



Re-Considering the Structural Covariates of Gun Crime: An Examination of Direct and Moderated Effects

Rick Dierenfeldt, Timothy C. Brown & Rocio A. Roles

To cite this article: Rick Dierenfeldt, Timothy C. Brown & Rocio A. Roles (2016): Re-Considering the Structural Covariates of Gun Crime: An Examination of Direct and Moderated Effects, Deviant Behavior

To link to this article: <http://dx.doi.org/10.1080/01639625.2016.1196974>



Published online: 13 Jul 2016.



Submit your article to this journal [↗](#)



View related articles [↗](#)



View Crossmark data [↗](#)

Re-Considering the Structural Covariates of Gun Crime: An Examination of Direct and Moderated Effects

Rick Dierenfeldt^a, Timothy C. Brown^b, and Rocio A. Roles^b

^aPenn State Wilkes-Barre, Lehman, Pennsylvania, USA; ^bUniversity of Arkansas at Little Rock, Little Rock, Arkansas, USA

ABSTRACT

The prevalence of gun violence in the U.S. has resulted in extensive examination of structural covariates of gun crime. The potential influence of institutionally isolated youth and illegal gun availability remains unexplored. Similarly, studies that simultaneously examine the influence of structural disadvantage and Southern culture are scant. We examine the relationships between these measures and gun crime in a sample of U.S. cities (N = 189) through negative binomial regression of data from the NIBRS and ACS. We find illegal gun availability and structural disadvantage maintain direct relationships with city-level gun crime counts. We also report several significant moderated relationships.

ARTICLE HISTORY

Received 3 December 2015
Accepted 28 January 2016

Introduction

According to the Centers for Disease Control and Prevention (2013), gun violence results in more than 11,000 deaths and 62,000 non-fatal injuries annually. Gun control efforts ranging from bans to purchasing restrictions are also frequent and typically follow in the wake of a highly publicized mass shooting (Fox and DeLateur 2013; Jang, Dierenfeldt, and Lee 2014; Koper and Roth 2001b). The central premise of such efforts is that gun availability directly influences rates of crime or violence (Kleck 2015). Issues of gun violence and gun control have also permeated academia, where they have served as impetus for scholarly examination of the relationship between gun availability and violent crime. These endeavors have produced mixed findings and a divide between unyielding perspectives concerning the relationship between guns and crime (Koper and Roth 2001a; Kleck 2001b; Kovandzic, Schaffer, and Kleck 2013; Lott 2013; Zimring 1989). Lott (2013), for example, has described a crime reducing effect of gun availability while Zimring (1989) has argued that gun availability is positively correlated with levels of gun violence and suggested the need for strict gun control. As noted by Burgason, Thomas, and Berthelot (2014), however, gun control efforts are frequently undertaken irrespective of the correlates of everyday gun violence. Similar shortcomings are common to examinations of gun availability and crime (Kleck 2015). Studies of gun crime frequently remain fixated on legal gun availability, while neglecting to consider the influence of other potential structural covariates of gun crime or describe clear theoretical guidance. Simultaneous examination of the influence of illegal gun availability, at-risk populations, structural disadvantage, and cultural influence may contribute to the understanding of macro-level gun crime; and thus serves as the purpose of the present study.

Drawing on the tenets of macro-level strain theory (Agnew 1999) and Institutional Anomie Theory (Maume and Lee 2003; Messner and Rosenfeld 1997), as well as concepts from the

Southern culture of honor perspective (Gastil 1971; Hackney 1969), we examine how community characteristics influence variation in gun crime counts in a sample of medium to large U.S. cities. Specifically, we analyze data from the National Incident Based Reporting System (NIBRS) and American Community Survey (ACS) to determine the direct effects of illegal gun availability, institutionally isolated youth, structural disadvantage, and location in the Confederate South on city-level expressive and instrumental gun crime counts. We find that illegal gun availability and structural disadvantage each maintain statistically significant positive relationships with city-level gun violence. To further probe the nature of these relationships, we also employ the use of several cross-product interaction terms. We find that the relative influence of structural disadvantage and the percentage of institutionally isolated youth on expressive gun crime is diminished in cities located in the Confederate South. The effects of structural disadvantage on gun crime, expressive and instrumental, are similarly attenuated in cities maintaining elevated aggregates of illegal gun availability and institutionally isolated youth. These findings represent substantive contributions to the growing body of literature on gun violence while providing clear guidance for social policy initiatives designed to curb the frequency of gun victimization. In particular, the salience of illegal gun availability as a direct and moderating influence suggests the need for policymakers to focus on *illegal* gun control as a means of reducing gun violence.

Review of the literature

Southern culture, structural disadvantage, and the anomic state

Elevated rates of violence observed in the Confederate South in comparison to other regions within the United States have long been the source of intense and extensive interest in the social sciences (Gastil 1971; Hackney 1969; Loftin and Hill 1974; McCall, Land, and Cohen 1992; Messner 1983a, 1983b; Smith and Parker 1980). Debate over the explanations for regional variation in violent crime has produced two competing perspectives: cultural and structural. According to the cultural perspective, Southern culture itself encourages or condones the use of violence in certain situations; specifically, expressive crimes arising from threats to honor, family, and property (Brown and Bankston 2006; Gastil 1971; Hackney 1969). Several theorists have posited this culture of honor was imported to the region by the Scots-Irish immigrants who first settled the region in the eighteenth and early nineteenth centuries (Berthelot, Blanchard, and Brown 2008; McWhiney 1989; Nisbett and Cohen 1996; Reed 1982). Thus, this often-called “culture of violence” became entrenched in the South during its colonization, permeated the class structure, and served as self-help social control in frontier areas frequently lacking more formal, governmental controls (Black 1983; McWhiney 1989; Nisbett and Cohen 1996; Reed 1982).

In contrast, structural theorists have argued that disproportionate levels of economic disadvantage and inequality found in the South are responsible for regional variation in violent encounters (Loftin and Hill 1974; Smith and Parker 1980). The structural hypothesis is grounded in Merton’s (1938) strain perspective, whereby young people experience strain and subsequent anomie when they are unable to achieve traditional goals. As levels of structural disadvantage become endemic within a community, and young people either reject or are denied legitimate means to attaining traditional goals, the resultant anomic state may culminate with increased levels of violent offending at a macro-level (Agnew 1999; Cloward and Ohlin 1960; Cohen 1955; Maume and Lee 2003; Messner and Rosenfeld 1997).

The results of studies employing additive models (i.e., structure *or* culture) have done little to resolve the debate over causes of regional variation in violent crime. In response, Messner (1983a) proffered that the effects of economic deprivation on violent incidents may be attenuated in the South due to its unique cultural acceptance of violent reprisal. His own analysis of urban homicide

rates in 300 cities yielded evidence of this attenuation process. Lee, Hayes, and Thomas (2008) extended this line of inquiry to white homicides in rural counties in the United States. Adopting Messner's (1983a) conceptual approach to attenuation, they further hypothesized an amplification effect whereby sources of structural disadvantage and inequality would exacerbate levels of violence already positively affected by the Southern culture of honor. Their amplification hypothesis was framed in the context of macro-level general strain theory (Agnew 1999) and institutional anomie theory (Maume and Lee 2003; Messner and Rosenfeld 1997), which posit that the frustration and anger associated with the anomic state would propagate under adverse socioeconomic conditions; resulting in increased violent criminal offending among young people as they attempted to attain status, power, and material goods. Like Messner (1983a), Lee et al. (2008) reported an attenuation effect characterized by the diminished influence of structural disadvantage on homicide in the Confederate South. Thus, the influence of the Southern culture of honor was observed in terms of its moderating effect on structural disadvantage rather than a direct positive relationship with white homicide.

While these studies represent significant contributions to our understanding of the influence of structural disadvantage and Southern culture, their outcome measures have been limited to homicide. Extant literature has consistently established correlations between gun violence and structural disadvantage (Spano 2012; Spano and Bolland 2011; Spano, Pridemore, and Bolland 2012). Whether the influence of structural disadvantage on gun crime varies by region remains a palpable yet untested inquiry. Similarly, the bulk of previous studies have not considered the potential influence of illegal gun availability in their statistical models; leaving a void in literature.

