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IS GUN CRIME LEARNED? SOCIAL LEARNING THEORY AND GUNS

By

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B.A., The University of Montana, Missoula, MT, 2010

Thesis

presented in partial fulfillment of the requirements  
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## **Is Gun Crime Learned? Social Learning Theory and Guns**

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This study examines the relationship between specific childhood experiences and the use of guns in crime in a sample of incarcerated males in American prisons. Two specific childhood experiences are examined: exposure to violence in the home and exposure to guns in the home.

Utilizing social learning theory, I argue that adult male felons who used guns in the commission of crimes will have had greater levels of exposure to violence and exposure to guns in their childhood home. Using a data set collected by sociologists James Wright and Peter Rossi, I conducted a binary logistic regression to determine the existence and strength of relationships between the variables. Results show that exposure to violence, as defined in this study, did not predict adult criminal gun usage, but that exposure to guns, and the control variable of race do predict adult criminal gun usage. I then address the limitations of the study and the implications of these findings for the furtherance of social learning theory as well as suggest directions for future research on gun violence.

The data (and tabulations) utilized in this thesis were made available (in part) by the Inter-university Consortium for Political and Social Research. The data for ARMED CRIMINALS IN AMERICA: A SURVEY OF INCARCERATED FELONS, 1983, were collected by James Wright and Peter Rossi. Neither the collectors of the original data nor the Consortium bear any responsibility for the analyses or interpretations presented here.

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It is virtually impossible to turn on the television, surf the internet, or pick up a newspaper without learning of yet another act of violence committed with a gun. In 2005, nearly half a million people were victims of crimes committed with firearms. According to National Institute of Justice (2010) statistics, 68% of murders, 42% of robberies, and 22% of aggravated assaults committed in 2006 involved a firearm. In the most recent available data from the National Crime Victimization Survey, firearms were used in 61% of all serious violent victimizations (Truman 2011). Overall weapons use has declined slightly between 2001 and 2010, but firearms, particularly handguns, are still the most commonly used weapons in robberies.

Obviously, gun violence is a serious problem in America, particularly in light of the recent spate of shootings at shopping malls, movie theaters, and schools. When Adam Lanza entered an elementary school in Connecticut, opened fire, and killed 26 people, the American public was shocked. People wanted to understand how such a terrible tragedy could occur. Authorities investigated Lanza's background and family, but because he took his own life, no one could ask him why he acted as he did. Often when acts of gun violence occur, there is no way to really understand why they happen. This is true for Sandy Hook Elementary, for Columbine High School, and for many of the half a million gun crimes that happen on a yearly basis in the United States (National Institute of Justice 2010). In the wake of these tragedies, politicians and law makers sought to create stricter gun control policies. These policies aim to reduce gun violence by cutting off the supply, but research indicates that five out of six people who use guns to commit crimes obtain their weapons through illicit means (Wright and Rossi 2008). This alarming statistic suggests that for a large portion of gun criminals, simply restricting legitimate access to guns does not work.

The magnitude of the problem suggests that the solution requires preemptive action, not simply reactionary measures such as gun control policy. Early intervention in childhood and adolescence may actually be more effective in reducing adult crime and violence than reactive measures such as incarceration and laws restricting gun procurement. Studies indicate that early intervention, both in the classroom with disruptive and violent children and in the home with emotionally and physically abusive families, can result in a reduction in adult criminal behavior (Farrington and Welsh 2003; Vitaro, Barker, Brendgen, and Tremblay 2012). If childhood intervention programs reduce subsequent adult crime, does the converse hold true as well? Does childhood exposure to guns and violence contribute to the likelihood that an adult criminal will use guns in the commission of crime?

In order to answer this question, it is essential to understand the factors that influence the likelihood of gun violence. Much of the current research on violent crime, such as the National Crime Victimization Survey, focuses on the victims, not the perpetrators, of crime. The importance of justice and restoration for victims cannot be overstated. However, only by questioning those who commit violent acts with guns can we begin to understand why these crimes occur. Otherwise, the wrong questions are asked of the wrong people. Because the current research seeks to understand why criminals use guns in the commission of crimes, the focus is on the offenders themselves. Not all offenders are identified, and thus cannot be questioned, but those who are arrested and ultimately incarcerated present a unique opportunity to go directly to the source. A comprehensive survey administered to inmates in all levels of the correctional system, including jail, prison, probation, and parole would be the ideal source of information regarding criminal motivations for gun use. Due to monetary and time constraints, an analysis of secondary data was conducted in lieu of original research.

