined when the offender was identified as the victim's spouse, common-law spouse, former spouse, girlfriend or boyfriend. All other cases were considered non-intimate, including those in which the relationship between victim and offender was unknown. During the study period, nine percent (N=6311) of all homicides were perpetrated by intimate partners. Only 28 percent of intimate partner homicide victims were male.

Gun prevalence. Many different indicators of gun availability have been used by researchers in the gun access and crime literature. Survey response data would likely be the most appropriate and valid measure of gun availability (Kleck, 2004). Unfortunately, no such national database currently exists. While some surveys have been conducted which include direct questions about the respondent's gun ownership, they are not extensive enough to reliably ascertain state-level gun ownership rates (Kleck, 2004). Because no direct measure of gun ownership is available, researchers have turned to proxy measures.

In a recent evaluation of 25 gun prevalence proxy measures employed in previous research, Kleck (2004) concluded that the best measure for cross-sectional

² The state of Kansas was dropped from analysis because it supplied no information to the Supplemental Homicide Report during the study period. The average rate across three years was substituted for three states for whom one year of SHR data was missing. In the case of Florida, the 1995 homicide rate was used instead of an average, because that was the only year for which data was available. The final sample size was 49.

research is the proportion of suicides committed with a gun. Kleck defends this measure by noting that it was easy to obtain from the National Center for Health Statistics (NCHS) and because it was the most highly correlated with direct survey measures of gun ownership. In addition, the National Research Council Committee on Law and Justice wrote, “A variety of [proxy measures of gun ownership] have been proposed, but it appears that the one the research community has settled on is the proportion of suicides committed with a firearm” (2004, p.41). Following Kleck and the National Research Council, I use the rate of suicides committed with a gun, as reported by the NCHS, in the current analysis to measure gun access. The data for this measure, as all independent variables in the current analysis, were drawn from the year immediately preceding the study period, 1994.

Other measures. Following other researchers of firearms and violence, I include other variables that have been shown to influence homicide in my analysis. The variables included in the current study are urbanicity, poverty, unemployment, proportion of the population who are black and level of non-lethal violence (Lott & Mustard, 1997; Miller, Azrael & Hemenway, 2002; Price, Thompson & Dake, 2004). The Census Bureau provides demographic information for states by year. My analysis includes data on proportion of the state population that is black, proportion of citizens in poverty and proportion of the population who live in urban areas, all obtained from data released by the Census Bureau. Information on the racial composition of states is included because blacks are disproportionately likely to be both homicide victim and offender (Sifakis, 2001; National Research Council, 2004). Furthermore, black women and men are more likely to be victims of intimate

homicide than whites of either gender (Websdale, 1999; Dugan, Nagin & Rosenfeld, 2003; Block & Christakos, 1995). Some researchers have found that poverty enhances homicide rates in general (Parker & Pruitt, 2000), while others have found that poverty is inconsistently related to homicide (Lattimore et al., 1997). The current study accounts for effects of state-level poverty. Population density, or urbanization, is associated with higher rates of violent crime and homicide, where people who live in more densely populated areas are more likely to become victims of violent crime (Sifakis, 2001). I obtained economic data accounting for the proportion of the workforce that was unemployed in 1994 from the Bureau of Labor Statistics (www.bls.gov). Unemployment has also been linked to increased homicide, although not robustly so (Lattimore, et al., 1997; Price, Thompson & Dake, 2004). Finally, in order to directly control for the level of general violence in a state, each state's 1994 aggravated assault rate per 1000 people, as reported in the Uniform Crime Report, is included in the model.

Descriptive statistics for all variables are shown in Table 1. The table shows that the means and maximum values for non-intimate homicides are greater than those for intimate homicides. Furthermore, non-intimate homicides overall and non-intimate homicide of males are far more prevalent than other kinds of homicide. In fact, the rate of non-intimate homicide (4.99 per 100,000) is almost 8 times greater than the rate on intimate homicide (0.65 per 100,000).