Illegal gun availability

Akin to the debate over regional variation in violent offending, the role of gun availability in crimes involving firearms has long been a topic of debate among social scientists and policy makers (Kleck and Hogan 1999; Stolzenberg and D'Alessio 2000). Although several studies have reported strong, positive relationships between legal gun availability and violent offending (Blumstein 1995; Hepburn and Hemenway 2004; McDowall 1991; Newton and Zimring 1969), others have found weak or inverse relationships (Kates and Mauser 2007; Kleck and Patterson 1993; Lott 2013; McDowall 1986). According to Kleck (2004, 2015), such incongruent findings can be attributed to the use of highly varied measures of legal gun availability, which have ranged from gun magazine subscription rates to the number of handgun sales, and failure to include appropriate controls—including regional variation.

Offering an alternative perspective, Stolzenberg and D'Alessio (2000) pointed to the consequences of reliance on data culled from the Uniform Crime Report (UCR). In their view, the advent of the NIBRS offered a more comprehensive means of exploring macro-level gun crime because it provides detailed descriptions of each incident. Moreover, they noted that use of the NIBRS allows for distinguishing between the effects of legal and illegal gun availability on violent crime. Operationalizing the number of guns reported stolen to law enforcement as a proxy of illegal gun availability in their examination of South Carolina counties, they found that *illegal* gun availability was positively related with gun crime; while *legal* gun availability and gun crime shared a null relationship. Their methodological approach, as well as their results, provided support for Cook's (1979) assertion that distinctions should be made between legal and illegal gun availability because the latter is more likely to result in increased macro-levels of violence.

Measuring the effect of illegal gun availability also facilitated Stolzenberg and D'Alessio's (2000) circumvention of the problem of a zero net effect associated with the use of general gun availability measures. Succinctly, this issue is one in which the violence-reducing effects of gun possession by non-criminals cancels out the violence-increasing effects of gun possession by criminals (Kleck 2001a; Kleck and DeLone 1993; Kovandzic et al. 2013; Southwick 2000). Additional support for the use of Stolzenberg and D'Alessio's (2000) methodological approach is found in the works of

Sheley and Wright (1993) and Wright and Rossi (1986), who reported that stolen guns were frequently used by offenders in the commission of their offenses. Explaining this phenomenon, Kleck and Hogan (1999: 276) asserted that guns provide criminals a source of power toward achieving goals including “acquisition of money, sexual gratification, respect, attention, or the humiliation and domination of the victim”—an assertion that dovetails well with the macro-level version of general strain theory advanced by Agnew (1999), as well as Institutional Anomie Theory (Maume and Lee 2003; Messner and Rosenfeld 1997).

Despite the theoretical and practical importance of the findings reported by Stolzenberg and D’Alessio (2000), the relationship between illegal, rather than legal, gun availability and violent crime involving the use of firearms remains under-explored in criminological research. In particular, the relationship between illegal gun availability and gun crime after accounting for regional variation has not been addressed in the extant literature. This gap in knowledge is interesting considering that cities in the Confederate South appear to be influenced by a number of factors that induce higher levels of violent crimes, including those involving firearms (Burgason et al. 2014; Lee, Thomas, and Ousey 2009; O’Connor and Lizotte 1978). As described by Kleck (1997), accurate assessment of the relationship between guns and crime behooves researchers to account for these regional disparities. A similar case can be made, however, for the influence of institutionally isolated youth, which has not been considered in studies of gun violence.

Age structure and institutionally isolated youth

Macro-level studies of violent offending and gun violence have typically examined age structure as a correlate of each (see Lee et al. 2008 for an example). The logic influencing this decision is grounded in the argument of Cohen and Land (1987) that cities maintaining larger proportions of individuals between the ages of 15 and 24 are more likely to exhibit elevated levels of crime. Although a large body of literature suggests that individuals between the ages of 15 and 24 are more prone to involvement in illicit activities (e.g., Krohn, Lizotte, and Perez 1997; Moffitt 1993; Sampson and Laub 1992), including gun crime (Cerdeja et al. 2010), other studies have reported non-significant and inverse relationships between violent offending, gun use, and the relative prevalence of youth in the community (Burgason et al. 2014; Krivo and Peterson 2000; Lee et al. 2008, 2009; Wooldredge and Thistlewaite 2003); challenging the status of age structure as a macro-level correlate of offending.

An alternative conceptual approach suggests that some youths become isolated from the local institutions (i.e., employers and schools) bearing responsibility for establishing and enforcing pro-social accepted norms and values (Ousey and Lee 2002; Steffensmeier and Streifel 1991). In turn, these individuals experience fewer impediments to their involvement in criminal activity (Laub and Sampson 1993). The results of recent studies are supportive of the notion that, as covariates of crime, institutionally isolated youth and age structure are conceptually and empirically distinct (McCall, Land, and Parker 2010; McCall et al. 2013; Thomas and Shihadeh 2013). Thomas and Shihadeh (2013), for example, found that each percentage increase in the population of youth who were simultaneously unemployed, not in the labor force, not in school, and not in the military predicted substantive increases in a variety of offenses; including homicide, assault, robbery, and burglary. Within the context of the strain perspective, their findings suggest that institutionally isolated youth represent a population at particular risk of experiencing the anomic state (Agnew 1999; Maume and Lee 2003; Messner and Rosenfeld 1997). As a consequence, cities maintaining increased populations of strained individuals may experience more frequent gun violence. Moreover, an increase in illegal gun availability may exacerbate levels of gun violence in cities with more pronounced proportions of individuals who have been isolated from socializing institutions.

Current study and hypotheses

The review of the literature demonstrates multiple gaps in cumulative knowledge concerning macro-level covariates of gun violence; enabling the present study to contribute to the extant literature in several important ways. First, by analyzing aggregates from the NIBRS in addition to structural measures from the ACS, we are able to examine the influence of illegal gun availability as a covariate of gun crime counts in medium to large U.S. cities. Prior examination of the influence of illegal gun availability revealed its positive association with gun crime; although application of the measure has been limited to counties in a single state (Stolzenberg and D'Alessio 2000). Second, our methodological approach permits simultaneous examination of the direct effects of Southern region and structural disadvantage, which are infrequently considered in tandem in city-level studies of gun crime (Kleck 2015). Extant literature has clearly described the robust positive influence of structural disadvantage across a variety of violent offenses—both expressive and instrumental (Agnew 1999; Cloward and Ohlin 1960; Maume and Lee 2003; Messner and Rosenfeld 1997). In contrast, the influence of the Southern culture of honor may be limited to a positive association with expressive crime (Brown and Bankston 2006; Gastil 1971; Hackney 1969; Lee et al. 2007). Third, Thomas and Shihadeh (2013) reported that the percentage of institutionally isolated youth in a community was strongly and positively associated with a variety of expressive and instrumental offenses. The focus of this research allows for determination of whether the influence of institutionally isolated youth extends to gun-specific violence. Framed within the context of macro-level strain and institutional anomie (Agnew 1999; Messner and Rosenfeld 1997), cities that demonstrate a diminished capacity to facilitate connections between youthful individuals and mainstream socializing institutions may also exhibit elevated levels of strain and, in turn, gun crime. Cumulatively, these studies suggest the following hypothesized direct relationships:

Hypothesis 1: Aggregate levels of illegal gun availability, structural disadvantage, and institutionally isolated youth will be positively related with both expressive (aggravated assault and homicide) and instrumental (robbery) gun crime counts.

Hypothesis 2: Location in the Confederate South will share a positive relationship with expressive gun crime counts, but a null relationship with instrumental gun crime counts.

In addition to direct relationships, the current study explores the moderated effects of the primary explanatory variables on expressive and instrumental gun crime counts. As discussed in the review of the literature, Lee et al. (2008) found that the relationship between structural disadvantage and white homicide counts was attenuated in the Confederate South. The authors surmised that this moderated effect was the observable influence of the Southern culture of honor. Whether this relationship extends to gun-specific or instrumental offenses has not yet been tested. Theorists have long posited, however, that the Southern culture of honor encourages the use of violence in the commission of certain expressive crimes but does not condone violence toward instrumental ends (Black 1983; Gastil 1971; Hackney 1969). Whether the effects of institutionally isolated youth and illegal gun availability are moderated by location in the Confederate South also remain untested inquiries. It might be expected, however, that the influence of either would be attenuated in areas affected by the Southern culture of honor—at least in terms of expressive crime. If youthful individuals are isolated from the socializing institutions that instill and reinforce Southern culture, then their influence on aggregate crime counts should be diminished. Likewise, the influence of illegal gun availability would likely be attenuated in cities where cultural adherence to violent reprisal is pervasive.

