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Child Murder: A Re-examination Of Durkheim's Theory Of Homicide

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CHILD MURDER:
A RE-EXAMINATION OF DURKHEIM'S THEORY OF HOMICIDE

by

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ABSTRACT

The current study examines county-level characteristics and their impact on child homicide. This work uses Durkheimian theory and tests the concept of solidarity by using variables that constitute integration and regulation. In addition, some variables are drawn from other theoretical perspectives, mainly social disorganization and anomie theories, to better explore additional macro-level indicators. Data were obtained from multiple locations. Homicide data for children, from birth through five years, utilized in this work came from the National Incident-Based Reporting System. County level socio-demographics were obtained from the Census. Political party affiliation (Republican or Democrat) came from Politico, and religious data were collected by InfoGroup and organized into groups by the Association of Religion Data Archives. This study aims to increase our understanding of how macro-level contextual and situational factors may help guide policy makers, law enforcement personnel, and any other individuals who are concerned with areas where there are varying degrees of risk for child homicide.

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LIST OF ACRONYMS

ICPSR   Inter-University Consortium for Political and Social Research

MSA   Metropolitan Statistical Area

NIBRS   National Incident-Based Reporting System

PTSD   Post-Traumatic Stress Disorder

UCR   Uniform Crime Reports

U.S.   United States

CHAPTER 1: INTRODUCTION

Child murder[1] can be traced throughout history (Barlow and Clayton, 1996). Meyer, Oberman, and White (2001) declare that there is every reason to believe that infanticide is as old as human society itself and that no culture has been immune to it. Lord, Boudreaux, Jarvis, Waldvogel, and Weeks (2002) suggest that the killing of one's offspring is not unique to humans, but rather can also be found among "primates and social vertebrate societies" (p. 332). Further, infanticide was legal throughout the ancient civilizations of Mesopotamia, Greece, and Rome, and justified on grounds ranging from population control to eugenics to illegitimacy (Meyer et al., 2001). According to Spinelli (2005), in Babylonian and Chaldeon civilizations abnormal infants, considered to be children of witches who consummated with animals or demons, were left on the roadside to die; and in the Greek and Roman eras, birth control and eugenic reasons were the primary causes for infant murder by fathers who had absolute rule in the family (p. 15). Infants were often sacrificed and unwanted newborns, or those thought to be too weak, were exposed to the elements as a means to control the population (Meyer et al., 2001). Over time, inheritance, illegitimacy, and stigma became grounds for infant murder (Lagaipa, 1990; Meyer et al. 2001).

There has been research conducted on child murder, but when compared to other types of killing, such as adult homicide, it is relatively new and undeveloped. In most cases, research on child homicide examines psychological influences, biological impacts, and/or the specifics of the crime. When discussing the offender, it has been suggested that children from birth to four years old are more likely to be murdered by a parent (Davis, 2005). Some research suggests that a

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[1] Although murder and homicide have different meanings, they are used interchangeably in this study.

mother usually murders younger (under one year old) children, while a father, stepfather, or

mother's boyfriend usually commits the murder after the child is one (Davis, 2005). Death by

abandonment, suffocation, or poison (Shelton, Corey, Donaldson, & Dennison, 2011) is more

common when a mother commits infanticide, and firearms (Davis, 2005) are more common

when the father, stepfather, or mother's boyfriend commits the murder. Research also looks at

why an individual murder happened, with many scholars pointing to the stigma of having a child,

not wanting the child, depression following the birth, and financial issues (Finkel, Burke, &

Chavez, 2000; Shelton et al., 2011; Spinelli, 2005).

Clearly, there appear to be gaps in the literature. Research details the events leading up to

the murder, the murder itself, and the psychological/biological state of both the offender and

victim (Abel, 1986; Brewster, Jason, & Weniger, 1998; Crittenden & Craig, 1990; Davis, 2005;

Ewigman, Kiyhlahan, & Land, 1993; Goetting, 1988; Jason, Gilliland, & Tyler, 1983; Putkonen,

Amonc, Eronena, Klier, Almirone, Yourstone, Cederwalf, and Weizmann-Heneliusa, 2011;

Strang, 1996). While it is impossible to ignore that such characteristics offer a wealth of

knowledge concerning child murder, prior studies overlook what the larger macro-level

perspective may reveal. Some research has examined sociocultural characteristics, such as

unemployment, poverty, and rurality (Abel, 1986; Jason & Andereck, 1983). Others have looked

at regional differences (Gelles, 1990; Jason et al., 1983; McClain, Sacks, Ewigman, Smith,

Mercy, & Sniezek, 1993). While Putkonen et al. (2011) acknowledge that an unfavorable social

environment is a vulnerability for child murder, Lyman, McGwin, Malone, Taylor, Brissie,

Davis and Rue (2003) declare that the impacts of community-level factors and social stressors

have not been addressed in previous literature. To my knowledge, no studies have looked at the macro-level characteristics of the community where child murders take place.

The purpose of the present macro-level study is to explore child murder. This investigation uses Durkheimian theory and tests the concept of solidarity by using variables that constitute integration and regulation. In addition, some variables will be drawn from other theoretical perspectives, mainly social disorganization and anomie, to better explore other macro-level indicators. The inclusion of such variables may increase our understanding of how contextual factors translate into differences in individual-level risks for children. This study provides knowledge to better guide policy makers, law enforcement personnel, and any other individuals who may come in contact with areas found to have children at risk homicide.

CHAPTER 2: LITERATURE REVIEW

According to Davis (2005), there are many categories of child murder. Most scholars, however, agree with the following definitions: neonaticide—murder of a newborn within the first 24 hours of birth; infanticide—murder of an infant child who is less than one year old; and filicide—murder of one's own child, including both step-children and adult children (Alt & Wells, 2010; Barlow & Clayton, 1996; Davis, 2005; Lyman, McGwin, Malone, Taylor, Brissie, Davis & Rue, 2003). However, some contradictions concerning the definitions exist. For example, only some scholars use the maximum age of 18 when discussing filicides (Lucas, Wezner, Milner, McCanne, Harris, Monroe-Posey, & Nelson, 2002). In addition, at least one scholar suggests that neonaticide is from birth to one week in age (Jason et al., 1983). Further, various scholars have also suggested other terms to account for child murder such as: prolicide— murder of one's offspring, including infants and fetuses in-utero (Davis, 2005), and familicide— murder of the entire family (Alt & Wells, 2010).

Thus, as noted above, there is not a single globally—accepted definition of child murder in the research literature (Barlow & Clayton, 1996). This tends to be an issue for scholars who examine the literature for comparative purposes. Due to the differences in definitions, researchers tend to study different age categories. For example, some scholars categorize the age of victims as less than 1 year, 1-5 years, 6-10 years, and 11-14 years (Strang, 1996). Other scholars use the categories of less than 1 year, 1-4 years, 5-9 years, 10-14 years, and 15 years and older (Chew, McCleary, Lew, Wang, 1999; Christoffel, 1983). Still, some scholars categorize each year individually from birth to four years (Ewigman et al., 1993), or use birth to one month,

1-12 months, 13-24 months, 2-5 years, and 6-12 years (Crittenden & Craig, 1999). It becomes obvious that there is discrepancy in the age categories used by researchers causing confusion for those trying to make comparison.