The secondary data come from a study conducted in 1983 by sociologists James Wright and Peter Rossi. Funded by the National Institute of Justice, Wright and Rossi sought to understand how criminals acquired their weapons, why they chose particular weapons, and what attitudes they held about gun control. The study was criticized almost immediately for its lack of a theoretical foundation, as it had been designed to contribute to the gun control policy debate, not to further criminological theory. A search of the literature that has cited Wright and Rossi's work indicates that the majority of researchers utilized this study and its data to address further policy implications (Bruga, Wintermute, Pierce, Cook, and Ridgeway 2012; Morselli 2012; Vittes, Vernick, and Webster 2013, and many others). Other researchers cited Wright and Rossi in studies of offender gun-carrying motivation and intent (Wells 2002; Phillips and Maume 2007). Spano, Pridemore, and Bolland (2012) and Brennan and Simon (2009) were interested in examining theoretical approaches to weapons use, but neither went so far as to apply a major criminological theory to the question of why criminals use weapons. While this may be seen as a limitation of Wright and Rossi's research, it also presents an interesting question for the current research. Can data that was collected for policy purposes and not based on a theoretical foundation be utilized to test theory?

### SOCIAL LEARNING THEORY

Socialization may be the key to understanding how childhood experiences contribute to adult behavior. In sociological terms, socialization refers to the process of learning culture, starting at birth (Henslin 2006). The family, peer groups, schools, and religious institutions all act as socializing agents, but the family provides primary socialization. Primary socialization describes the process whereby children learn which attitudes, values, and beliefs are appropriate to live and be accepted in a society.

Social learning theory is the primary theory that explains socialization. Social learning theory (originally called a differential association-reinforcement theory of criminal behavior) states that criminal behavior is learned in the same manner as any other behavior (Burgess and Akers 1966; Akers 1985). The key to this theory is that criminal behavior is not only learned through direct association and communication with criminals, as postulated by Sutherland's (1939) seminal theory of differential association, but also through observation and modeling. Sutherland's theory was comprised of nine propositions and essentially states that criminal behavior is learned through association and communication with criminal others. More frequent and intense exposure to criminal others will result in a greater degree of criminal learning. This learning includes specific techniques, motivations, and attitudes. The direction of those motives and attitudes is dependent on whether violating laws is deemed favorable or unfavorable. At the crux of differential association is the idea that if definitions that promote law-breaking behavior outweigh definitions that promote law-abiding behavior, a person learns to be a criminal.

Differential association theory had been criticized as not being empirically testable and Sutherland himself realized this and made a revision in 1947 (Burgess and Akers 1966). Despite this revision, the original theory still could not be operationalized; it was purely conceptual. Though Sutherland was convinced that criminal behavior is learned, his theory did not specify how learning occurs, nor did the theory clearly indicate how it could be scientifically tested. Burgess and Akers (1966) incorporated psychological learning theory to specify the mechanism by which behavior is learned. Thus, social learning theory includes not only Sutherland's differential associations and definitions favorable or unfavorable to committing crimes, but also classical and operant conditioning and cognitive theories of imitation and vicarious learning.

These psychological mechanisms of learning are especially important for social learning theory, which recognizes that reinforcement of attitudes conducive to crime and violence can be more salient than actually being taught to commit crimes and acts of violence.

Classical conditioning, made famous by Pavlov and his salivating dogs, was first applied to human behavior in the case of Little Albert (Watson and Raynor 1920). A neutral stimulus, a white rat, was presented to the child along with a loud sound and soon Little Albert was afraid of rats, making a negative association with the sound that startled him. In classical conditioning, the responses which are conditioned are automatic, reflexive behaviors. B.F. Skinner (1963) advanced the study of learning by adding the concept of operant conditioning. In operant conditioning, the behavior that is modified is voluntary; also known as operant behavior. The frequency of a behavior can be increased with the use of reinforcers or decreased with the use of punishments. Psychologist Albert Bandura (1977) developed his learning theory on the principles of operant conditioning, specifically the importance of reinforcement. He emphasized modeling, also known as imitation or observational learning. Infants learn to clap their hands, play peek-a-boo, and speak while imitating those around them. Likewise, when a behavior is reinforced, it will increase in frequency. Bandura also underscored the importance of vicarious learning; not all reinforcements have to occur to the individual. Witnessing the model receiving reinforcement or punishment can be as influential on learning as being the recipient.

Ultimately, Burgess and Akers' (1966) theory resulted in seven propositions about how criminal behavior is learned. Like Sutherland, they believed that criminal behavior is learned like any other behavior, but recognized that learning is accomplished through operant conditioning and the presence of effective reinforcement.

Social learning theory postulates that criminal behavior is learned through a process of socialization, in the same manner as any other behavior. It follows then that the use of firearms in the commission of crime is also learned behavior. Where is this behavior learned? Children learn how to behave through interactions with people in their world. While there are many influences on children, such as teachers, schoolmates, and the media, studies show primary groups, such as family and close friends, are the most significant in terms of impact on child learning and socialization (Akers and Sellers 2009). Children learn more than behaviors and actions from their models. Beliefs about violence are also learned. Foshee, Bauman, and Linder (1999) conducted a survey of male and female high school students, asking questions about childhood violence, both personal and witnessed. They also asked questions about dating violence and the students' beliefs about dating violence. Interested in the role of socialization, the researchers utilized social learning theory to hypothesize that adolescents who had been hit by an adult or had seen one adult hit another would be more likely to perpetrate dating violence and see dating violence as more acceptable than adolescents who had not been victims or witnesses of violence. They found that exposure to violence was positively associated with both commission and acceptance of dating violence. Exposure to violence directly contributes to the cycle of violence. Simply by witnessing negative or violent interactions between significant adults, children may learn interpersonal interaction styles and violent coping skills (Kalmuss 1984). The learning of maladaptive behaviors then affects attitudes about violence, and acts of violence are then seen as permissible.