Extant macro-level strain and institutional anomie literature (Agnew 1999; Maume and Lee 2003; Messner and Rosenfeld 1997) suggests that structural disadvantage influences aggregate levels of expressive and instrumental crime by increasing levels of anomie and strain within the community. The relative prevalence of institutionally isolated youth has been associated with increases in a

variety of expressive and instrumental offenses (Thomas and Shihadeh 2013). An increase in the population of institutionally isolated youth may suggest higher levels of anomie and strain in the community (Agnew 1999; Maume and Lee 2003; Messner and Rosenfeld 1997). Whereas anomie and strain may enhance the collective will to offend, increased levels of illegal gun availability may provide the means (Sheley and Wright 1993; Stolzenberg and D'Alessio 2000; Wright and Rossi 1986). Thus, it may be expected that the effects of structural disadvantage on gun crime counts, expressive and instrumental, will be amplified in cities where illegal gun availability and institutionally isolated youth are more prevalent. The relative influence of institutionally isolated youth may be similarly affected by elevated levels of illegal gun availability. Thus, the following moderated relationships are hypothesized:

Hypothesis 3: The effect of structural disadvantage on expressive gun crime counts will be attenuated in the Confederate South, but this relationship will not extend to instrumental gun crime counts.

Hypothesis 4: The effect of structural disadvantage on gun crime counts, expressive and instrumental, will be amplified in cities maintaining higher rates of illegal gun availability and percentage of institutionally isolated youth.

Hypothesis 5: The influence of institutionally isolated youth will be attenuated in the Confederate South, but this effect will be limited to expressive gun crime counts.

Hypothesis 6: The influence of institutionally isolated youth on gun crime counts, expressive and instrumental, will be amplified in cities maintaining elevated rates of illegal gun availability.

Hypothesis 7: The influence of illegal gun availability on expressive gun crime counts will be attenuated in the Confederate South, but this effect will not extend to instrumental gun crime counts.

Data, measures, and methods

The current study examines the influence of the Southern culture of honor, structural disadvantage, institutionally isolated youth, and illegal gun availability on city-level gun violence counts. To accomplish this, we draw on data on incidents of expressive and instrumental gun violence, as well as demographic, social, and economic characteristics for U.S. cities with at least 50,000 residents from 2008–2012. Specifically, data from the NIBRS Incident Extract for the years 2009, 2010, and 2011, and the 2008–2012 ACS city-level summary file are merged and analyzed. Our final sample includes 189 medium to large cities that meet the population cutoff and for which data are available in both NIBRS and the ACS. Below, we describe the creation of city-level measures included in the current study.

Outcome measures

The present study examines a total of four outcome measures: expressive gun crime, instrumental gun crime, total expressive crime, and total instrumental crime. To guard against the potential influence of year-to-year fluctuations, the outcome measures are calculated using 3-year figures of single offense/single victim/single offender homicides, aggravated assaults, and robberies involving the use of a firearm. The decision to limit analyses to single victim/single offender cases allows the present study to avoid the influence of mass public shootings, which likely maintain covariates distinct from those associated with everyday gun violence (Kleck 2001b). Similarly, by including only those incidents that involve a single

offense (i.e., aggravated assault *or* robbery), we are able to discern differences and similarities in the structural covariates of expressive versus instrumental gun offenses. Homicides and aggravated assaults are aggregated and treated as a proxy of expressive gun crime, while the robbery count is treated as a proxy of instrumental gun offenses. Toward this end, the utility of the NIBRS is key because it provides incident-level information not readily available in the Uniform Crime Report (i.e., whether a firearm was involved in the commission of the included offenses) (Akiyama and Nolan 1999; Barnett-Ryan and Swanson 2008). Two supplementary outcome measures are also utilized. The first is an aggregate of all reported homicides and aggravated assaults, while the second is an aggregate of all reported robberies. These measures, which include gun and non-gun offenses, are incorporated in accordance with the assertion of Kleck (2015) that such an approach overcomes the argument that the relationship between gun availability and gun crime may be somewhat tautological.

Although the NIBRS itself suffers the well-known criticisms associated with official data, the offenses examined in the present study are less vulnerable to the differential reporting practices associated with non-violent offenses (Faggiani and McLaughlin 1999; Inciardi 1978; Steffensmeier and Haynie 2000). Moreover, repeated testing of these offenses has established their validity as indicators of gun violence at the macro-level (Kleck 2015). As can be seen in Table 1, there is considerable variation between cities in the range of each of the outcome measures. This is further demonstrated by the fact that the standard deviation of each is considerably higher than the mean.

Primary explanatory variables

The primary goals of this research are to explore the direct effects of the Southern culture of honor, institutionally isolated youth, illegal gun availability, and structural disadvantage on gun crime. To examine the influence of Southern culture, we identify the 11 original Confederate states and employ a dichotomous indicator (1 = South; 0 = non-South). This operationalization has been established in previous literature and is an (e.g., Lee et al. 2008; Thomas and Shihadeh 2013) appropriate methodological approach because it distinguishes the region in which the Southern culture of honor is most likely to remain entrenched—the Confederate South.

Table 1. City-level aggregate descriptive statistics ($N = 189$).

	M	SD
Pop. size	129,231	130,114
Pop(Ln)	11.516	.618
Gini Index	.450	.044
Hispanic (%)	12.337	10.631
Foreign born (%)	10.749	7.549
Res. stability	.003	.911
Own home (%)	59.148	11.425
Same house (%)	80.290	6.163
Isol. youth (%)	3.029	1.541
Pop 15–24 (%)	16.099	5.596
Structural disadvantage	-.014	.794
FHH (%)	28.368	12.138
Poverty (%)	16.530	7.283
Unemploy. (%)	6.023	2.210
Black (%)	14.416	15.957
Low. educ. (%)	11.062	5.970
Vac. homes (%)	9.002	4.218
South	.318	.467
Illegal gun availability	55.499	45.909
Exp. gun crime	164.466	543.453
Exp. crime	798.455	1759.394
Gun robbery	123.778	383.312
Robbery	336.519	844.404

Institutionally isolated youth are operationalized as the percentage of individuals between the ages of 15 and 24 who were simultaneously not in school, employed, or in the labor force (Thomas and Shihadeh 2013). In accordance with the approach adopted by Stolzenberg and D'Alessio (2000), illegal gun availability is operationalized as the rate of incidents (per 100,000 residents) reported to police in which a firearm was stolen. Within the extant literature, structural disadvantage has exhibited consistent influence over violent offenses, including those involving firearms. To examine the effects of this broad concept, multiple city-level measures drawn from the 5-year (2008–2012) estimates provided by the ACS are included in the analyses. These include city-level measures of poverty, unemployment, female-headed households with children, vacant housing, residents who have failed to successfully graduate from high school, and percentage of African-American residents. Each is common to macro-level research across a variety of theoretical perspectives, due to their strong and consistent relationships with violent offending (Agnew 1999; Bursik 1988; Bursik and Grasmick 1993; Sampson and Groves 1989). Specific to macro-level strain, Agnew (1999) argues that these factors create social cleavages and increase strain within the community—resulting in exacerbated levels of anger and crime. Macro-level research has consistently demonstrated the tendency of the relative prevalence of African-American residents to be excessively correlated with aggregate measures of resource disadvantage (Beckett et al. 2005; Ousey and Lee 2002); a finding that is replicated in this research. Preliminary analyses suggest potential multicollinearity among the aggregate measures of structural disadvantage. Subsequent factor analysis using oblique rotation indicates these measures represent a single latent construct with an eigen-value in excess of 1. Each of the aggregate measures of economic deprivation, as well as the percentage of African-American residents, converge on a single dimension with all factor loadings in excess of .66. We therefore combine these measures into a summary structural disadvantage index ($\alpha = .81$) constructed as an average of standardized values for the included variables.

Control variables

Several control measures drawn from the five-year (2008–2012) ACS estimates are also included in the analyses that follow. These include the total population size, Gini index of income inequality, percentage of individuals between the ages of 15 and 24, percentage of ethnic Hispanic residents, percentage of foreign-born residents, percentage of homes owned, and percentage of individuals who lived in the same house 12 months prior. Each was selected based on its theoretical and empirical relevance. Descriptive statistics for each are provided in Table 1. We account for scale of place with the total population size converted to its natural logarithm. The use of the Gini index controls for variation among cities in terms of income inequality, which has been associated with increases in aggregate violent crime (e.g., Blau & Blau 1982). Values approaching 1 would indicate elevated levels of income inequality (i.e., communities in which the majority of wealth is maintained by a small segment of the population).