<center>History</center>

By 1888, all European states established a legal distinction between infanticide and murder and gave more lenient penalties to infanticide offenders (Spinelli, 2004). Meyer et al. (2001) discussed how infanticide was considered a crime committed exclusively by unmarried women, and even in societies with infanticide laws that governed all citizens, it was speculated that married women who committed infanticide generally avoided punishment. Spinelli (2005) notes that certain cultures began to see women as biologically—vulnerable around the time of birth, and therefore allowed probation or medical treatment of the offenders in the early 1900s. Meyer et al. (2001) discusses how this "medicalization of infanticide was embraced in England where they recognized infanticide as a distinct form of homicide due to the impact of pregnancy and birth upon the mother's mental status" (p. 11).

Different countries began having contrasting views concerning child murder in the 1900s. Whereas countries such as the United Kingdom held lenient views due to the view that the murder was the outcome of an illness, the response in the United States (U.S.) was harsh because it was seen as murder. According to Meyer et al. (2001), the U.S. did not have any laws regarding infanticide; it was seen as a type of murder and the individuals found guilty of child murder were convicted without regard to the age of the victim (Caron, 2010; Finkel, Birk, and Chaves, 2000). However, individual states within the U.S. decide on mitigating and aggravating

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circumstances, which help decide how an individual who kills a child should be convicted (Spinelli, 2005). An offender may be treated more leniently or harshly for the murder of their child depending on local community views. The sentence also differs depending upon the age of the victim. If an individual kills a child who was less than a year, their punishment is harsher (Spinelli, 2005). The United States does not currently recognize postpartum depression or postpartum psychosis (Spinelli, 2005), which many studies have shown to be reasons why some mothers kill their young (Finkel et al., 2000; Shelton et al., 2011; Spinelli, 2005). If a state does not recognize postpartum depression or psychosis, then they may be placing individuals who need treatment in prisons. However, Spinelli (2005) does mention that the incident rates are not much different when comparing a place like the United States, which focuses on punishment, to other nations which focus on treatment.

As the literature suggests, ideas concerning child murder change with the culture. Defective infants, female infants, motherless or illegitimate infants, closely spaced children, and children resulting from multiple births have all been at risk for infanticide in some cultures at some times (Crittenden & Craig, 1990). It appears that some cultures condone child murder while others treat the offenders, and still others disapprove, convict, and react with harsh sentences (Finkel, et al., 2000; Spinelli, 2005).

<u>Prevalence</u>

The reported prevalence of child murder tends to fluctuate. For example, in 1990, the worldwide prevalence of violent deaths for children four years old and under accounted for 1,926 out of 17,472 violent deaths (Murray and Lopez, 1996 as cited in Spinelli, 2005). Shelton et al.

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(2011) contend that the U.S. has the fourth highest rate, behind Japan, Austria, and Finland, of infant homicide relative to population size. According to the Uniform Crime Reports, there were 448 children aged birth to four years old murdered out of a total of 12,996 killings in 2010; 186 were under one year old and 313 were between one and four year olds (Federal Bureau of Investigation, 2010). One study estimates that eighty-five infanticides occur annually in the U.S. (Caron, 2010).

Child homicide is a rare crime in Western societies (Putkonen et al., 2011), but research points out that both child murder and fatal cases of child abuse are undercounted (Herman-Giddens, Brown, Verbiest, Carlson, Hooten, Howell, & Butts, 1999; Jason & Andereck, 1983; Overpeck, 2002). This underreporting is accounted for by poor documentation, infanticides reported as SIDS deaths, lack of death certificates, unfound corpses, and undocumented births due to pregnancy denial (Herman-Giddens et al., 1999, Spinelli, 2005). Lyman et al. (2003) say that the "underascertainment is due to restrictions into inaccuracies in coding causes of death, incomplete or inaccurate information on death certificates or police reports, variable case definitions, and the absence of a national system for reviewing child homicides" (p. 1064). Other reasons for inaccurate estimations could be that investigators may lack certain skills, fail to communicate findings, and lack access to additional professional records. Overall, these authors suggest that the rate of child homicide is considerably higher than the data suggest.

Because of underreporting, accurate data are difficult to obtain and, when data are collected, reporting methods vary (Alt & Wells, 2010). "Data collection and reporting procedures among health, law enforcement, and social service agencies are not uniform,

standardized, or coordinated" (Ewigman et al., 1993, p. 335). Ewigman et al. (1993), who

studied underreporting of maltreatment as a cause of death, found significant underreporting in

all the data used, including vital statistics, FBI – UCR homicide data, and the child protective

service information.

<div align="center">Risk Factors</div>

The majority of research on child homicide has been done by public health scholars, who

generally provide descriptive studies rather than explanatory investigations (Clifford-Wittekind,

Corzine, Huff-Corzine, Weaver, Petee, & Jarvis, 2003). Research concerning risk factors for

child homicide has reported some contradictory findings. Some of these inconsistencies can be

attributed to sampling differences (Chew et al., 1999). Most research (Abel, 1986; Chew, et al.,

1999; Ewigman et al., 1993; Lucas et al., 2002) is based on small local samples of child

homicide which tend to be rather site-specific. Some studies (Chew et al., 1999; Clifford-

Wittekind, et al., 2003; Jason et al., 1983) are based on larger samples, but contradictions still

tend to be prevalent. Therefore, it may be that the population from which the sample was drawn

significantly influences the risk factors discussed.

One area that is inconsistent is the sex of both the offender and the victim. While some

research indicates an even distribution between male and female child homicide victims (Chew

et al., 1999; Silverman, Reidel & Kennedy, 1990), others conclude that the majority are male

victims (Blaser, Jason, & Ewigman, 1984; Brewster et al., 1998; Ewigman et al., 1993; Goetting,

1988; Putkonen et al., 2011; Shelton et al., 2011), and yet others report predominately female

victims (Abel, 1986; Clifford-Wittekind, et al., 2003; Crittenden & Craig, 1990; Lyman, et al.

2003). Similarly, some research indicates that males, most likely the father, are more likely to be the offenders (Brewster et al., 1998; Ewigman, et al., 1993; Strang, 1996), while others claim that females, most likely the mother, are more likely to be the offenders (Abel, 1986; Crittenden & Craig, 1990; Goetting, 1988; Jason et al. 1983; Putkonen et al., 2011). It has also been suggested that the age of victim tends to differentiate the sex of the offender with females more likely to be the offenders when children are less than one year (Brewster et al., 1998; Jason et al., 1983; Lucas et al., 2001).