Research provides extensive support for the idea that the cycle of violence is learned. In one study, Ball (2005) determined that the greater the exposure to acts of violence, and the more varied the types and severities of violence, the greater the likelihood that one would be arrested

for violent crime. Ball based his hypothesis on Bandura's social learning theory, specifically on the principles of modeling and vicarious learning, which state that violence and aggression are often learned through simple observation. He found, however, that actual exposure may sometimes have a stronger impact than merely observing acts of violence.

Fox, Nobles, and Akers (2001) applied social learning theory to the phenomenon of stalking and found that attitudes and perceptions about a behavior can be more impactful than actually witnessing the behavior. In this case, stalking behavior might not be directly learned in childhood, but the attitudes and beliefs that would make stalking permissible are learned.

Felson and Lane (2009) analyzed data from the Survey of Inmates in State and Federal Correctional Facilities to investigate the relationship between childhood abuse and the types of crimes that inmates committed as adults. Felson and Lane were interested in the cycle of violence and hypothesized that those inmates who had been abused in childhood would be more likely to commit violent offenses than nonviolent offenses. They suggest that criminals often specialize; they commit offenses similar to offenses they witnessed or personally experienced.

If greater exposure to violence in childhood can have such far-reaching and negative consequences, what about exposure to guns? Garbarino, Bradshaw, and Vorrasi (2002) studied the impact of childhood exposure to guns and gun violence and found that the closer the proximity to the violence, the more negative the outcomes would be for the children. These outcomes contribute to the cycle of violence. They found children who had been exposed to a greater degree of gun violence, such as personally witnessing it or being a victim of it, were often desensitized to violence and were more likely to engage in high risk behavior.

Additionally, it is recognized that in the non-criminal population, boys who grow up with fathers who own guns are more likely to own guns themselves as adults (Wright and Rossi 2008). This

is not to imply that gun ownership leads to gun crime, but suggests that increased exposure to guns in childhood can contribute to a familiarity with guns that extends into adulthood.

Spano, Pridemore, and Bolland (2012) studied longitudinal data to examine the impact of childhood exposure to violence and violent behavior on subsequent gun carrying and use. They found that exposure to violence and violent behavior at one point in time made youths two and one half times more likely to carry a gun at a later time. This indicates that, at least for youths, exposure to guns has an impact on subsequent gun carrying or usage.

There is, however, a gap in what is known about the link between childhood exposure to guns and violence and the subsequent use of guns in crimes committed in adulthood. Some studies, such as those by Garbarino, Bradshaw, and Vorrasi (2002) and Spano, Pridemore, and Bolland (2012) suggest that exposure to guns and violence can have detrimental impacts, but these studies are focused on juveniles. Foshee, Bauman, and Linder (1999) found that exposure to family violence is related to teens having more permissive attitudes towards dating violence, but again, this study was conducted with juveniles. These same principles could apply to adults as well, and the study done by Felson and Lane (2009) indicates support that adult violent behavior and crime is influenced by childhood violence. Felson and Lane, however, do not investigate gun violence. These studies indicate support for social learning theory as the link between violence and guns. Is it the combination of exposure to violence and guns that is particularly potent and influential on a criminal's decision to use guns in the commission of crime? This proposition has yet to be tested, which led to this study's hypothesis that exposure to guns and violence in childhood will influence the adult criminal's use of guns in crime.

The current research seeks to apply social learning theory to understanding the link between childhood exposure to guns and violence and adult gun crime, using information

collected from a sample of adult male felons in state prisons. The question that drives this research is: “Does childhood exposure to guns and violence contribute to the likelihood that an adult criminal will use guns in the commission of crime?” From this question, and the review of the literature, the following hypotheses were developed.

H<sub>1</sub>: Childhood exposure to *violence* will significantly improve the ability to predict whether the offender used a gun in the commission of the crime or not.

H<sub>2</sub>: Childhood exposure to *guns* will significantly improve the ability to predict whether the offender used a gun in the commission of the crime or not.