While the proportion of youthful individuals isolated from socializing institutions is treated as an explanatory variable, age structure is employed as a control and operationalized as the percentage of individuals between the ages of 15 and 24. As was discussed, recent studies have reported inverse relationships between this demographic and aggregate crime, particularly gun offenses (Burgason et al. 2014; Krivo and Peterson 2000; Lee et al. 2008; 2009; Wooldredge and Thistlewaite 2003). The proportion of Hispanic and foreign-born residents, percentage of homes owned, and percentage of individuals who lived in the same home 12 months prior are also culled from the ACS estimates and serve as proxies for ethnic heterogeneity and residential instability. While these concepts are traditionally associated with social disorganization theory (Shaw and McKay 1942), Agnew (1999) argues that within the context of macro-level strain they create social cleavages, reduce the ability of communities to maintain informal social controls, and increase levels of strain and crime. As was the case with measures of structural disadvantage, preliminary analysis indicates potential multicollinearity between the percentage of homes owned and proportion of residents who lived in the same

home 12 months prior. An obliquely rotated factor analysis reveals that these measures represent a single latent construct with an eigen-value in excess of one. Each of the measures converge on a single dimension with all factor loadings above .91. We therefore retain these measures in an additive residential stability index ($\alpha = .71$) constructed as an average of standardized values for the included variables. Collinearity diagnostics performed using ordinary least squares (OLS) regression models provide no evidence of excessive multicollinearity between the final independent measures, as all variance inflation factors are less than 4, which has been deemed an acceptable standard in criminological research (Allison 1999).

Interaction terms

In addition to examining main effects, we also explore the influence of six interaction terms. As was discussed in the review of the literature, the influence of structural disadvantage on urban homicide (Messner 1983a) and rural, white homicide (Lee et al. 2008) has been demonstrated to vary by region. The present study examines whether the same attenuation effect extends to gun-specific forms of violence in medium to large cities. Adopting the approach of Messner (1983a) and Lee et al. (2008), we develop an interaction term by multiplying the dichotomous measure of region by the structural disadvantage index. The dichotomous measure of region is used in two additional interaction terms. The first is used to determine if the influence of illegal gun availability varies by region, while the second allows for determination of whether the influence of institutionally isolated youth is amplified or attenuated depending on location in the Confederate South. We also develop a multiplicative term between measures of institutionally isolated youth and illegal gun availability to determine if the influence of illegal gun availability on crimes involving the use of firearms varies by the percentage of institutionally isolated youth in the community. The fifth and sixth interaction terms examine whether the influence of structural disadvantage varies by the rate of illegal gun availability and percentage of institutionally isolated youth, respectively. In each case, continuous variables are mean centered prior to their inclusion in the multiplicative term.

Analytical technique

The use of count data requires a Poisson-based estimator to predict variation in gun violence across the sample cities. This approach has been popularly adopted in macro-level criminological research involving count data (Osgood 2000; Osgood and Chambers 2000). A standard Poisson model assumes equidispersion between the mean and variance of the outcome measure. Crime data, however, frequently exhibit overdispersion whereby the variance of the outcome measure exceeds its mean. Preliminary analyses indicate that each of the outcome measures is overdispersed, rendering the use of standard Poisson models inappropriate. Specifically, a post-Poisson goodness of fit test suggested the need for an alternative Poisson-based estimator that allowed introduction of an error term (Long and Freese 2006). A negative binomial estimator is, therefore, used to predict variation in counts of each of the outcome measures across cities with the independent variables previously discussed and the logged population size specified as the offset variable. Robust standard errors are also used to allay concerns of potential non-independence in city-level data.

Results

Direct effects gleaned from the negative binomial regression analyses for each of the outcome measures are displayed in Table 2. In Model 1, we examine the structural covariates of expressive gun crime. Hypothesis 1 expressed the expectation that structural disadvantage, illegal gun availability, and percentage of institutionally isolated youth would each be positively associated with counts of expressive and instrumental gun crime. Consistent with Hypothesis 1, structural disadvantage and illegal gun availability each share a statistically significant, positive association with expressive and instrumental

Table 2. Negative binomial regression analyses predicting gun use counts (direct effects) ($N = 189$).

	Model 1	Model 2	Model 3	Model 4
	Exp. gun crime	Expressive crime	Gun robbery	Robbery_
Constant	-8.449*** (.713)	-6.571*** (.600)	-7.354*** (.873)	-7.146*** (.721)
Foreign born (%)	.004 (.007)	.004 (.006)	.026*** (.008)	.020** (.007)
Hispanic (%)	.007† (.004)	-.004 (.004)	-.015** (.006)	-.006 (.005)
Pop. 15–24 (%)	-.014 (.014)	.002 (.012)	-.028† (.014)	-.040*** (.011)
Isolated youth (%)	.045 (.038)	.108** (.040)	-.032 (.055)	-.003 (.044)
Gini Index	.592 (1.360)	1.575 (1.152)	-1.245 (1.793)	1.988 (1.434)
Structural Disadvantage	.792*** (.095)	.447*** (.074)	1.202*** (.110)	.920*** (.084)
Residential Stability	.073 (.086)	-.093 (.070)	-.110 (.101)	-.226 (.084)
South	.102 (.120)	-.073 (.089)	.027 (.146)	-.292** (.112)
Illegal Gun Availability	.010*** (.002)	.002† (.001)	.006*** (.002)	.003* (.001)

Unstandardized coefficients with robust standard errors in parentheses.

† $p \leq .10$; * $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$.

gun crime counts. Specifically, each standard deviation increase in the structural disadvantage index is associated with an 87.4% increase in the expressive gun crime count, while each standard deviation increase (45.909) in the rate of illegal gun availability is associated with a 56.6% increase in expressive gun crime count.¹ The relationship between the percentage of institutionally isolated youth and expressive gun crime, although positive, fails to achieve statistical significance; a finding that conflicts with Hypothesis 1. Similarly, location in the Confederate South shares a null relationship with expressive gun crime. This finding is inconsistent with Hypothesis 2, and similar to Messner's (1983a) findings concerning urban violence. Of the control variables, the percentage of Hispanic residents shares a marginally significant, positive relationship with expressive gun crime counts; with each standard deviation increase (10.631%) in the size of this population predicting a 7.9% increase in expressive gun crime. In Model 2, the expressive gun crime outcome measure is replaced with the broader dependent variable comprised of all reported homicides and aggravated assaults rather than only those involving the use of a firearm.

The influence of structural disadvantage and illegal gun availability are relatively robust to this substitution; though the latter is reduced to marginal statistical significance. The influence of the percentage of Hispanic residents is also reduced to statistical non-significance, indicating that it is specific to expressive crimes involving the use of a firearm. Interestingly, although the percentage of institutionally isolated individuals fails to exert statistically significant influence over expressive gun crime, each standard deviation increase (1.541%) in this demographic is associated with an 18.1% increase in overall expressive crime counts.

The results of Model 3 demonstrate that structural disadvantage and illegal gun availability each retain their influence as covariates of the instrumental gun crime of robbery. Each standard deviation increase in the structural disadvantage index is related to a 159.7% increase in gun robbery counts, while each standard deviation increase in illegal gun availability is associated with a 32.7% increase in this outcome measure. These findings provide an additional layer of support for Hypothesis 1. As was the case with expressive gun crime, however, the percentage of institutionally isolated youth is not a statistically

¹Percent change interpretations are obtained by multiplying a raw coefficient by the standard deviation of that predictor, exponentiating the product, subtracting 1, and multiplying the result by 100 ($(\exp(B_1 * SD_1) - 1) * 100$).

Table 3. Negative binomial regression analyses predicting gun use counts (moderated effects) ($N = 189$).

	Models 5–10	Models 11–16	Models 17–22	Models 23–28
	Exp. gun crime	Expressive crime	Gun robbery	Robbery
Structural disadvantage \times South	-.315* (.126)	.102 (.148)	.247 (.235)	.139 (.181)
Structural disadvantage \times Illegal gun availability	-.006*** (.002)	-.003** (.001)	-.006*** (.002)	-.006*** (.001)
Structural disadvantage \times Isolated youth	-.075* (.030)	-.035 (.023)	-.130*** (.030)	-.118*** (.027)
Isolated youth \times Illegal gun availability	-.001* (.000)	.000 (.000)	-.001 (.001)	-.001 (.001)
Isolated youth \times South	-.123† (.066)	.065 (.069)	-.031 (.105)	.042 (.085)
Illegal gun \times South	-.002 (.002)	.007** (.002)	.008** (.003)	.005* (.002)

Unstandardized coefficients with robust standard errors in parentheses.