There is also disagreement concerning the race and ethnicity for both the offenders and the victims in existing research. Findings from some studies indicate that African Americans tend to be overrepresented among the victims of child homicide (Abel, 1986; Clifford-Wittekind, et al., 2003; Goetting, 1988; Lyman et al. 2003), while others report that Caucasians are more commonly the victims of child homicide (Brewster et al. 1998; Ewigman et al., 1993; Lucas et al., 2002; Shelton et al., 2011). When studies include Hispanics, they are usually found to be the least represented among victims and offenders (Lucas et al, 2001; Shelton et al., 2011). Chew et al. (1999) argue that child homicide victimization closely resembles the composition of the general population. Similarly, some studies have found that the offender is more likely to be African American (Crittenden & Craig, 1990; Goetting, 1988), and others have found that the offender is more likely to be Caucasian (Brewster et al., 1998; Shelton et al., 2011).

Despite the inconsistencies, there still tends to be some agreement about certain risk factors. The literature indicates that the age when children are at the greatest risk of murder and the age of offenders are congruent across studies. Children under the age of five tend to be at the

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greatest risk for death (Abel, 1986; Levine, Compann, & Freeman, 1995; McClain et al., 1993), with homicide being most prevalent during infancy (Christoffel, 1983). In fact, it has been indicated that the greatest number of child homicides occur among infants (under 1 year old), young children (1 to 4 years old), and teenagers (13 to 17 years old) (Abel, 1986; Chew et al. 1999; Christoffel, 1984; Crittenden & Craig, 1990). In Crittenden and Craig's (1990) study, it was determined that the rate of homicide was highest during the first month of life, dropped dramatically after the first month, and slowly decreased as the child got older. Similarly, scholars agree that offenders tend to be young adults, usually in their twenties (Brewster et al., 1998; Chew et al., 1999; Goetting, 1988; Lucas et al., 2001; Shelton et al., 2011). This may be related to the time (age) when individuals usually have young children.

<center>Contextual and Situational Factors</center>

Contextual and situational variables have been included in research concerning child murder, and again, the literature shows discrepancies in the findings. Discrepancies exist in regard to the season (Abel, 1986; McCleary and Chew, 2002) and day of the week (Abel, 1986; Brewster et al., 1998; Clifford-Wittekind et al., 2003; Lucas et al., 2001) that child murder is more likely to occur. One common finding about child murder is the observation that children are most likely to be murdered by someone they know, usually a parental figure (Brewster et al, 1998; Clifford-Wittekind, et al., 2003; Crittenden and Craig, 1990; Mayhew, 2007).

Some scholars have suggested that violence toward children is a continuum of violence that ranges from the mildest forms, such as emotional abuse and/or physical punishment, to the more severe forms, such as murder. As is well-known among homicide researchers, "The

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difference between assault and homicide is often as simple as luck, aim, or the presence/absence of a weapon" (Gelles, 1990, p. 60). Another consistent finding is that children are significantly more likely to be murdered by personal weapons, that is, hands, fists, or feet than by other types of weapons (Chew et al., 1999; Clifford-Wittekind, et al., 2003; Lucas et al., 2002; Lyman et al, 2002; Mayhew, 2007). Mayhew (2007) asserts that beatings are the primary cause of child murder, but mentions that neonaticide generally occurs from suffocation (being wrapped in a towel or placed in a box), abandonment, or drowning, especially if born into a toilet. When a weapon other than one's hands, fists, or feet is used, a knife tends to be common (Brewster et al. 1998; Clifford-Wittekind, et al., 2003), but anything that is not bolted down may be used as a weapon of opportunity (Mayhew, 2007). Guns may also be used, but this is generally more prevalent in murder-suicide, familicide, or domestic violence (Mayhew, 2007), and they are more likely to be used by male perpetrators (Crittenden & Craig, 2007). In addition, when location has been included in studies, it has been found that most child homicides happen at home (Abel, 1986; Brewster et al., 1998; Goetting, 1988; Putkonen et al., 2011; Shelton et al., 2011). Goetting (1988) found that of the offenders, 84% were Protestant, 69% achieved at least a high school education, and 58% had been arrested prior to the incident. Further, Abel (1986) asserts that more murders occurred when individuals did not have a high school degree.

Sociocultural factors, such as poverty and pre-existing social relationships, "explain almost all state-to-state differences in adult homicide rates, but they do not explain differences within states and homicide deaths of infants" (Gelles, 1991, p. 64). Research has found that there is a direct relationship between the incidence of child homicide and economic conditions. Specifically, the typical families with child abuse fatalities are poor, rural, and white (Jason &

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Andereck, 1983). Findings also suggest that "the higher the number of [child] homicides, the higher the unemployment and percentage of families living below the poverty level" (Abel, 1986, p.711). Abel (1986) suggests that more murders occurred in places with higher unemployment rates. However, Putkonen et al. (2011) reported that nearly half of the fathers who committed filicide were employed, whereas only approximately one-fourth of the mothers worked outside the home. Brewster et al. (1998) found that 77% of offenders were employed at the time of the incident, whereas in Goetting's (1988) study, 70% of the offenders were unemployed. In Lucas et al.'s (2002) study, the victim's family was most likely composed of married couples, but the families of the youngest victims were represented by single parents, separated parents, or divorced parents. Putkonen et al. (2011) found that family disintegration seemed relevant to child homicide, a fact that was truer for fathers than for mothers. Lyman et al. (2003) also found that the majority of offenders were single.

An additional area of exploration is geographical location. McClain et al. (1994) proposes that child homicide rates in the U.S. differ according to age and geographic location. Specifically, McClain et al. (1994) examined the occurrence of fatal child abuse or neglect of children ages birth to five years for each state in the U.S. from 1979 to 1988 and found higher incidences in the South and West, with the lowest in the Northeast. Jason et al.'s (1983) findings suggest that homicide among infants aged one week or less occurs most often in the Northeast and South, while homicide among infants aged one week to one year was highest in the North Central region. Still, Gelles et al. (1991) finds that although the rate of adult homicide is highest in the South, infant and toddler homicide rates are highest in the West.

It has been acknowledged that an unfavorable social environment is considered a vulnerability for child homicide (Putkonen et al., 2011). Still, Lyman et al. (2003) declare that the impact of community-level factors and social stressors has not often been addressed in previous literature, and the inclusion of these ecological variables in an appropriate analysis may increase our understanding of how contextual factors translate into differences in individual-level risk.

Offender Motivations for Child Murder

When research has been conducted on child murder, usually the scholars are looking for risk factors. Thus, some scholars have attempted to create offender motivation classifications. There are many classifications, but the following tend to be used most often. Pathological child murder is when the offender has an altered state of mind, a homicide-suicide, or when a parent or caregiver was suffering from a mental illness, depression, or acute psychosis (Alt & Wells, 2010; Bourrget & Bradford, 1990, as cited in Putkonen et al., 2011; Resnick, 1969). Unwanted child murder is when the mother denies or conceals the pregnancy prior to the murder, or neonaticide (Alt & Wells, 2010; Bourrget & Bradford, 1990, as cited in Putkonen et al., 2011; Resnick, 1969). Accidental child murder includes various forms of abuse and neglect such as shaken baby syndrome or battered child syndrome (Alt & Wells, 2010; Bourrget & Bradford, 1990, as cited in Putkonen et al., 2011; Resnick, 1969). Revenge or retaliation child murder involves revenge or retaliation against the spouse or girl/boyfriend and usually involves the father as the offender (Alt & Wells, 2010; Bourrget & Bradford, 1990, as cited in Putkonen et al., 2011; Resnick, 1969). Altruistic child murder occurs when the child has a disability, or the offender feels

nobody will be available to love and care for the child (Alt & Wells, 2010; Resnick, 1969). Non-accidental child murder would include sudden infant death syndrome or Munchausen Syndrome by Proxy (Alt & Wells, 2010). A final classification motive is religion (Alt & Wells, 2010), which would include denial of medical intervention.