## METHODS

### *Data*

The current study is a secondary data analysis of data collected via a survey that James D. Wright and Peter Rossi (1983) conducted with a sample of incarcerated felons. In 1983, Wright and Rossi began administering a survey of criminal behavior and gun possession and use to men incarcerated in several American prisons. This study, titled “Armed Criminals in America: A Survey of Incarcerated Felons, 1983,” has had a substantial impact on gun control policy (Bruga, Wintermute, Pierce, Cook, and Ridgeway 2012; Morselli 2012; Vittes, Vernick, and Webster 2013). The survey was designed with practical application in mind and as such, Wright and Rossi did not apply criminological theory. The study was criticized almost immediately for its lack of a theoretical foundation, and to date has not been used to test criminological theory. Wright and Rossi (2008) were primarily interested in understanding how criminals obtain guns, what type of weapons they preferred, and their motivations for carrying weapons and using them

during criminal acts. Their study evolved out of Burr's 1977 study on criminal gun acquisition in a sample of male inmates in the state of Florida.

Wright and Rossi (2008) created an extensive questionnaire including over 500 questions that covered demographic information, current socioeconomic status, prior criminal record, history of drug and alcohol use, family history, and recreational and criminal weapons procurement and usage. The questionnaire was administered to 1,874 felons serving sentences in eleven correctional institutions in ten states. The researchers used cluster sampling to ensure that the prisons and prisoners included in the research sample resembled the larger incarcerated male population in the United States. Two prisons in Minnesota were included in the study, and one each from Michigan, Missouri, Oklahoma, Nevada, Arizona, Florida, Georgia, Maryland, and Massachusetts. Wright and Rossi noted that while their sample was a fair representation of the incarcerated male population in state prisons, it could not be considered a probability sample because of self-selection. Prisons that agreed to participate may have been different than those that refused. They argued, however, that the prisoners in their study were not atypical of the larger incarcerated population.

#### Characteristics of the sample

Descriptive frequencies were performed on characteristics of the sample, such as education level, employment, marital status, and type of crime, in order to add depth and context to the sample of offenders.

*Education:* Nearly 30% of the sample had less than a 9<sup>th</sup> grade education, and 61% had not graduated high school. Almost 14% had some college, and fewer than 3% were college graduates. This suggests that incarcerated felons are typically uneducated.

*Marital status:* At the time of the 1983 survey, 20% of participants were married, 25% had a girlfriend, and 10% were divorced. Nearly 40% had never been married.

*Childhood family size:* Most participants grew up in large families. Only 8% of the respondents were only children or only had one sibling. The majority of the sample had multiple siblings, with 80% having more than three siblings.

*Employment status:* Over half (68%) of respondents had a job in the year before their (current) arrest, and 60% had employment at the time of their arrest.

*Types of crimes committed:* Wright and Rossi's survey asked respondents if they had ever committed seven different crimes: assault, burglary, drug dealing, murder, rape, robbery and theft. Just over 70% of respondents had committed an assault, and an equal amount had committed burglary. Only half of respondents had ever dealt drugs or committed a robbery. Over 80% had committed a theft. Finally, only 13% of the sample committed a murder, and 12% committed a rape. These numbers suggest that the majority of respondents in this sample committed property crimes (theft, burglary, robbery) more than crimes against a person (murder, rape) with the exception of the personal crime of assault.

*Use of handguns in crime:* For six of seven types of crime (all except rape) the majority of offenders who had committed those crimes used a handgun in the commission of the crime. Table 1 shows the number of offenders in the sample who responded they had used a weapon in a particular crime and indicated that the weapon was a handgun.

**Table 1. Use of handgun in crime based on type of crime (percentages and frequencies)**

		<b>Assault</b>	<b>Burglary</b>	<b>Drug Dealing</b>	<b>Murder</b>	<b>Rape</b>	<b>Robbery</b>	<b>Theft</b>
<b>Used handgun</b>	<b>Yes</b>	52(417)	70(376)	88(466)	61(135)	35(25)	79(598)	77(433)
	<b>No</b>	48(385)	30(161)	12(66)	39(87)	65(47)	21(158)	23(132)
<b>Total</b>		<b>100(802)</b>	<b>100(537)</b>	<b>100(532)</b>	<b>100(222)</b>	<b>100(72)</b>	<b>100(756)</b>	<b>100(565)</b>

It should be noted that, while findings from both the current research and Wright and Rossi's study may be applicable to the entire confined criminal population, in no way can they be generalized to the non-incarcerated population. The research also does not intend to suggest that either exposure to violence or exposure to guns causes individuals to become criminals. Rather, the current research seeks an explanation for gun offenses already committed by criminals.

### *Measures*

#### Gun Usage

The dependent variable (DV) has been defined as the use of guns in crime and was measured using the following question: Q. 223 "Did you ever use a gun to commit a crime?" This is an ordinal dichotomous variable, with response alternatives listed as: 0-no; 1-yes; 7-not app; 9-NA (no answer). The dependent variable was defined so precisely for several reasons. First, the purpose of this study was to understand the use of guns in crime. Second, the data itself set limits on the way the dependent variable could be defined in that this question was the best approximation for "gun usage" in the secondary data set. Additionally, the selection of this dependent variable presented an opportunity to test social learning theory in a new context. As previously stated, a search of the literature uncovered support for the social learning of violent attitudes and behaviors in general, but rarely in relation to guns in particular.