† $p \leq .10$; * $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$

significant covariate of instrumental gun crime. Although it was anticipated that location in the Confederate South would be negatively related with instrumental gun crime, we find a null relationship; a result inconsistent with Hypothesis 2. Several controls, however, maintain statistically significant relationships with instrumental gun crime. Once again, the size of the Hispanic population maintains a direct association with the dependent variable. Interestingly, while the relative size of the Hispanic population is positively related with expressive gun crime, it shares a statistically significant negative relationship with instrumental gun crime. Specifically, each standard deviation in the size of the Hispanic population is associated with a 14.8% decrease in robberies involving the use of a firearm. Similarly, a standard deviation increase in the percentage of individuals between the age of 15 and 24 is associated with a 14.4% decrease in instrumental gun crime counts. Finally, each standard deviation increase in the percentage of foreign born residents (7.549) is related with a 22.5% increase in counts of robberies involving the use of firearm. In Model 4, the measure of all robberies is substituted for those involving the use of a firearm. The statistical significance of structural disadvantage and illegal gun availability are robust to this substitution. Similarly, the effects of size of the populations that are foreign born and between the ages of 15 and 24 retain their statistical significance in this supplementary analysis. While not a statistically significant covariate of gun-specific robbery, location in the Confederate South is associated with a 25.3% decrease in the overall robbery count. Having described each of the direct relationships explored in the primary and supplementary analyses, the discussion now moves to the modeling of the six interactive effects, which are displayed in Table 3.²

Consistent with Hypothesis 3, as well as the work of Lee et al. (2008), the influence of structural disadvantage on expressive gun crime is attenuated in the Confederate South. Furthermore, this relationship is not observed in terms of a moderated effect on instrumental gun crime counts. As expressed in Hypothesis 4, it was anticipated that the influence of structural disadvantage would be amplified in cities maintaining elevated levels of illegal gun availability and institutionally isolated youth. Contrary to this expectation, the effect of structural disadvantage on expressive gun crime is diminished in cities maintaining higher rates of illegal gun availability and percentage of institutionally isolated youth. The same attenuating effect is observed in terms of gun robbery counts—prompting rejection of Hypothesis 4. Interestingly, while increased illegal gun availability moderates the influence of structural disadvantage across outcome measures, the same consistency is not observed in terms of the interaction effect between structural disadvantage and institutionally isolated youth. Among expressive crimes, moderation of the effect of structural disadvantage by increases in the percentage of institutionally isolated youth is limited to those offenses involving the use of a firearm. As can be seen in Table 3, a higher degree of consistency is observed among robbery

²Direct effects, which have already been discussed, are omitted for display purposes. While modeling moderated effects, a single cross-product interaction term was included in each statistical model.

counts. For both instrumental outcome measures, the influence of structural disadvantage is attenuated in cities maintaining larger percentages of institutionally isolated youth.

It was hypothesized that the influence of the percentage of institutionally isolated youth would be attenuated in cities located in the Confederate South, but this effect would be limited to expressive gun crime. Thus, Hypothesis 5 is grounded in the assumption that the independent influence of institutionally isolated youth is diminished within a larger culture that embraces the use of violence as a self-help social control. Consistent with this expectation, the direct effect of the percentage of institutionally isolated youth is attenuated in cities located in the Confederate South. As was anticipated, this phenomenon does not extend to counts of robberies involving the use of a firearm. It was also anticipated that the relative influence of the percentage of institutionally isolated youth on gun crime counts, both expressive and instrumental, would be amplified in cities maintaining elevated rates of illegal gun availability. Contrary to this expectation, a small but statistically significant attenuation effect is observed while modeling expressive gun crime counts. Specifically, in cities maintaining higher rates of illegal gun availability, the influence of the percentage of institutionally isolated youth on expressive gun crime counts is diminished. The effect of this interaction term on the remaining outcome measures is null; prompting rejection of Hypothesis 6. Finally, as expressed in Hypothesis 7, it was anticipated that the effect illegal gun availability on expressive gun offenses would be attenuated in the Confederate South while the effect of this interaction term on instrumental offenses would be null. This expectation was derived from the fact that the Southern culture of honor encourages the use of violence in certain expressive crimes, but does not condone the use of violence toward instrumental ends. Inconsistent with this hypothesis, the effect of illegal gun availability on gun robberies, as well as the general robbery measure, is more pronounced in cities located in the Confederate South. Although the effect of illegal gun availability on general expressive crime is also amplified in the Confederate South, this interaction is null in terms of its effect on expressive crimes involving the use of a firearm.

Discussion and conclusion

The purpose of the present study was twofold. The primary goal was to examine the direct influence of the Southern culture of honor, structural disadvantage, institutionally isolated youth, and illegal gun availability on city-level gun violence counts. The second goal was to examine the moderated relationships between each of these measures and gun crime counts. The findings discussed here represent a number of substantive contributions to the growing body of extant literature on gun crime. First, we demonstrate the salience of illegal gun availability as a covariate of gun crime beyond its limited application in South Carolina counties (Stolzenberg and D'Alessio 2000) in a sample of medium to large U.S. cities. This finding provides a layer of macro-level support to the works of Sheley and Wright (1993) and Wright and Rossi (1986), which suggested the importance of the relationship between stolen firearms and crime at the micro-level. Our findings also offer affirmation to Cook's (1979) argument that illegal gun availability may exert its own distinct influence on violent offending at the macro level. Indeed, the consistent positive and significant influence of illegal gun availability across all outcome measures demonstrates the robust nature of our findings.

Second, the consideration of multiple interaction terms provided an opportunity to extend our knowledge of gun crime beyond its direct relationships to moderated effects. The moderating effects of illegal gun availability and percentage of institutionally isolated youth on structural disadvantage are demonstrative of the need for such exploration. The direct, positive influence of structural disadvantage on crime, particularly gun offenses, has long been a mainstay in criminological literature. That the influence of structural disadvantage on gun crime, expressive and instrumental, appears diminished in communities maintaining higher levels of illegal gun availability and populations of institutionally isolated youth offers preliminary evidence to support reconsideration of the nature of this relationship. This assertion is consistent with studies reporting an inverse relationship

between structural disadvantage and crime; particularly the works of Krivo and Peterson (1996, 2000) and McNulty (2001). Their findings led these authors to conclude that in the most structurally disadvantaged neighborhoods, the influence of economic deprivation is diminished and other unidentified factors become more predictive of crime.

Third, our findings suggest that the direct influence of institutionally isolated youth, as first noted by Thomas and Shihadeh (2013), may not extend to gun-specific forms of violent offending. It is possible, however, that this result is an artifact of limiting analyses to single-victim/single-offender crimes, especially if one considers the frequency of co-offending among adolescents and young adults. The statistically significant inverse relationships between age structure and gun-specific and general robbery measures are consistent with those reported in recent literature (Burgason et al. 2014; Krivo and Peterson 2000; Lee et al. 2008, 2009; Wooldredge and Thistlewaite 2003). Considered in tandem with the disparate influence of age structure and percentage of institutionally isolated youth on each of the outcome measures, our findings offer support to the assertion advanced by Thomas and Shihadeh (2013) that these measures are conceptually and empirically distinct.

Our findings also yield a certain level of support for both the structural and cultural explanations of violent offending, especially gun crime. Structural disadvantage maintained a strong, positive relationship with each of the outcome measures. In the context of macro-level strain (Agnew 1999) and Institutional Anomie Theory (Maume and Lee 2003; Messner and Rosenfeld 1997), structural disadvantage results in increased marginalization from traditional goals and the means to achieve them; and, in turn, increases in city-level expressive and instrumental crime. The findings presented here suggest that this theoretical explanation extends to gun-specific offenses. That the direct influence of structural disadvantage and percentage of institutionally isolated youth on expressive gun crime was diminished in the Confederate South, however, suggests that the influence of the Southern culture of honor remains relevant to the study of violent crime. The direct negative relationship between location in Confederate South and instrumental gun crime serves as another point of discussion. Recent literature has frequently confined examination of the influence of the Southern culture of honor to expressive offenses, particularly homicide (e.g., Lee et al. 2007; Thomas and Shihadeh 2013). While this study found no statistically significant direct relationships between location in the Confederate South and gun-specific crime counts, the regional variation in general robbery counts suggests the need for additional research that may clarify the nature of this relationship. Indeed, the results of the present study suggest the possibility that the Southern culture of honor may actively discourage robbery rather than simply fail to condone it. Such a possibility may help to explain the nature of the interaction between illegal gun availability and location in the Confederate South on instrumental crime counts. Rather than the expected null effect, the influence of illegal gun availability on each of the instrumental outcome measures was amplified in the Confederate South. This may suggest that the influence of illegal gun availability on instrumental crime is more acute in the Confederate South because the regional culture rejects the use of violence toward instrumental ends.