Mayhew (2007) claims that most child homicides are a result of frustration and lack of appropriate expectations of children, but others are calculated acts of violence. The number one trigger is usually crying with the risk of harm rising if the baby is colicky; other triggers are toilet training and feeding time (Mayhew, 2007). Deaths in infancy tend to be indicative of discarding rather than punishing, and deaths in early childhood are usually indicative of attempts to manage child behavior, punishing rather than discarding (Crittenden & Craig, 1990). Further, death in early childhood seems to be more closely related to child abuse and neglect, which is when physical discipline is most often used (Crittenden & Craig, 1990). However, the methods of the homicide change as the child ages. This trend can be attributed to a variety of factors including the size and age of the victim, the size of the perpetrator, the reaction by the caregiver to the child's behaviors, and the accessibility of weapons (Mayhew, 2007). Crittenden and Craig (1990) suggest that cultural and developmental reasons may affect children's risk for child homicide, especially when considering age. Their examination of infancy and early childhood finds that some societies use passive infanticide as a means of controlling both strain on community resources and the size and quality of future adult populations.

CHAPTER 3: THEORY

Criminological Theories

Various criminological theories have been used to explain child murder. Past research

primarily applied micro-level theories (Brewster, et al., 1998; Goetting, 1988; Jason &

Andereck, 1983; McClain et al., 1994; Putkonen et al., 2011; Schwartz & Isser, 2007; Shelton, et

al., 2011). Some of the theories that have been relied on to pull variables from are routine

activities theory, control theory, anomie theory, and social disorganization theory. Studies

applying such theories offer a wealth of information. It is because of these theories that child

homicide classifications, individual risk factors, etc., are known.

Routine activities theory applies to child murder when examining the context in which it

occurs. First, the motivated offender (usually a parent) is present. Second, a suitable target (the

young child) is present. Third, there is a lack of a capable guardian (perhaps the parent is alone

with the child). Research has included variables to measure the capable guardian, such as the

presence of a witness and previous contact with the Department for Children and Families

(Shelton et al., 2011). Shelton et al. (2011) found that in 75% of the cases examined, another

adult or child was in the same living space, but 88% of them were unaware that the murder had

occurred.

Control and anomie theories examine offenders. Control theory discusses how weak or

broken social bonds with members of conventional society will increase the likelihood of

criminal involvement (Hirschi, 1969). Child murder may result from situations such as a strained

or broken relationship or from a young female's fear of being disowned by her family or friends.

Another type of control, self-control, emphasizes the lack of individual self-control leading to crime. Crime is contingent upon a set of conditions or opportunities, which lead individuals, particularly those with low self-control, to violate norms (Gottfredson & Hirschi, 1990). Child murder may result from revenge or retaliation caused by strained or broken relationships from infidelity or other social issues. Measures for this would include prior abuse (Brewster et al., 1998; McClain et al., 1994; Putkonen et al., 2011). Anomie theory is relevant when exploring how negative emotions generate pressure for corrective action. This may lead to criminal acts meant to escape strain, such as seeking revenge against the sources of strain or trying to suppress negative emotions through the use of illegal drugs. Mayhew (2007) suggests that often a noxious behavior triggers child murder; for example, a baby that cries all the time or a parent who does not want a child (Shelton et al., 2011). The child may lead to strained relationships, as well, and therefore be murdered.

Deviance is attributed to social disorganization when a community cannot properly supervise and control deviance. Social disorganization applies to the areal characteristics in which child murder occurs. Shaw and McKay (1969 [1942]) suggest that social disorganization is an approach that emphasizes neighborhood structural differences instead of individual traits. The usual methods of social control are not evident in these areas, resulting in higher levels of deviant and lawless acts (Park & Burgess, 1924). Individuals who reside in areas that are characterized by impoverished conditions, evidenced by decaying housing, broken families, substance abuse, and low income and education levels, among other social issues, are more likely to experience higher rates of deviance than more socially organized areas. Social disorganization theory helps explain the distribution of neighborhood crime (Bellair &

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Browning, 2010). Studies have looked at female-headed households, residential stability, and other community-level indicators. Some of the measures used are poverty, crowding (Goetting, 1988; Jason & Andereck, 1983), and employment (Putkonen et al., 2011). Even though these measures could be micro-level or macro-level, scholars have used them to examine individual family characteristics. These individual characteristics are noteworthy, but we may be able to get a more complete picture by using a macro-level approach which could offer a more conservative statistical estimates of child murder.

Durkheim

Scholars, using variables derived from criminological theories such as anomie, social disorganization, and control theories, tend to focus at the micro-level by examining how the offender's marital status and/or religion triggered the offense, etc. Durkheim used social facts in his research, a macro-level approach, which may help further our understanding of child murder. Durkheim treated suicide and homicide as social facts and explained variations in their rates on a macro-level scale.

On Suicide

One of Durkheim's most notable studies was on suicide. In his book, *Suicide*, he also discusses other types of crime, including homicide (Durkheim, 1951 [1897]). It is therefore relevant to discuss suicide before focusing on homicide. Durkheim (1951 [1897]) discusses four types of suicide: egoistic, altruistic, anomic, and fatalistic. He (1951 [1897]) argues that social pathologies are rooted in all social conditions, that is, degrees of solidarity such as integration and regulation. According to Durkheim (1951 [1897]), suicide is an example of social pathology.

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In developing the classifications of suicide, Durkheim (1951 [1897]) states that, "without asking why they differ from one another, we will first seek the social conditions responsible for them; then group these conditions in a number of separate classes by their resemblances and differences, and we shall be sure that a specific type of suicide will correspond to each of these classes" (p. 147). Continuing he adds that, "disregarding the individual as such, his motives and ideas, we shall seek directly the states of the various social environments (religious confessions, family, political society, occupational groups, etc.) in terms of which the variations of suicide occur" (p. 151). Durkheim (1951 [1897]) concluded that egoistic suicide is likely when there is low integration, altruistic suicide when there is high integration; anomic suicide is the most likely type when there is low regulation, and fatalistic suicide when there is high regulation. Although these were the four main types, there may be times where a combination of types best describe suicide. Durkheim's work on homicide is less well-known than his investigation of suicide, however, it has some important guiding principles for the study of child homicide. Figure 1 shows the relationship between integration, regulation, and the types of suicide.