Table 2 provides the frequencies and percentages for the dependent variable. As can be seen, missing data is a problem. Wright and Rossi (2008) explained this missing data as participants either not answering or answering "not applicable," perhaps denying they had committed a crime at all. Subsequently, the valid sample size (N) for this study is 1048, rather than 1874, when accounting for the missing data. Also of note is the lack variance in the valid

data. Over 80% of respondents who answered said they had used a gun in the commission of a crime.

**Table 2. Use of gun in crime**

	<b>Percent/Frequency</b>	<b>Valid %</b>	<b>Cumulative %</b>
No	9.4 (177)	16.9	16.9
Yes	46.5 (871)	83.1	100.0
Missing data	44.1 (826)		
<b>Total</b>	<b>100.0 (1874)</b>	<b>100.0</b>	

Exposure to violence

The first independent variable (IV1), childhood exposure to violence, was defined very specifically as: the exposure to abuse (personal or witnessed) perpetrated by the father or other adult male in the inmate’s childhood home. The definition is narrow due to the nature of the data. While “exposure to violence” is a concept that encompasses many facets, including neighborhood violence, media violence, and acts of violence committed by some other family member, the data used in this study only included questions about violence perpetrated by the father or other adult male in the inmate’s childhood.

Previous research using social learning theory often utilizes the Conflict Tactics Scale (Straus 1979) as a way of defining and measuring exposure to violence, but this tool cannot be applied to the current data. It addresses the type of violence, including slapping, pinching, hitting, and so on, and also the degree or amount of violence. As such, the tool encompasses a broad spectrum of exposure to violence and abuse. It is also considered to have a high degree of validity and reliability (Straus 1979). Unfortunately, there were no questions in the current secondary data that agree with those in the Conflict Tactics Scales. Thus, the above definition

must act as a proxy for “exposure to violence.” It will be measured using the following questions:

Q. 26 “Did your father or other man of the house ever beat you up?”

Q. 27 “Did your father or other man of the house ever beat up your mother?”

Q. 28 “Did your father or other man of the house ever beat up your brothers/sisters?”

These three indicators have the following response categories: 0-no; 1-yes; 8-DK (don’t know); 9-NA (no answer). Responses were summed and transformed into a variable named “exposure to violence” with a range of 0 for no exposure to 3, which would indicate higher exposure to violence. It should be noted that question 26 is a measure of direct exposure to violence, while questions 27 and 28 are measures of vicarious exposure. Research on social learning theory addresses both direct and indirect learning (Kalmuss 1984; Ball 2005; Felson and Lane 2009), thus combining the three measures into a single variable is justified. However, the individual contribution of each measure will be assessed in the analysis.

As Table 3 indicates, over half of the respondents did not experience any childhood violence, at least not as it was narrowly defined using the questionnaire items. This suggests that the measure is weak, as research has shown that at least 20% of male inmates in America suffered physical abuse in childhood (Harlow 1999).

**Table 3. Exposure to violence in childhood**

<b>Range of Exposure</b>	<b>Percent/Frequency</b>	<b>Valid %</b>	<b>Cumulative %</b>
None (0)	50.1 (938)	58.5	58.5
Low (1)	14.8 (278)	17.3	75.8
Medium (2)	9.9 (186)	11.6	87.4
High (3)	10.8 (202)	12.6	100.0
Missing data	14.4 (270)		
<b>Total</b>	<b>100.0 (1874)</b>	<b>100.0</b>	<b>100.0</b>

## Exposure to guns

The second independent variable (IV2), childhood exposure to guns, is defined as the degree to which the respondent was exposed to guns in the home during childhood and adolescence. Once again, gun exposure is often defined to include images of guns in the media and entertainment, but for this research, the definition of gun exposure is limited by the secondary data. In addition, previous research has established that family members, and especially significant adult role models, are the strongest socializing agents for children (Akers and Sellers 2009). Thus, narrowing the definition of gun exposure to that which occurs within the home is appropriate for testing social learning theory. As with “exposure to violence,” this narrow definition will act as a proxy for “exposure to guns,” in the absence of more refined scales and measures. The proxy for “exposure to guns” will be measured using the following questions:

- Q. 29 “Did your father ever own shotgun/rifle?”
- Q. 30 “Did your father ever own a handgun?”
- Q. 31 “Did your father ever carry gun outside?”
- Q. 32 “Did your father ever show you how to use gun?”
- Q. 33 “Did your father ever give you a gun?”
- Q. 44 “Did your siblings ever own a rifle/shotgun?”
- Q. 45 “Did your siblings ever own a handgun?”
- Q. 46 “Did your siblings ever show you how to shoot gun?”