While this study does make several contributions to the extant literature, it is also affected by certain noteworthy limitations. First, the cross-sectional nature of the data does not allow for inference of causality; rather, interpretation of results is limited to covariance. That analyses are limited to medium and large cities also warrants some caution in the interpretation of the results. While Messner's (1983a) findings suggest that the Southern culture of honor may influence urban violence, other studies suggest that the explanatory power of the Southern culture of honor hypothesis may be limited to violence among rural whites; particularly those incidents stemming from arguments between individuals who are familiar with one another (Gastil 1978; Lee et al. 2007; Smith and Parker 1980). Third, we must acknowledge the limitations of our operationalization of the concept "illegal gun availability." While examination of the relationship between stolen firearms and gun crime is of critical importance, the inability to capture the extent of illegal transfer of firearms between private individuals likely underestimates the effect of illegal gun availability on gun crime.

Fourth, the use of a dichotomous measure of Confederate South as a proxy for the Southern culture of honor may also pose certain methodological concerns. The works of Egerton (1974), McCall et al. (1992),

and Sowell (2005) suggest that the Southern culture of honor has diffused to areas outside of the Confederate South. Subsequent studies have attempted to explore this possibility through the use of a variety of proxy measures, including the percentage of individuals born in the census South, percentage of evangelical protestants, and percentage of residents claiming Scots-Irish ancestry (Berthelot et al. 2008; Huff-Corzine, Corzine, and Moore 1986; Lee et al. 2007); although the use of each presents its own limitations. Lee et al. (2007), for example, note that reliance on the census definition of “South” is problematic because it does not capture the geographic boundaries of Southern culture. Moreover, Reed (1982) argued that an individual’s place of birth matters little in comparison to where he or she is socialized—an argument that may be extended to one’s ancestry. In support of this perspective, Brown and Bankston (2006), determined early socialization and cultural transmission by considering the state in which individuals spent the first 10 years of life. Unfortunately, the present study cannot replicate this level of specificity due to the limitations of the ACS.

Fifth, the present study lacks a measure of legal gun availability. Although extant literature has failed to establish a consistent direct relationship between legal gun availability and gun crime, none could be located that have considered its moderating effect. The inclusion of legal and illegal gun availability measures in separate interaction terms would likely offer several interesting points of comparison while providing a more comprehensive understanding of gun violence. Kleck (2004, 2015) notes that the sole valid proxy of legal gun availability is the aggregate of suicides committed by firearm³—a statistic that is publicly available at the county level or higher. Finally, while the present study adds substantively to the body of knowledge concerning gun violence, it does not consider the effects of individual or situational characteristics that may exert their own unique influence on gun crime (e.g., Burgason et al. 2014; Burgason, Thomas, Berthelot, and Burkey 2014). In their totality, the shortcomings of the present study move the authors to suggest that future research engage the use of race-specific, multilevel models of county-level gun crimes that are further delineated by rural and urban context. Such an approach may provide researchers with answers to long-standing questions concerning racial disparities in levels of gun violence (Blau and Blau 1982; Krivo and Peterson 2000; Parker 2001; Peterson and Krivo 1993, 2005). Similarly, extension of this methodology to rural communities will allow for effective determination of whether the relationships reported in this study maintain salience or are confined to more populated areas (Lee 2008; Lee et al. 2008).

The same methodology may be used toward providing explanations for unexpected findings encountered in this study. The relative prevalence of foreign-born and Hispanic residents were treated as proxies of ethnic heterogeneity. While this concept is traditionally associated with social disorganization theory, Agnew (1999) argued that it is also fosters increased social cleavages and strain within the community. In accordance with macro-level strain, it would be expected that increases in the relative prevalence of Hispanic and foreign-born residents would be associated with increases in each of the outcome measures included in the present study. Our findings, however, do not offer consistent support for this assumption. Indeed, the percentage of Hispanic residents shared a positive relationship with expressive gun crime, but a negative association with instrumental gun crime. Similarly, the percentage of foreign-born shared a null relationship with expressive crime measures, but statistically significant positive relationships with both instrumental crime measures. While the methodology adopted by the present study does not allow for conclusions concerning the involvement of ethnic Hispanics and foreign-born residents in gun crime, either as perpetrators or victims, our findings are suggestive of the need for further investigation involving the use of multilevel models; which may assist in clarifying the relationship between these populations and gun violence.

Limitations of the present study withstanding, our findings carry with them certain policy implications that merit further discussion. Illegal gun availability, measured here as an aggregate of stolen guns,

³The aggregate number of suicides by firearm is the only measure strongly correlated with measures of household gun ownership in the General Social Survey, which is limited in terms of distribution.

maintained significant positive associations with each of the outcome measures, while moderating the effects of several other explanatory variables. In their totality, these findings suggest the salience of illegal gun availability as a covariate of violent crime; particularly those offenses involving the use of a firearm. As was discussed, gun control measures have typically targeted legal gun availability via purchasing restrictions or gun bans. Evidence that either has been successful in reducing gun crime is inconsistent and both have been met with strong resistance from advocates of the Second Amendment. Such measures are also frequently undertaken absent consideration of the structural covariates of gun crime. In contrast, Stolzenberg and D'Alessio (2000) proposed that educating gun owners about the importance of properly securing their firearms may be a more effective approach. The findings presented here suggest an alternative solution focused on preventing the theft of firearms and, in turn, gun crime—an example being federal tax incentives for the purchase of mounted gun safes. The U.S. government has long provided tax incentives to home and business owners in exchange for the purchase and installation of energy efficient materials. One can surmise that the cost of providing similar incentives for the purchase of approved mounted guns safes for installation in homes and vehicles would be comparable. Such an incentive may prove highly popular among gun owners, ensure that their firearms are secured, and in turn reduce the frequency of gun violence. The costs of such an approach, both financial and social, pale in comparison to those associated with gun crimes and may not meet with the level of resistance encountered by more traditional gun control measures. Some may perceive that such a strategy detracts from addressing the “larger” problems of structural disadvantage and cultural influence. We argue, however, that affecting meaningful change in levels of structural disadvantage and cultural influence is a process not measured in months or years but decades and generations. Moreover, identification and implementation of viable solutions to either problem has proven difficult. *Illegal* gun control may prove less tedious, in comparison, and catalyze improvements to peripheral social problems. Criminologists, irrespective of their theoretical inclinations, can generally agree that businesses are unlikely to establish or thrive in communities maintaining high levels of gun violence. Policies designed to reduce the number of stolen firearms in a community may, therefore, serve to reduce gun crime both directly and indirectly through decreases in illegal gun availability and improvements to the economic standing of communities.

Notes on contributors

RICK DIERENFELDT is an Assistant Professor of administration of justice at Penn State Wilkes-Barre. His research interests include the relationship between community characteristics, race, and crime, as well as policy evaluation in the fields of policing and corrections. His most recent works have been published in the *American Journal of Criminal Justice*, *Criminal Justice Policy Review*, *International Journal of Offender Therapy and Comparative Criminology*, and *Security Journal*.

TIMOTHY C. BROWN is an Assistant Professor in the Department of Criminal Justice at the University of Arkansas at Little Rock. He received his Ph.D. of Sociology with a concentration in Criminology from Louisiana State University in 2010. His research utilizes both sociological as well as criminological theory in his examination of crime and the criminal justice system. His primary research interests include corrections, deviance, ecological models of crime focusing on social capital, and qualitative research methodology. One of Tim's primary areas of research and intellectual interest is the trend of mass incarceration in the United States. The goal of this research is to investigate the often neglected detrimental impacts of mass incarceration. His research has been published in such scholarly journals as *Deviant Behavior*, *Homicide Studies*, *The Social Science Journal*, and *Sociological Spectrum*.

ROCIO A. ROLES, M.A., is a doctoral candidate and graduate assistant in the Department of Criminal Justice at the University of Arkansas at Little Rock. Her areas of research interest include juvenile justice and policy, community policing, and race and ethnicity. Her most recent work is published in the *American Journal of Criminal Justice*.