Egoistic   Anomic

High   High

Integration   Types of   Regulation
                         Suicide

Low   Low

Altruistic   Fatalistic
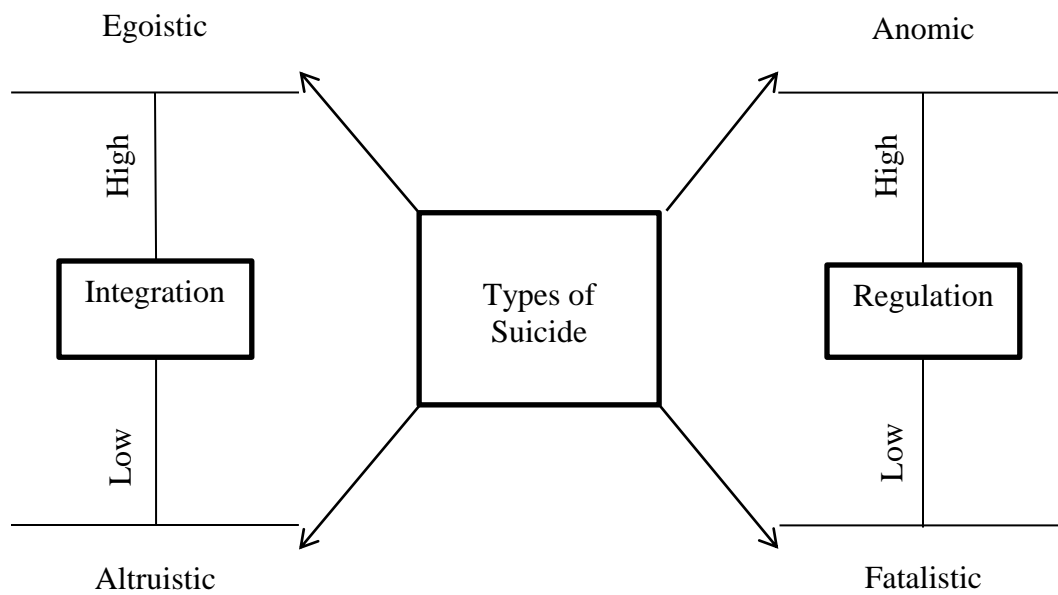
Figure 1
Integration and Regulation in Relation to Durkheim's Types of Suicide

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On Homicide

Durkheim (1951 [1897]) mentioned homicide as a type of social pathology. He (1951 [1897]) was most concerned with two types of homicide, premeditated and unpremeditated. However, "the evolution of the trend of homicide cannot therefore be best served through the variations of premeditated murder; general orientation is better brought out by the curve of unpremeditated murder" (Durkheim, 1951 [1897], p. 349). Therefore, he deals mostly with homicide that is not premeditated. According to Durkheim (1951 [1897]), "homicide is inseparable from passion" (p. 365).

Durkheim's theory of homicide is based on his account of the change in the content of the common consciousness that accompanies societal development (DiCristina, 2004). The common consciousness, also referred to as the collective consciousness, is "the totality of the beliefs and sentiments common to the average members of a society [that] forms a determinate system with a life of its own" (Durkheim, 1984 [1893], p. 38 – 39). DiCristina (2004) implies that as society advances, the collective gives way to the individual. Durkheim (1984 [1893]) discusses how as the division of labor shifts from mechanical solidarity to organic solidarity, there is a requirement for individuality. DiCristina (2004) suggests that as the development requires more individuality, "religion proper declines and cultural traditions and the state tend to lose the religiosity" (p. 66). Durkheim's theory of homicide results in a two-part theory centering first on the level of societal development, and second on the rate of social change (DiCristina, 2004).

Durkheim discusses the division of labor by using the progression of societies from mechanical solidarity to organic solidarity. With mechanical solidarity, simple societies are bound together by commonly shared norms and values, whereas with organic solidarity, complex

societies are bound together through differentiation of the roles and statuses of their members (Durkheim, 1984 [1893]). As social systems grow in population size and density, they must develop efficient means for producing and distributing goods and services among their members. This is done through the transformation of society from being more homogenous and undifferentiated to heterogeneous and differentiated (Chamlin & Cochran, 2005). In sum, the religion of humanity, or individuation, becomes stronger over time as a result of gradual societal development and the shift to social bonds based on exchange relations with collective sentiments weakening over time (DiCristina, 2004; Durkheim, 1951 [1897]). Heterogeneity can be measured by using income, religion, educational attainment, and marital status to better understand how integrated an area is, because less similarity may indicate less integration. Figure 2 shows how the Division of Labor relates to homicide.
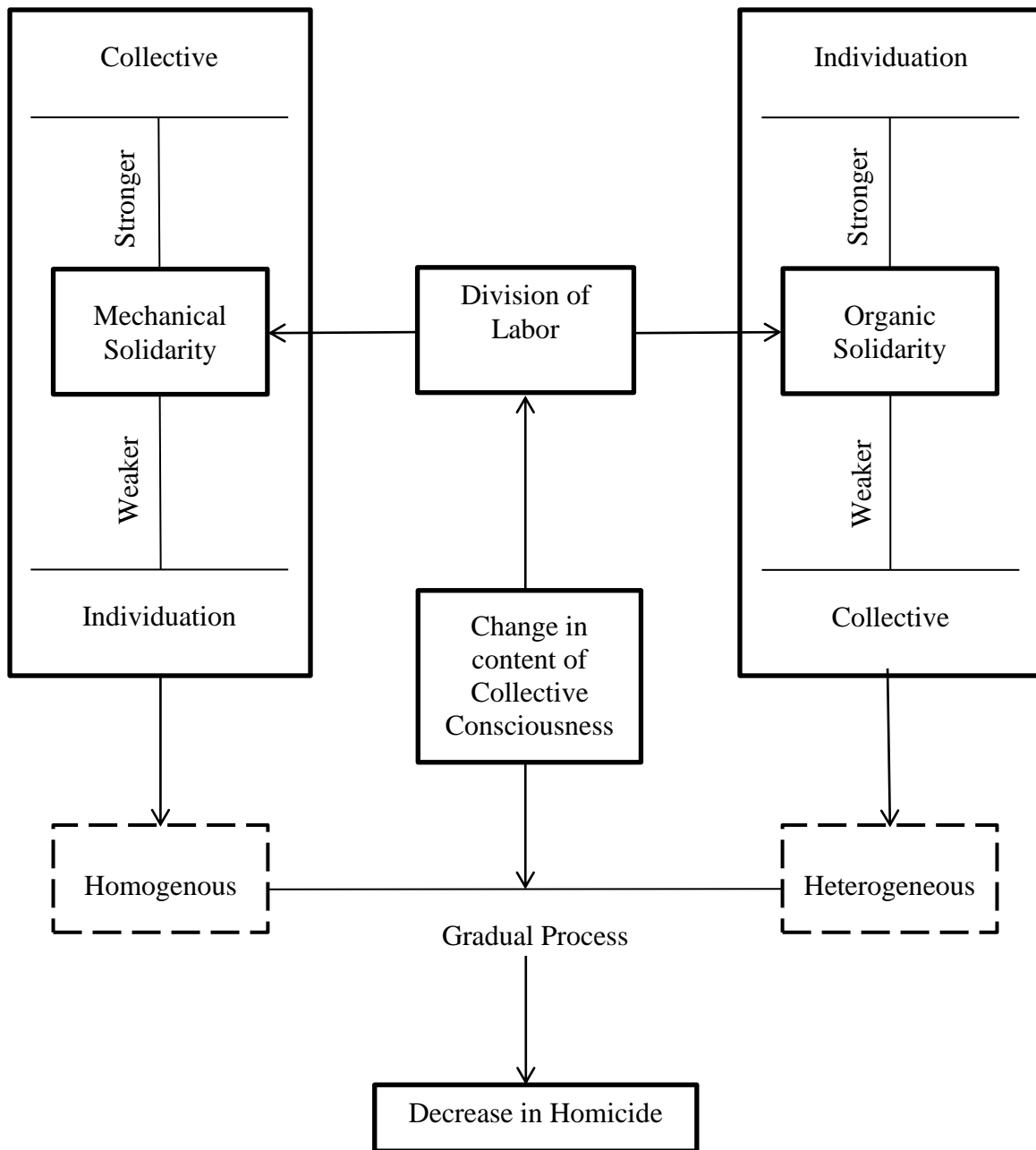
Figure 2
Homicide and the Division of Labor