These eight indicators of gun exposure have the following response categories: 0-no; 1-yes; 8-DK (don’t know); 9-NA (no answer). Responses were summed and transformed into a variable named “exposure to guns” with a range of 0 for no exposure to 8, which would indicate a greater degree of exposure to guns. Table 4 shows that approximately 80 percent of respondents had at least minimal exposure to guns in their childhood home, as it was defined above. Forty-five percent of participants could be classified as “low exposure,” indicating placement in the 0 to 2 range. Nearly 40 percent would be classified “medium exposure,” and

only 18 percent would be classified as “high exposure,” landing in the 6 to 8 range on the scale defined above.

**Table 4. Exposure to guns in childhood**

<b>Level of exposure</b>	<b>Percent/Frequency</b>	<b>Valid %</b>	<b>Cumulative %</b>
0	18.9 (354)	19.4	19.4
1	11.0 (207)	11.4	30.8
2	13.4 (252)	13.8	44.6
3	12.3 (230)	12.6	57.2
4	13.0 (244)	13.4	70.6
5	10.6 (199)	10.9	81.6
6	8.4 (157)	8.6	90.2
7	6.8 (128)	7.0	97.2
8	2.7 (51)	2.8	100.0
Missing data	2.8 (52)		
<b>Total</b>	<b>100.0 (1874)</b>	<b>100.0</b>	<b>90</b>

Race as a control variable

Only one variable was used as a control variable; race. In the original survey, whites were coded as “1”, blacks as “2”, Native Americans as “3”, Asians as “4”, and all others as “5.” For the purposes of this analysis, in order to make a dichotomous variable, race was recoded. Not only did it simplify the analysis to make race a dichotomous variable, the data practically required it. In the original survey, the majority of respondents identified themselves as white or black. All other racial groups combined constituted less than ten percent of the total population; thus it was deemed appropriate to recode into two racial categories. The code for whites remained “1”, while all other groups were recoded “0” and renamed “non-white.” Whites accounted for 911 of the respondents, while non-whites accounted for 914. Forty-nine respondents declined to answer.

All respondents in the original survey were male; therefore sex could not be used as a control variable. Socio-economic status (SES) and age could not be addressed as control variables; in the case of socio-economic status, the only questions asked in the survey were regarding SES at time of incarceration; no questions asked about childhood SES. Additionally, SES and income are more traditionally connected to strain theory than social learning theory. In the case of age as a potential control variable, there were no questions asked in the survey that are germane to the research at hand.

### **ANALYSIS**

For this secondary data analysis, the most appropriate method of analysis was binary logistic regression, using SPSS. Binary logistic regression is a form of multiple regression designed for analyses in which the dependent variable (DV) is not continuous; that is, the DV is categorical and there are only two categories. The dependent variable, gun usage, was an ordinal, dichotomous variable, thus the primary assumption of binary logistic regression was met. The goal of a binary logistic regression model is to predict membership in the outcome groups, which in this instance were “gun usage” or “no gun usage.” The prediction takes the form of an odds ratio; that is, the logistic regression estimates the odds that location in one or the other categories of the dependent variable can be predicted by knowing the covariates, or predictor variables (Hosmer and Lemeshow 2000). Before all the variables were entered into the logistic model, bivariate correlations were conducted to check for association between variables. Cross tabulations were then performed with each individual variable and the dependent variable, in order to determine if the predictor variables independently influenced the dependent variable.

## RESULTS

Bivariate correlations were performed with all the variables, including the three individual components of the “exposure to violence” variable. Research suggests that the impact of childhood violence may depend on whether the violence was direct or vicarious (Fox, Nobles, and Akers 2001; Ball 2005, Felson and Lane 2009). Thus, checking the independent associations between the three components and the dependent variable was an important part in determining if the analysis should include two definitions of exposure to violence. As can be seen in Table 5, “exposure to violence” is negatively associated with “use of gun in crime”, as are all three separate component questions, and the association is statistically insignificant for all correlations. This finding is surprising considering that the literature would suggest a positive relationship between the exposure to violence (either personal or witnessed) and the use of guns in crime (Felson and Lane 2009; Spano, Pridemore, and Bolland 2012). The negative correlation between is potentially the product of the weakness of these variables as a measure of “exposure to violence.” All three individual measures of exposure to violence are highly correlated with each other, and with the summed variable “exposure to violence.” All these correlations are significant at the 0.01 level.

The control variable of race and the independent variable “exposure to guns” are both positively correlated with the dependent variable “use of gun in crime,” at the 0.05 and 0.01 levels, respectively. Thus, these relationships are not likely to be due to chance.