References

Agnew, Robert. 1999. “A General Strain Theory of Community Differences in Crime Rates.” *Journal of Research in Crime and Delinquency* 36(2):123–155.

- Akiyama, Yoshio and James Nolan. 1999. "Methods for Understanding and Analyzing NIBRS Data." *Journal of Quantitative Criminology* 15(2):225–238.
- Allison, Paul D. 1999. *Multiple Regression: A Primer*. Thousand Oaks, CA: Pine Forge.
- Barnett-Ryan, Cynthia and Gregory Swanson. 2008. "The Role of State Programs in NIBRS Data Quality: A Case Study of Two States." *Journal of Contemporary Criminal Justice* 24(1):18–31.
- Beckett, Katherine, Kris Nyrop, Lori Pfingst, and Melissa Bowen. 2005. "Drug Use, Drug Possession Arrests, and the Question of Race: Lessons from Seattle" *Social Problems* 52(3):419–441.
- Berthelot, Emily R., Troy Blanchard, and Timothy C. Brown. 2008. "Scots-Irish Women and the Southern Culture of Violence: The Influence of Scots-Irish Females on High Rates of Southern Violence." *Southern Rural Sociology* 23(2):157–170.
- Blau, Judith R. and Peter M. Blau. 1982. "The Cost of Inequality: Metropolitan Structure and Violent Crime." *American Sociological Review* 47:114–129.
- Blumstein, Alfred. 1995. "Youth Violence, Guns, and the Illicit-Drug Industry." *Journal of Criminal Law and Criminology* 86:10–36.
- Brown, Timothy C. and William B. Bankston. 2006. "Some People Deserve Killin': An Individual-Level Test of the Southern Subculture of Violence Thesis." *International Journal of Crime, Criminal Law, and Law* 1(2):243–252.
- Burgason, Kyle A., Shaun A. Thomas, and Emily R. Berthelot. 2014. "The Nature of Violence: A Multilevel Analysis of Gun Use and Victim Injury in Violent Interpersonal Encounters." *Journal of Interpersonal Violence* 29(3):371–393.
- Burgason, Kyle A., Shaun A. Thomas, Emily R. Berthelot, and L. Chris Burkey. 2014. "Gats and Gashes: Street Culture and Distinctions in the Nature of Violence between Youth and Adult Offenders." *Deviant Behavior* 35:534–554.
- Bursik, Robert J. 1988. "Social Disorganization and Theories of Crime and Delinquency: Problems and Prospects." *Criminology* 26(4):519–552.
- Bursik, Robert J. and Harold G. Gasmick. 1993. *Neighborhoods and Crime: The Dimension of Effective Community Control*. New York: Lexington.
- Centers for Disease Control and Prevention (CDC). 2013. "Web-Based Injury Statistics Query and Reporting System." Retrieved June 28, 2015 (<http://www.cdc.gov/injury/wisqars/index.html>).
- Cerda, Magdalena, Steven F. Messner, Melissa Tracy, David Vlahov, Emily Goldmann, Kenneth J. Tardiff, and Sandro Galea. 2010. "Investigating the Effect of Social Changes on Age-Specific Gun Related Homicide Rates in New York City During the 1990s." *American Journal of Public Health* 100(6):1107–1115.
- Cloward, Richard A. and Lloyd E. Ohlin. 1960. *Delinquency and Opportunity: A Study of Delinquent Gangs*. New York: Free Press.
- Cohen, Albert K. 1955. *Delinquent Boys: The Culture of the Gang*. New York: Free Press.
- Cohen, Lawrence and Kenneth C. Land. 1987. "Age Structure and Crime: Symmetry vs. Asymmetry, and the Projection of Crime Rates through the 1990s." *American Sociological Review* 52(2):170–183.
- Cook, Philip J. 1979. "The Effect of Gun Availability on Robbery and Robbery Murder: A Cross-Section Study of Fifty Cities." *Policy Studies Review Annual* 3:743–781.
- Egerton, John. 1974. *The Americanization of Dixie: The Southernization of America*. New York: Harper's Magazine Press.
- Faggiani, Donald and Colleen McLaughlin. 1999. "Using National Incident-Based Reporting System Data for Strategic Crime Analysis." *Journal of Quantitative Criminology* 15(2): 181–191.
- Fox, James A. and Monica J. DeLateur. 2013. "Mass Shootings in America: Moving Beyond Newtown." *Homicide Studies* 18(1):125–145.
- Gastil, Raymond D. 1971. "Homicide and a Regional Culture of Violence." *American Sociological Review* 36:412–427.
- . 1978. "Comments." *Criminology* 16:60–65.
- Hackney, Sheldon. 1969. "Southern Violence." *The American Historical Review* 74:906–925.
- Hepburn, Lisa M. and David Hemenway. 2004. "Firearm Availability and Homicide: A Review of the Literature." *Aggression and Violent Behavior* 9(4):417–440.
- Huff-Corzine, Lin, Jay Corzine, and David Moore. 1986. "Southern Exposure: Deciphering the South's Influence on Homicide Rates." *Social Forces* 64:906–924.
- Inciardi, James A. 1978. "The Uniform Crime Reports: Some Considerations on Their Shortcomings and Utility." *Public Data Use* 6(6):3–16.
- Jang, Hyunseok, Rick Dierenfeldt, and Chang-Hun Lee. 2014. "Who Wants to Allow Concealed Weapons on the College Campus?" *Security Journal* 27(3):304–319.
- Kates, Don B. and Gary A. Mauser. 2007. "Would Banning Firearms Reduce Murder and Suicide? A Review of International and Some Domestic Evidence." *Harvard Journal of Law and Public Policy* 30(2):649–694.
- Kleck, Gary. 1997. *Targeting Guns*. New York: Aldine.
- . 2001a. "The Frequency of Defensive Gun Use." Pp. 213–284 in *Armed*, edited by G. Kleck and D. B. Kates. New York: Prometheus.
- . 2001b. "Impossible Policy Evaluations and Impossible Conclusions: A Comment on Koper and Roth." *Journal of Quantitative Criminology* 17(1):75–80.