Table 1. Descriptive Statistics for Dependent and Independent Variables (N = 49)

	<u>Mean</u>	<u>SD</u>	<u>Minimum</u>	<u>Maximum</u>
Dependent Variables				
Intimate Homicide of Males	0.17	0.13	0.02	0.51
Non-Intimate Homicide of Males	3.98	2.1	0.47	11.77
Intimate Homicide of Females	0.47	0.20	0.15	1.08
Non-Intimate Homicide of Females	1.03	0.48	0.20	2.45
Intimate Homicide	0.65	0.33	0.17	1.60
Non-Intimate Homicide	4.99	2.96	0.69	13.90
Independent Variables				
Proportion of Suicides Committed with a Firearm	0.60	0.12	0.30	0.77
Population of Blacks	0.13	0.10	0.00	0.36
Poverty	0.13	0.04	0.08	0.25
Urbanicity	0.68	0.15	0.32	0.93
Unemployment	0.06	0.01	0.03	0.09
Assault Rate (per 1000)	3.50	1.87	0.47	7.80

Analysis

I conducted a cross-sectional analysis drawing on four years of homicide data to examine the association between gun availability and homicide rates for different kinds of victims.³ This analysis can determine if my measure of gun access has variable strength of association with homicides of intimate partners and non-intimate

³ Using the average homicide rate protects the analysis from large fluctuations in homicide rates due to low base rates in some states (see Messner et al, 2002).

partners and if these relationships are stronger for female victims than for male victims.

The dependent, state-level homicide rate variables are average homicide rates for each state over the years 1995 to 1998. Measures of gun prevalence and other independent variables used for analysis are from 1994. Drawing the independent variables from the year immediately preceding the study period ensures that the effect of the independent variables precedes subsequent changes in homicide rates.

I use ordinary least squares regression analysis to determine what effect gun availability has on homicide of different categories of victims. These categories, which serve as dependent variables are: intimate partner and non-intimate partner homicide rates for both genders combined, intimate and non-intimate partner homicide rates of men and intimate and non-intimate partner homicide rates of women and men.

To verify that the OLS procedure is appropriate for use with the current data, I used SPSS v.11.5 and Stata v.7 diagnostics to test the OLS assumptions. Appendix A displays a table of the correlations among independent variables. The Variance Inflation Factor (VIF statistic) indicated that multi-collinearity did not pose a threat to the interpretability of the analysis results. With the exception of heteroskedasticity in the distribution of the intimate partner homicide of males variable, all the assumptions were met. The robust procedure corrected the single instance of heteroskedasticity.

In order to test the hypotheses stated above, I tested whether the gun suicide B coefficients in the relevant regressions are equivalent. To do this, I used the z-statistic and the equation endorsed by Paternoster et al. (1998) for this purpose:

$$z = \frac{b_1 - b_2}{\sqrt{sd_1^2 + sd_2^2}}$$

This equation will yield an easily interpretable statistic, indicating whether the difference between B coefficients is statistically difference than zero.

CHAPTER 4: RESULTS AND DISCUSSION

Results of the regressions analyses are displayed in Table 2. As the R-squared statistics reveal, the current model explains a large proportion of the variance in homicide rates across U.S. states. The model is best suited for predicting non-intimate homicide of males and non-intimate homicide for both genders combined, where it explains more than three-quarters of the variance in these rates. The model has the poorest fit for intimate and non-intimate homicide of females, although it explains more than 60 percent of the variance in these homicide rates.

Visual inspection of Table 2 immediately illustrates that the independent variables other than gun suicide rate do not behave identically across homicide categories. Table 3 is a simplified version of Table 2, showing only where significant relationships between the independent and dependent variables exist and the direction of those relationships.

Urbanicity does not significantly contribute to the explanation of intimate-partner homicide of men or women. However it is significant for all categories of non-intimate victims. Population density within a state appears to be an important predictor of non-intimate homicide, while not impacting the rate of intimate partner homicide. Percent of the population who are black contributes significantly to every victim category except intimate homicide of women. The only two variables that are *not* significant predictors of homicide of non-intimates, unemployment and poverty,

Table 2. Results from Regression Analyses of Effects of Gun Availability on Homicides by Category of Victims for 49 States, 1995-1998 (N = 49)