**Table 5. Bivariate Correlations With All Variables\*\*\***

	<b>Exposure to violence</b>	<b>Exposure to guns</b>	<b>Recoded Race</b>	<b>Father ever beat you up?</b>	<b>Father ever beat up mother?</b>	<b>Father ever beat up brothers or sisters?</b>	<b>Use of gun in crime</b>
<b>Exposure to violence</b>	—						
<b>Exposure to guns</b>	.145** .000	—					
<b>Recoded Race</b>	.100** .000	.257** .000	—				
<b>Father ever beat you up?</b>	.852** .000	.142** .000	.155** .000	—			
<b>Father ever beat up mother?</b>	.780** .000	.089** .001	.004 .889	.456** .000	—		
<b>Father ever beat up brothers or sisters?</b>	.848** .000	.127** .000	.079** .002	.688** .000	.458** .000	—	
<b>Use of gun in crime</b>	-.048 .149	.106** .001	-.079* .012	-.062 .062	-.024 .478	-.029 .392	—

\*\*\*Including independent components of “exposure to violence” variable

\*\*Correlation is significant at the 0.01 level (2-tailed)

\*Correlation is significant at the 0.05 level (2-tailed)

Independent cross tabulations indicate that race is a significant predictor of gun use in crime. Non-whites were six percent more likely to have used a gun while committing a crime than whites (Pearson Chi-square = 6.334,  $p < .05$ ). Exposure to guns was also statistically significant as a predictor of gun usage (Pearson Chi-square = 19.136,  $p < .05$ ). Nearly 98% of criminal gun users had experienced the greatest level of exposure to guns. Exposure to violence was not a statistically significant predictor of gun usage in an independent cross tabulation (Pearson Chi-square = 2.476,  $p > .05$ ). However, small but noticeable differences in percentages did exist, in a positive direction. As respondents scored higher on the “exposure to violence”

variable, they were slightly more likely to have committed a gun crime, but the difference only amounted to a few percentage points, and as stated, was not significant.

Logistic regression was then conducted to determine whether the independent variables (childhood exposure to violence and childhood exposure to guns) and the control variable (race) were predictors of adult criminal gun use (use or no use). Regression results indicate that in the overall model, only childhood exposure to guns and race were statistically significant predictors of criminal gun usage (-2 log Likelihood=754.651; Goodness-of-Fit=4.213; Chi-square (3)=21.919,  $p < .0001$ ). This significant Chi-square indicates that the model with three predictor variables predicts the dependent variable better than chance alone. The other independent variable, childhood “exposure to violence”, was not statistically significant at the .05 level and dropped out of the model.

The overall model correctly classified 84.1% of the cases. However, the constant-only model correctly predicted 84.1% of the cases, meaning that although the overall model was statistically significant, the model does not achieve substantive significance. The overall model does not increase the odds of predicting which inmates would use guns. It may be that the model achieved statistical significance simply because of its relatively large sample size.

Table 6 shows the results of the full regression model. When interpreting the slope and odds ratio ( $B = -.595$ ;  $\text{Exp}(B) = .551$ ) the model indicates that non-whites are 49% more likely to use a gun in a crime than whites, and this finding is statistically significant ( $p < 0.05$ ). As expected, based on the correlations and cross tabulations, “exposure to violence has a negative slope and is not a significant predictor of use of guns in crime ( $B = -.112$ ;  $\text{Exp}(B) = .894$ ). In fact, these results suggest that those inmates who had been exposed to violence in childhood were actually *less* likely to use a gun in the commission of a crime. Finally, the model indicates

that “exposure to guns” is a significant predictor of use of guns in crime; inmates with more exposure to guns were 17% more likely to use guns in crime (B= .157; Exp (B)= 1.169).

**Table 6. Logistic Regression Model with All Variables in Equation**

	<b>B</b>	<b>S.E.</b>	<b>Wald</b>	<b>df</b>	<b>Sig.</b>	<b>Exp(B)</b>
Recoded Race	-.595	.196	9.197	1	.002	.551
Exposure to violence	-.112	.081	1.880	1	.170	.894
Exposure to guns	.157	.042	13.932	1	.000	1.169
Constant	1.583	.198	63.763	1	.000	4.868

Because there was significant skew in the dependent variable (approximately 80% of respondents had used a gun, as shown in Table 2) a second regression model was built with equal numbers of each response category in order to have a normally distributed dependent variable. The purpose was to determine if the overall model and the coefficients (specifically the negative slope for “exposure to violence” would change with an equal distribution). A random sample of 100 “yes” responses and 100 “no” responses was obtained, and the regression was performed again. While the specific values changed due to the different sample size and equal distribution, the overall trends stayed the same. The results indicate that skew in the dependent variable was not responsible for the anomalous negative slope.

## **DISCUSSION**

The results of the analysis indicate support for the hypothesis that adult male felons who used guns in crime experienced greater exposure to guns in childhood, but no support for the hypothesis that those same felons who used guns would have experienced greater levels of exposure to violence. It is important to recall that in the case of exposure to violence, the cross tabulations showed a small difference, in the predicted direction. That is, respondents who answered “yes” on all three measures of exposure to violence were in fact more likely to state

they had used a gun in the commission of a crime. This difference was extremely small and, as stated, not statistically significant, but it suggests that, given more refined measures, perhaps statistical significance could be achieved.