The division of labor assumes slow evolutionary change, but the rate of change is just as important as the level of development in a society. Durkheim (1951 [1897]) posited that a gradual change over time would lead to greater individuation and less homicide due to a solidarity based on social bonds of complementary differences, whereas swift changes would lead to anomic conditions and possibly increase homicide. Measurements for swift changes could include a measure of population change or a change in political party rule. DiCristina (2004) described anomie primarily as a condition in which people are unable to satisfy their desires due to the removal of opportunity or the deregulation of society. Using this definition, it is possible to measure the removal of opportunity by race, ethnicity, and income level, in addition to population and political party change. This inability to satisfy desires can foster violent emotions, which may drive a person to commit suicide or homicide. Those with low morality or who blame others for their hardships are more likely to kill another individual (DiCristina, 2004). Pridemore and Kim (2006) suggest that Durkheim indicated that the development of individuation would lead to a long-term decrease in homicide due to the weakening of collective sentiments rather than an increase in individuality.

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                    │    Labor    │
                    └─────────────┘
                           │
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                  │   Change in     │
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│Gradual Process│◄──│ Rate of Social  │──►│ Swift Process│
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│Decrease in Homicide│                  │ Anomic Conditions│
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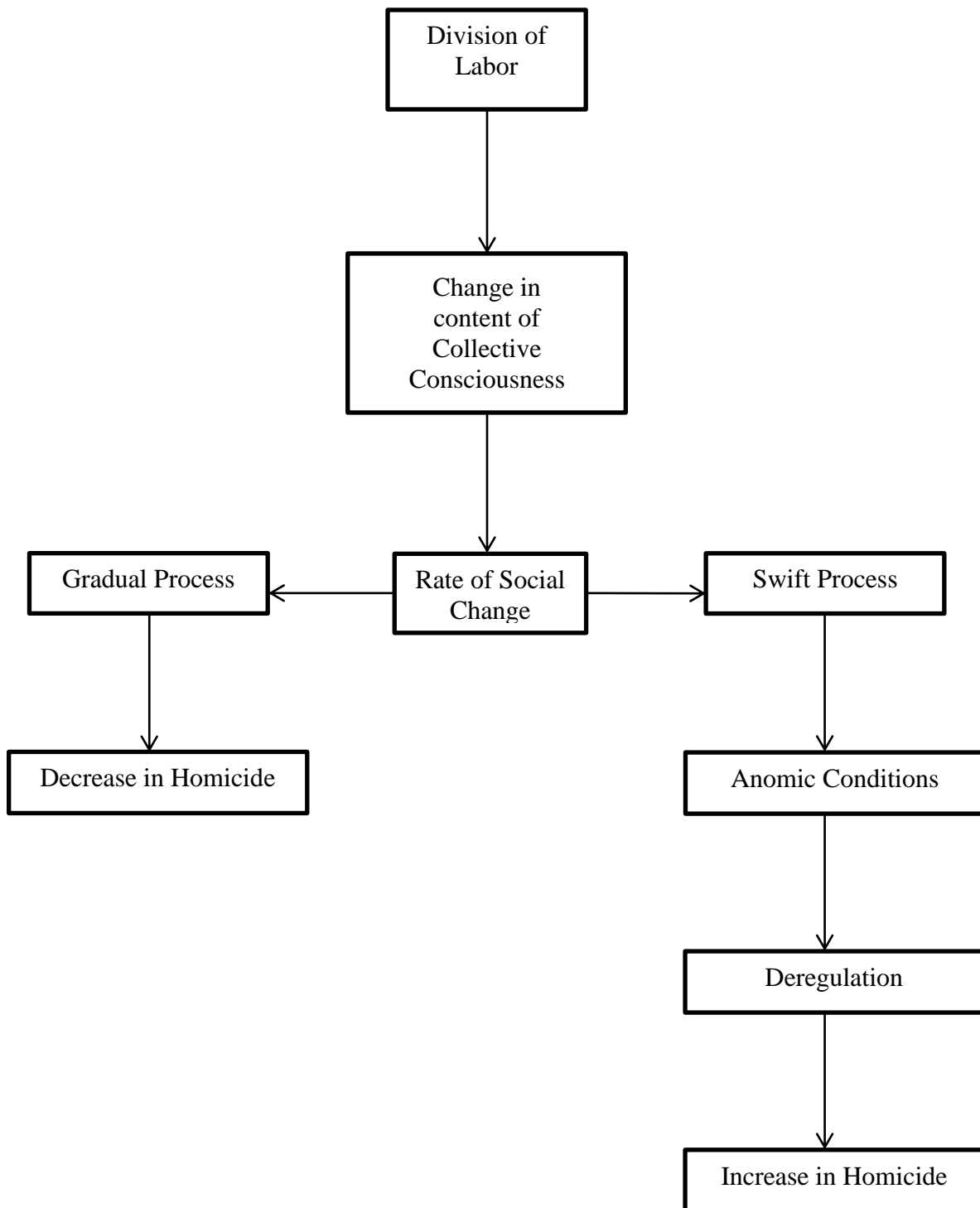
Figure 3
Homicide and the Rate of Social Change

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Durkheim was concerned with the degree of solidarity when discussing the different types of suicide and homicide and looked at integration into, and regulation by, the society (Durkheim, (1951 [1897]). Integration refers to the degree to which collective sentiments are shared, while regulation generally refers to the degree of external constraints on individuals through society's norms, rules, and values. Essentially, social integration is the strength of the social bonds between the individual and society. Social regulation is the strength of control over the individual by society. Varnik, Tooding, Palo, and Wasserman (2003) suggest that, according to Durkheim, when social integration or regulation is too weak or strong it generates suicide.