	Males				Females				Total Males and Females			
	Intimate		Non-Intimate		Intimate		Non-Intimate		Intimate		Non-Intimate	
	<u>B^a</u>	<u>beta</u>	<u>B^a</u>	<u>beta</u>	<u>B^a</u>	<u>beta</u>	<u>B^a</u>	<u>beta</u>	<u>B^a</u>	<u>beta</u>	<u>B^a</u>	<u>beta</u>
Gun Suicides	0.40	.37**	5.28	.26*	1.06	.65***	1.96	.50***	1.40	.51***	7.00	.29*
Urbanicity	-0.16	-.17	4.67	.27*	-0.10	-.04	1.03	.31*	-0.30	-.13	5.54	.28*
Percent Black	0.55	.40***	9.01	.34***	0.40	.19	1.41	.28*	0.98	.28*	10.43	.34***
Poverty Rate	0.10	.03	10.50	.16	-2.15	-.42***	-1.30	-.11	-1.99	-.23	9.45	.13
Unemployment Rate	0.50	.05	24.51	.13	4.54	.29*	6.99	.19	5.14	.20	31.15	.14
Assault Rate	0.02	.30**	0.40	.30*	0.05	.45**	0.08	.30*	0.08	.44*	0.50	.31**
	R ² =.720		R ² =.757		R ² =.646		R ² =.625		R ² =.685		R ² =.752	

*p< .05

** p< .01

*** p< .001

Table 3. Significant ($p < .05$) Contributors to Homicide of Different Categories of Victims with Direction of Effect (+/-) (N = 49)

	Category of Homicide Victim					
	<u>Intimate</u> <u>Male</u>	<u>Non-</u> <u>Intimate</u> <u>Male</u>	<u>Intimate</u> <u>Female</u>	<u>Non-</u> <u>Intimate</u> <u>Female</u>	<u>Intimate</u> <u>Partner</u>	<u>Non-</u> <u>Intimate</u> <u>Partner</u>
Gun Suicides	+	+	+	+	+	+
Urbanicity		+		+		+
Percent Black	+	+		+	+	+
Poverty Rate			-			
Unemployment Rate			+			
Assault Rate	+	+	+	+	+	+

are significant predictors of intimate homicide of women. The unemployment rate has a significant effect on the homicide of female intimates in the expected direction. However, the poverty rate has homicide *suppressing* effect on homicide of females, a result which was unexpected and contrary to prior literature on homicide and poverty. Although I can offer no complete explanation of this surprising finding, it is interesting to note that in bivariate analysis, poverty rate was significantly associated with increased homicide for all categories of victims. Assault rate was a significant predictor of all types of homicide, with a similar magnitude of effect according to the standardized beta across all categories except intimate homicides of women and intimate homicides for both genders combined. For these types of homicide, assault rate explained a larger amount of the variance relative to other variables.

The coefficient for gun suicide rate, the independent variable of interest, is significant across all categories of victims. Although gun suicide rate cannot be a perfect measure of the true level of gun availability within a state, clearly this variable

taps into a meaningful element of the makings of homicide. In order to test the current hypotheses, I calculated z-statistics for the equivalence of the regression coefficients for gun availability, using the formula presented in the methods section. Results of these tests are displayed in Table 4.

Table 4. Z-Scores: Effects of Gun Availability by Category of Victim (N = 49)

	Males		Females		<u>z</u>	<u>p</u> ^a
	<u>B</u>	<u>SD</u>	<u>B</u>	<u>SD</u>		
Intimate Partner	0.40	0.13	1.06	0.22	-2.623	.004
	Non-Intimates		Intimates		<u>z</u>	<u>p</u> ^a
	<u>B</u>	<u>SD</u>	<u>B</u>	<u>SD</u>		
Both Genders	7.00	2.68	1.40	0.34	2.073	.019

^a one-tailed test

The results lend support to the Hypothesis II and offer no support for Hypothesis I. According to this test, Hypothesis I should be rejected. Contrary to Hypothesis I, the coefficient for gun availability is larger in association with non-intimate homicide than intimate homicide, and this difference is statistically significant. The evidence presented here does not indicate that gun availability is a stronger predictor of intimate than non-intimate homicide. This test supports Hypothesis II. Gun availability is a stronger predictor of intimate partner homicide of women than men in this analysis.

Discussion

On the whole, these results lead to four important conclusions about the social and economic influences on homicide of the six categories of victims under study here: intimate and non-intimate homicides overall, intimate and non-intimate

homicides of men and intimate and non-intimate homicides of women. The first is that the B coefficients for non-intimate homicide, a category dominated by male victims, are much larger than those for homicide of females or intimate homicide of males. This indicates that the correlates of male non-intimate homicide can dominate statistical analyses that do not disaggregate by gender or relationship between victims, obscuring possible findings that are unique to female or intimate victims.