Though the results were mixed and not altogether statistically significant, they are important nevertheless because they indicate the ability to predict the use of guns in crime, based on childhood experiences. Exposure to guns in childhood is a predictor of future criminal gun use, in this specific sample of felons. This may suggest that men who use guns in the commission of crime have a familiarity with guns which stems from childhood exposure. That is, the use of guns was socialized. It must be re-emphasized that this in no way implies that a familiarity with guns causes gun crime. Rather, this study only suggests that in a criminal population, a greater exposure to, and familiarity with, guns may make them the weapon of choice.

While exposure to violence in childhood was not found to be a statistically significant predictor of use of guns in crime in this analysis, that does not negate the results of the cross tabulation which suggest a positive relationship, however small. In addition, previous research suggests that there is a link between exposure to violence and subsequent gun use and indicates that future research with a more precise operationalization has merit.

### ***Limitations and Future Research***

Several limitations exist that may explain the mixed results of this analysis. First, social learning theory might not be the most appropriate theory to explain the use of guns in crime. It should be noted that a wide variety of other theoretical explanations for criminal behavior exist, including general strain theory, rational choice theory, and social bond and social control theories (Agnew 1992, Cornish and Clarke 1986, Hirschi 1969, and Gottfredson and Hirschi

1990). However, due to the limits of the secondary data used for the current research, the contributions of these theories could not be investigated thoroughly. In addition to testing social learning theory, future research on gun violence would benefit from the ability to test the contribution of other theoretical explanations for crime and violence.

Second, assuming that social learning theory was the correct theory to apply to the research question, it must be acknowledged that the research was weakened by an incomplete conceptualization of the theory. Behaviors, both experienced and witnessed are important, but so are the attitudes and perceptions of the actors involved. As mentioned previously, attitudes are learned as easily as actual behaviors. Unfortunately, Wright and Rossi's survey did not ask questions concerning attitudes or beliefs about childhood violence or gun exposure.

Third, a major limitation of secondary data analysis in general is that the researcher has to work within the parameters of the existing data set. One consequence for the current study is that many measures that would indicate social learning were not present in the data set. Existing scales for exposure to violence and guns could not be used because the questions in the survey did not match the existing scales. Thus, the variables had to be narrowly defined on the basis of face validity and connection to social learning theory principles. Additionally, all the questions used as measures of exposure to violence and guns assume the existence of a two-parent home. It is possible that a number of respondents did not grow up with a father or other significant male adult, and thus their potential exposure to violence and guns is not accounted for in this study. The most significant outcome was the lack of usable variables that demonstrate the frequency of exposure to guns and violence. Frequency of exposure is an extremely important part of social learning theory (Sutherland 1939; Burgess and Akers 1966, Akers 1985). The data also dictated the design of the analytic model, perhaps limiting the conclusions of the study.

Fourth, having been collected in 1983, the data set is rather old. It is important to recognize the implications of context with data that is thirty years old. Respondents in 1983 would have most likely been children in the 1940s through the 1960s. Definitions of what constitutes child abuse and violence have most likely changed since those days. Additionally, exposure to guns potentially means something different as well. Conducting this analysis may have been less difficult with more modern data. However, this data set is essentially one of a kind, as no other large scale surveys of gun procurement and usage have been conducted using a sample of incarcerated felons. Regardless of the age of the Wright and Rossi survey, the uniqueness of the data and the importance of the topic make the data appropriate for use.

Despite the lack of support for one hypothesis and the overall model, the current research was successful in answering the other important question: Can data that was collected for policy purposes, derived from a survey without theoretical foundation, be used to test theory? The answer is a resounding, “Maybe.”

The greatest obstacle for this analysis was that it was difficult to find a theory that was applicable to the data. Social learning theory appeared to be the “best fit,” but in practice, the fit was marginal at best. Because the purpose of the original research was to inform and influence gun control policy, there are no questions in the survey that are specifically tailored to assessing the influence of social learning and other criminological theories on criminal behavior and gun use. While this was acceptable for the purposes of Wright and Rossi’s research, the application of theory would allow for the systematic identification of the contributors of violence. Without theory, one is essentially fishing in the dark, casting out in the hopes of catching something.

Future research could add to the theoretical understanding of social learning and the contribution of negative socialization in criminal careers. A study could be designed to assess

social learning theory. If the results supported the hypothesis that negative childhood experiences influence adult criminality, that would indicate the need for policies and interventions targeted at child and adolescent victims of violence to deter them from the path to criminal behavior.

### ***Conclusion***

Ultimately, this analysis found little support for the hypotheses that adult male felons who used guns would have had greater exposure to violence and to guns in childhood. While creating and defining the variables, it had already become clear that the measures were weak due to the lack of usable variables in the secondary data and the obstacle of using theory-free data to test theory seemed insurmountable. It was possible to build and analyze the model, but the scope of the research changed dramatically in the process. Rather than being a simple exercise in theory testing, it became more important to determine whether it was even possible, considering the data limitations. In the end, the most significant outcome was the realization that theory must be used in the construction of surveys, even if the surveys are intended to guide policy. Theory provides a necessary frame of reference for the research, and subsequently, for policy. Otherwise, we might be asking the right people, but we might be asking the wrong questions.

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