Generally, studies focus on an either or approach, neglecting a combination of suicide and homicide. Durkheim suggests that suicide and homicide are merely streams of the same river, and therefore posited similarities between homicide and suicide (Shon & Roberts, 2008). However, Durkheim (1951 [1897]) does indicate that there are times when the forces behind suicide and homicide are different (see section on Altruistic Homicide in Relation to Egoistic Suicide for further explanation). Following Henry and Short (1954), Unnithan, Huff-Corzine, Corzine, and Whitt (1994) propose that there are common forces of production as well as forces of direction. Forces of production produce both suicide and homicide while forces of direction will alter the choice between suicide or homicide.

O'Brien and Stockard (2006) suggest that in modern society the problem is rarely too much integration or regulation, but rather too little integration and regulation. According to O'Brien and Stockard (2006), a lack of social integration is positively associated with homicides and they draw upon control theory for validation. Control theories claim that low integration

causes more deviance because of ineffective internal and/or external social controls. They hypothesize that "insufficient social integration/regulation is a 'force of production' that increases suicide and homicide…Durkheim (1951 [1897]) saw lack of regulation as a 'force of production' for both suicide and homicide but viewed a lack of integration as increasing suicide and decreasing homicide in modern societies," (2006, p. 1553) or as a force of direction.

Durkheim examined many social environments to test his ideas of integration and regulation. He discussed the effects that he expected religion, family life, war and political crisis, urbanity, sex, and age may have on homicide.

<u>Religion</u>
Catholicism reduces suicide, but increases homicide (Durkheim, 1951 [1897]). Catholicism protects its members from suicide due to their strong collective beliefs. They are very integrated through a body of common sentiments. However, this integration is said to increase homicide. If integration increases homicide, then we should see more homicide in areas that have highly integrated religions, such as Catholicism, because of the strength of the common beliefs and sentiments.

<u>Family Life, Sex and Age</u>
Family life has a restraining effect on suicide, but stimulates murder (Durkheim, 1951 [1897]). This is probably due to the morality that exists within the family because of the influence from each of its members. The influence of its members creates both integration and regulation. This morality is insulating, and threats become something that must be dealt with personally (Durkheim, 1951 [1897]). Married men murder less than unmarried men. Although Durkheim (1951 [1897]) asserts that the tendency to murder is greatest between the ages of 25

and 30 years, which happens to be younger than the average age of married men, i.e., 45 years old. Of course, this statistic came from Durkheim's time and may be different today. This may be an important factor to consider since the level of integration and regulation will differ between marital statuses. A married couple will be more integrated and regulated than a divorced couple. Further Durkheim (1951 [1897]) suggests that the larger the family, the more insulated it will be from suicide. Acknowledging this and taking into consideration what has been discussed in relation to family and homicide, it makes sense to examine family household and the presence of children, assuming that the presence of children will increase integration and regulation. Durkheim (1951 [1897]) also asserts that there may not be a large difference between homicide perpetrators being male or female. This statistic also came from Durkheim and may be specific to the era he studied. He continues by discussing how it appears that females commit suicide and homicide less than males because they don't participate in the collective life as much and therefore lack opportunity. However, when one considers premeditated and unpremeditated murder and includes infanticides, abortions, and poisoning, females actually do not differ from males all that much (Durkheim, 1951 [1897]). In fact, women normally spend more time with children compared to men. In addition, Durkheim (1951 [1897]) emphasizes that many of the murders committed by females escape justice and statistics.

War and Political Crisis
Wars have a restraining effect on suicide, but not on homicide. Political crisis is similar. Both tend to increase homicide (Durkheim, 1951 [1897]). During war, integration seems higher as there appears to be a social condition that is bonding society together. Although this may be short lived, it still acts as an integrating condition. According to Durkheim (1951 [1897]), this

would cause an increase in homicide. However, those who are more likely to commit homicide are also those who are serving in the military. Additionally, a rapid shift in the political system would cause anomy[2] to exist due to deregulation which would also cause an increase in homicide (Durkheim, 1951 [1897]).

<u>Urbanity/Rurality</u>
Durkheim (1951 [1897]) advised that suicide exhibits higher rates in urban areas, while rural areas have higher rates of homicide. Essentially, suicide is more prevalent among higher-income groups and those groups tend to live in urban areas (Durkheim, 1951 [1897]). Urbanites usually have less integration and more individuation (egoism). However, these individuals may face anomic conditions more often than those in rural areas, which may lead to suicide or homicide. Individuals who live in rural areas have a stronger collective and less individuation. This collective may help insulate rural individuals from anomic conditions, but it does not eliminate them. Also, individuals living in rural areas generally have more access to "tools" that make killing easier, as they are more likely to own guns, knives, and other equipment. In addition, the strong collective, as well as anomic conditions, should result in an increase in homicide rates. Durkheim (1951 [1897]) examined the effects of these on both suicide and homicide, but devoted much more attention to suicide.

Types of Homicide
Durkheim (1951 [1897]) discusses the four categories of suicide and relates them to homicide. Whereas all categories are related to types of suicide, the categories differ in relation to homicide. For example, with suicide, all of the categories are classifications of suicides. With

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[2] Anomy is spelled this way because it is how Durkheim spelled it in *Suicide.*

homicide, fatalistic is not a mentioned category, and egoistic is a category used to explain the lack of homicide. Although fatalistic homicide was not mentioned by Durkheim, DiCristina (2004) draws the conclusion that it is the opposite of anomic and stems from excessive regulation; "if extreme regulation suppresses passion, we should expect fewer homicide under such conditions" (p. 80). However, if something is done to break this regulation, an increase in homicide would be likely. There are other important variables that may affect the homicide rate. As discussed earlier, the forced division of labor creates conditions where opportunities are more equally distributed while modernization reduces a source of frustration and anger. However, the forced division of labor can also trigger frustration by making people more sensitive to an inequitable distribution of opportunities (DiCristina, 2004). The age distribution of homicide, as discussed by Durkheim (1951 [1897]), was that homicidal tendencies vary by age. Durkheim (1951 [1897]) mentioned that when examining both unpremeditated and premeditated murder, the gender of offenders may not be too different. Therefore, as societies evolve from simple preindustrial to early industrial forms, the total homicide rate for women offenders should vary relative to the homicide rates for men (DiCristina, 2004). Therefore, if the total homicide rate increases, one should see more men and women offenders.

The two categories of homicide that Durkheim posited are altruistic homicide and anomic homicide. Both types of homicide deal with social conditions that contribute to homicide. An integral area to consider when discussing these types of homicide is solidarity, especially the integration of society and the regulation by society. In explaining these types of homicide, one can turn to the discussion on the division of labor and the rate of social change to get a better picture of solidarity and its relation to homicide.

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Altruistic Homicide in Relation to Egoistic Suicide.