A second major distinction detected in the current study is that percentage of blacks and population density do not have an impact on homicide of female intimates, but exert a substantial homicide-enhancing influence on all other categories of victims. This finding is consistent with a great deal of prior literature which indicates urban black males are disproportionately both victims and offenders in cases of homicide and that victims and offenders tend to share many personal characteristics. These results suggest that inner-city homicide of black males and females may be driven by different forces than those that drive other types of homicide.

The third interesting distinction is that the unemployment rate seems fairly inconsequential to homicide rates except in the case of intimate femicide. This finding is consistent with domestic violence research which indicates that unemployed males are more likely to assault their partners than employed males (e.g. Campbell et al., 2003). The violent consequences of stress and frustration due to lack of employment appear to be meted out in the domestic climate against female partners more so than in the broader social sphere.

Finally, the results of this study clearly support one of its central hypotheses. The results support the conclusion that gun access operates through a different

mechanism in explaining intimate partner homicides of women and men. The current analysis suggests that gun availability increases the risk of intimate partner homicide more so for women than for men.

A more in depth look at the data unearths a trend that supports the spirit Hypothesis I. As was presented in Table 1, the distribution of the non-intimate homicide rate is much wider than the distribution of the intimate homicide rate. Non-intimate homicide is a much more common occurrence than intimate homicide. Between 1995 and 1998, an average of 15,729 persons were murdered by non-intimate relations while only 1,678 were murdered by intimate relations each year. An increase of 500 murders would represent a 30 percent change in the intimate homicide rate, but only a 3 percent change in non-intimate rate.

Since B coefficients reflect the magnitude of a change, it is not surprising that they are larger in the regressions where the distribution of the dependent variable is wider, in other words, where there is more room for change. The distribution of intimate homicide is very narrow compared to non-intimate homicide. A fairer comparison of the influence of gun availability on differently distributed outcome variables would be to look at the change in standard deviation units. The standardized beta scores, reported in Table 2, tell a different story about the influence of firearms on homicide than the B coefficients.

The beta scores demonstrate that gun availability makes a larger contribution to intimate homicide than non-intimate homicide for men, women and overall. The beta score indicates that a one-standard deviation increase in state-level gun availability is associated with a 0.51 standard deviation increase in intimate partner

homicide overall and only a 0.37 standard deviation increase in non-intimate homicide. Unlike the z-test for equivalence of coefficients, this evidence indicates support for Hypothesis I. But without a significance test to verify that the observed difference is not due to sampling error, this evidence is suggestive only. Future researchers may wish to investigate this pattern in greater depth.

Additional support for Hypothesis II is achieved through examination of the standardized beta scores. They show that that intimate partner homicide of women is the most sensitive to gun availability effects, followed by intimate partner homicide overall and non-intimate homicide of women.

Beyond the specifics of the current investigation, one of the more important findings of this paper is that not all homicides are the same, contrary to the classic assertions of Gottfredson and Hirschi in A General Theory of Crime (1990). Social, economic and inter-personal factors in the lives of men and women are not related to their risk of homicide in identical ways. The general theory of crime has been criticized by feminist scholars for ignoring gender differences in crime causation and consequence (Burak & Miller, 1993). The findings of this study make that criticism a more pointed one.

Additionally, feminists have called for clearer distinction between homicide and femicide. Feminist researchers have called for more investigation into the specifics of intimate femicide because, “When men murder women or girls the power dynamics of misogyny and/or sexism are almost always involved.” (Russell & Harmes, 2001, p. 3). Although the power dynamics of gender are not specifically addressed by the current investigation, this paper does address the specific correlates

of femicide. This study further speaks to influences on killings of female intimates that differ from other killings.

The current results show not only that the correlates of homicide are different for men and women, but that within intimate relationships, gun access is more of a risk to a female partner than a male partner. Power dynamics and rigid adherence to gender roles may be part of the decision making-process which leads to intimate homicide by firearm.

Moreover, the results of this study suggest that gun accessibility does not affect all types of homicide in the same way. Intimate partner homicide appears to be more sensitive to gun availability than non-intimate partner homicide. Future research may investigate the mechanisms through which gun access impacts homicide of intimate partners and non-intimate partners differentially.

Appendix A. Correlations among Independent Variables (N = 49)

	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>
1. Urbanicity					
2. Percent black	.000				
3. Poverty	-0.062	0.444**			
4. Unemployment	0.191	0.204	0.465**		
5. Gun suicide rate	0.534**	0.255	0.455**	-0.054	
6. Assault rate	0.376*	0.501**	0.508**	0.376*	0.148

*p < .01

** p < .001

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