- . 2004. "Measures of Gun Ownership Levels for Macro-Level Crime and Violence Research." *Journal of Research in Crime and Delinquency* 41(1):3–36.
- . 2015. "The Impact of Gun Ownership Rates on Crime Rates: A Methodological Review of the Evidence." *Journal of Criminal Justice* 43:40–48.
- Kleck, Gary and Miriam A. DeLone. 1993. "Victim Resistance and Offender Weapon Effects in Robbery." *Journal of Quantitative Criminology* 9(1):55–81.
- Kleck, Gary and Michael Hogan. 1999. "National Case-Control Study of Homicide Offending and Gun Ownership." *Social Problems* 46(2):275–293.
- Kleck, Gary and Britt Patterson. 1993. "The Impact of Gun Control and Gun Ownership Levels on Violence Rates." *Journal of Quantitative Criminology* 9:249–287.
- Koper, Christopher S. and Jeffrey A. Roth. 2001a. "The Impact of the 1994 Federal Assault Weapon Ban on Gun Violence Outcomes: An Assessment of Multiple Outcome Measures and Some Lessons for Policy." *Journal of Quantitative Criminology* 17(1):33–74.
- Koper, Christopher S. and Jeffrey A. Roth. 2001b. "A Priori Assertions Versus Empirical Inquiry: A Reply to Kleck." *Journal of Quantitative Criminology* 17(1):81–88.
- Kovandzic, Tomislav V., Mark E. Schaffer, and Gary Kleck. 2013. "Estimating the Causal Effect of Gun Prevalence on Homicide Rates: A Local Average Treatment Effect Approach." *Journal of Quantitative Criminology* 29(4):477–541.
- Krivo, Lauren J. and Ruth D. Peterson. 1996. "Extremely Disadvantaged Neighborhoods and Urban Crime." *Social Forces* 75:619–650.
- . 2000. "The Structural Context of Homicide: Accounting for Racial Differences in Process." *American Sociological Review* 65:547–559.
- Krohn, Marvin D., Alan J. Lizotte, and Cynthia M. Perez. 1997. "The Interrelationship between Substance Use and Precocious Transitions to Adult Statuses." *Journal of Health and Social Behavior* 38(1):87–103.
- Laub, John H. and Robert J. Sampson. 1993. "Turning Points in the Life Course: Why Change Matters to the Study of Crime." *Criminology* 31:301–325.
- Lee, Matthew R. 2008. "Civic Community in the Hinterland: Toward a Theory of Rural Social Structure and Violence." *Criminology* 46(2):447–478.
- Lee, Matthew R., William B. Bankston, Timothy C. Hayes, and Shaun A. Thomas. 2007. "Revisiting the Southern Culture of Violence." *The Sociological Quarterly* 48:253–275.
- Lee, Matthew R., Timothy C. Hayes, and Shaun A. Thomas. 2008. "Regional Variation in the Effect of Structural Factors on Homicide in Rural Areas." *The Social Science Journal* 45:76–94.
- Lee, Matthew R., Shaun A. Thomas, and Graham C. Ousey. 2009. "Southern Culture and Homicide: Examining the Cracker Culture/Black Rednecks Thesis." *Deviant Behavior* 31(1):60–96.
- Loftin, Colin and Robert H. Hill. 1974. "Regional Subculture and Homicide: An Examination of the Gastil-Hackney Thesis." *American Sociological Review* 39:714–724.
- Long, J. Scott and Jeremy Freese. 2006. *Regression Models for Categorical Dependent Variables using STATA*. College Station, TX: Stata Press.
- Lott, John R. 2013. *More Guns, Less Crime: Understanding Crime and Gun Control Laws*. Chicago, IL: University of Chicago Press.
- Maume, Michael O. and Matthew R. Lee. 2003. "Social Institutions and Violence: A Sub-National Test of Institutional Anomie Theory." *Criminology* 41(4):1137–1172.
- McCall, Patricia L., Kenneth C. Land, and Lawrence E. Cohen. 1992. "Violent Criminal Behavior: Is there a General and Continuing Influence of the South?" *Social Science Research* 21(3):286–310.
- McCall, Patricia L., Kenneth C. Land, and Karen F. Parker. 2010. "An Empirical Assessment of What We Know About Structural Covariates of Homicide Rates: A Return to a Classic 20 Years Later." *Homicide Studies* 14:219–243.
- McCall, Patricia L., Kenneth C. Land, Cindy B. Dollar, and Karen F. Parker. 2013. "The Age Structure-Crime Rate Relationship: Solving a Long-Standing Puzzle." *Journal of Quantitative Criminology* 29(2):167–190.
- McDowall, David. 1986. "Gun Availability and Robbery Rates: A Panel Study of Large U.S. Cities, 1974–1978." *Law and Policy* 8:135–148.
- . 1991. "Firearm Availability and Homicide Rates in Detroit, 1951–1986." *Social Forces* 69:1085–1101.
- McNulty, Thomas L. 2001. "Assessing the Race-Violence Relationship at the Macro Level: The Assumption of Racial Invariance and the Problem of Restricted Distributions." *Criminology* 39(2):467–490.
- McWhiney, Grady. 1989. *Cracker Culture: Celtic Ways in the Old South*. Tuscaloosa: University of Alabama Press.
- Merton, Robert K. 1938. "Social Structure and Anomie." *American Sociological Review* 3:672–682.
- Messner, Steven F. 1983a. "Regional Differences in the Economic Correlates of the Urban Homicide Rate." *Criminology* 21(4):477–488.
- . 1983b. "Regional and Racial Effects on the Urban Homicide Rate: The Subculture of Violence Revisited." *American Journal of Sociology* 88(5):997–1007.
- Messner, Steven F. and Richard Rosenfeld. 1997. *Crime and the American Dream*. Belmont, CA: Wadsworth.
- Moffitt, Terri E. 1993. "Adolescence-Limited and Life-Course-Persistent Antisocial Behavior: A Developmental Taxonomy." *Psychological Review* 100(4):674–701.

- Newton, George D. and Franklin E. Zimring. 1969. *Firearms and Violence in American Life: A Staff Report to the National Commission on the Causes and Prevention of Violence*. Washington, DC: U.S. Government Printing Office.
- Nisbett, Richard E. and Dov Cohen. 1996. *Culture of Honor: The Psychology of Violence in the South*. Boulder, CO: Westview Press.
- Osgood, D. Wayne. 2000. "Poisson-Based Regression Analysis of Aggregate Crime Rates." *Journal of Quantitative Criminology* 16(1):21-43.
- Osgood, D. Wayne and Jeff M. Chambers. 2000. "Social Disorganization Outside the Metropolis: An Analysis of Rural Youth Violence." *Criminology* 38(1):81-116.
- Ousey, Graham C. and Matthew R. Lee. 2002. "Examining the Conditional Nature of the Illicit Drug-Market Homicide Relationship: A Partial Test of the Theory of Contingent Causation." *Criminology* 40(1):73-102.
- Parker, Karen F. 2001. "A Move Toward Specificity: Examining Urban Disadvantage and Race-and Relationship-Specific Homicide Rates." *Journal of Quantitative Criminology* 17(1):89-110.
- Peterson, Ruth D. and Lauren J. Krivo. 1993. "Racial Segregation and Black Urban Homicide." *Social Forces* 71:1001-1026.
- Peterson, Ruth D. and Lauren J. Krivo. 2005. "Macrostructural Analysis of Race, Ethnicity, and Violent Crime: Recent Lessons and New Directions for Research." *Annual Review of Sociology* 31:331-356.
- Reed, John S. 1982. *One South: An Ethnic Approach to Regional Culture*. Baton Rouge: Louisiana State University Press.
- Sampson, Robert J. and W. Byron Groves. 1989. "Community Structure and Crime: Testing Social-Disorganization Theory." *American Journal of Sociology* 94(4):774-802.
- Sampson, Robert J. and John H. Laub. 1992. "Crime and Deviance in the Life Course." *Annual Review of Sociology* 18:63-84.
- Shaw, Clifford R. and Henry D. McKay. 1942. *Juvenile Delinquency and Urban Areas: A Study of Rates of Delinquency in Relation to Differential Characteristics of Local Communities in American Cities*. Chicago, IL: The University of Chicago Press.
- Smith, M. Dwayne and Robert N. Parker. 1980. "Type of Homicide and Variation in Regional Rates." *Social Forces* 59:136-147.
- Southwick, Lawrence. 2000. "Self-Defense with Guns: The Consequences." *Journal of Criminal Justice* 28(5):351-370.
- Sowell, Thomas. 2005. *Black Rednecks and White Liberals*. San Francisco, CA: Encounter Books.
- Spano, Richard. 2012. "First Time Gun Carrying and the Primary Prevention of Youth Gun Violence for African American Youth Living in Extreme Poverty." *Aggression and Violent Behavior* 17:83-88.
- Spano, Richard and John M. Bolland. 2011. "Is the Nexus of Gang Membership, Exposure to Violence, and Violent Behavior a Key Determinant of First Time Gun Carrying for Urban Minority Youth?" *Justice Quarterly* 28:838-862.
- Spano, Richard, William A. Pridemore, and John M. Bolland. 2012. "Specifying the Role of Exposure to Violence and Violent Behavior on Initiation of Gun Carrying: A Longitudinal Test of Three Models of Youth Gun Carrying." *Journal of Interpersonal Violence* 27:158-176.
- Steffensmeier, Darrell and Dana Haynie. 2000. "Gender, Structural Disadvantage, and Urban Crime: Do Macrosocial Variables Also Explain Female Offending Rates?" *Criminology* 38(2):403-438.
- Steffensmeier, Darrell and Cathy Streifel. 1991. "Age, Gender, and Crime across Three Historical Periods: 1935, 1960, and 1985." *Social Forces* 69(3):869-894.
- Stolzenberg, Lisa and Steward J. D'Alessio. 2000. "Gun Availability and Violent Crime: New Evidence from the National Incident-Based Reporting System." *Social Forces* 78 (4): 1461-1482.
- Thomas, Shaun A. and Edward S. Shihadeh. 2013. "Institutional Isolation and Crime: The Mediating Effect of Disengaged Youth on Levels of Crime." *Social Science Research* 42(5):1167-1179.
- Wooldredge, John and Amy Thistlewaite. 2003. "Neighborhood Structure and Race-Specific Rates of Intimate Assault." *Criminology* 41(2):393-422.
- Wright, James D. and Peter H. Rossi. 1986. *Armed and Considered Dangerous: A Survey of Felons and Their Weapons*. New York: Aldine de Gruyter.
- Zimring, Franklin E. 1989. "The Problem of Assault Firearms." *Crime & Delinquency* 35(4):538-545.