Altruistic homicide results from high integration within society and is characterized by a stronger collective and weaker level of individuation causing an increase in homicide. This is the opposite of egoistic homicide. According to Durkheim (1951 [1897]), a lack of social integration in modern societies will increase egoistic suicide, but will not increase homicide because egoistic suicide and homicide come from divergent causes. Egoistic homicide is a violent act inseparable from passion, or non-premeditated homicide, where there is intensity of the collective. Essentially, egoistic homicide then turns into altruistic homicide where integration is necessary for the homicide. The relationship between altruism and homicide can be seen through the division of labor.

DiCristina (2004) suggests that as societies develop, the collective decreases while individuality increases, which should cause a decrease in homicidal dispositions. This is because when there are strong sentiments related to collective things, it can cause intense emotions, which may lead to homicide. Eisner (2001) furthers this position when discussing how "Durkheim saw the decline of homicide rates as resulting from the liberation of the individual from collective bonds rather than as a consequence of the coercive potential of the state" (p. 632). In addition, when the collective is high, there may be little value placed on individual life (DiCristina, 2004). Levels of lethal violence tend to mirror collective emotions, which integrate individuals into groups (Eisner, 2001). Sentiments inspired by the collective are stimulants to murder (Durkheim, 1951 [1897]). When the person becomes liberated from the sacred obligation to the group, moral individualism becomes more pronounced and violence declines. Laws can also affect this relationship, as more acts are defined as criminal. DiCristina (2004) articulates

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that the level of societal development should be "negatively related to the official rates of unpremeditated murder when controlling for the extension of criminal law" (p. 73). However, it is important to note that the existence of anomic conditions can alter this relationship.

This dissimilarity across individuals is what causes social unity in modern society. "It is this complex division of labor that forces us to become mutually dependent on one another for basic needs and desires" (Chamlin & Cochran, 2005, p.6; see also Pridemore, Chamlin & Cochran, 2007). Norms and values that define social rules become obsolete during this transition (Pridemore et al., 2007). This is especially seen with rapid change. Solidarity is not eliminated, but rather changes based on greater social equality (Messner, 1982).

Wasserman (1978) examines the interaction between religious behavior and social activity in relation to deviant behavior for Alabama, Louisiana, Mississippi, and South Carolina. Durkheim (1951 [1897]) discusses how Catholics and Jews have lower suicide rates while Protestants have higher suicide rates, and how Catholics have higher homicide rates while Protestants have lower homicide rates. According to Wasserman (1978), religion integrates individuals into the social fabric of society and, therefore, should reduce the level of homicide. However, Durkheim (1951 [1897] suggests that where religious faith is very intense, it often inspires murders due to offenses against the collective being regarded as sacrilege. Wasserman (1978) found that black Baptist membership had a positive influence on the homicide rate in South Carolina, while white Protestant affiliation had a negative influence on homicide rates in Alabama, Mississippi, and South Carolina. Catholicism was negatively related to homicide rates

in all four states. Wasserman (1978) argues that the results for white Protestants was caused by the cohesion among the dominant white groups, which reduces the level of homicides.

Messner (1982) uses Durkheim's concept of solidarity to examine societal development, social equality, and moral individualism. A significant inverse relationship between the level of equality and the murder rate resulted, suggesting that egalitarian trends promote new forms of social solidarity, which replace older ones (Messner, 1982). In addition, a positive partial relationship between the measures of moral individualism and the murder rate was predicted, however, the results did not support this expectation. Chandler (1984) points out a possible flaw in Messner's (1982) study by saying that moral individualism is positively related to organic solidarity and negatively related to homicide. Messner argued that moral individualism was positively related to homicide. Chandler (1984) advises that Messner misinterpreted Durkheim's theory and suggests that if Messner had predicted the negative relationship, the findings would support the expectations.

Anomic Homicide.

Anomic homicide results from low regulation by society and is characterized by a weaker collective and a stronger amount of individuation causing an increase in homicide. A lack of social regulation fosters both homicide and suicide in a parallel state (Durkheim, 1951 [1897]). This relationship can be seen through the rate of social change.

Where there is an abrupt societal change, such as a rapid shift in population or political rule, there will be higher levels of anomy. Pridemore et al. (2007) suggest that during rapid social change, crime and deviance are increased due to a state of normlessness, where society fails to regulate escalating aspirations and expectations of its citizenry. This is congruent with

Durkheim's rationale that (1951 [1897]) as society's hold over individuals lessens, their

aspirations increase. This may result in a blurring of norms causing greater deviance. Gradual

change does not represent a direct challenge to society, especially if a new form of solidarity

arises, but an acute and immediate threat to the solidarity may present a crisis, especially if it is

against the collective belief and is emotionally charged (Pridemore & Kim, 2006). This is due to

a sudden shift causing deregulation to occur. Additionally, Durkheim (1951 [1897]) conveys that

those areas with a stronger collective and weaker individuation will be less susceptible to

"anomy," while those areas with weaker collective and higher individuation will be more

susceptible to anomic conditions. The first is evident in rural areas and the latter in urban areas.

However, in times of rapid social change, both rural and urban areas are likely experience an

increase in homicide.

Durkheim (1951 [1897]) suggests that political beliefs may carry the seeds of homicide.

Pridemore and Kim (2006, 2007) examined political change or crisis, which threatened collective

sentiments in Russia (Pridemore & Kim, 2006). They use Durkheim's idea on the level of

societal development and the rate of change. They used Russia to test this aspect of Durkheim's

theory due to the rapid political change being experienced at the time of their investigation and

found that the rapid political change during the 1990s threatened the collective sentiments and, in

fact, increased the homicide rates.

Similarly, Pridemore et al. (2007) using an interactive time-series analysis of Durkheim's

deregulation thesis found that the "Russian Federation experienced significant permanent

increase in the level of homicides and alcohol-related deaths and a more dramatic, though short-

lived, increase in the suicide rate in the years following the breakup of the Soviet Union" (p.

284). The authors explain that the former solidarity lost its power to control behavior while the

new solidarity remained underdeveloped leading individuals to follow selfish pursuits

(Pridemore et al., 2007). Further, they acknowledge that symbols of group pride and faith, which

generated collective sentiments, existed in a weakened state allowing their replacement with

goals of freedom, autonomy, and economic opportunities for the individuals, which were at once

repressed. According to Pridemore et al. (2007), crime and corruption became acceptable, or less

unacceptable, which fostered deviance. This study of crime in Russia tends to parallel

Durkheim's (1951 [1897]) position that in times of rapid change, individuals are freer to follow

their own desires due to deregulation. This causes norms to be distorted, which may result in

increased deviance. Pridemore and Kim (2007) furthered this idea by testing socioeconomic

change looking at anomic conditions. They found that socioeconomic change was positively and

significantly associated with the regional homicide rates. Pridemore and Kim (2007) propose that

while these changes were generally positive, the limits of the newfound freedoms were not fixed,

which caused boundary testing by citizens. Since this change was swift, individuals were free to

follow their own selfish pursuits allowing individual aspirations to flourish at the expense of

respect for others. Figure 4 shows the relationship between the collective consciousness, division

of labor, rate of social change, solidarity, and Durkheim's two types of homicide.
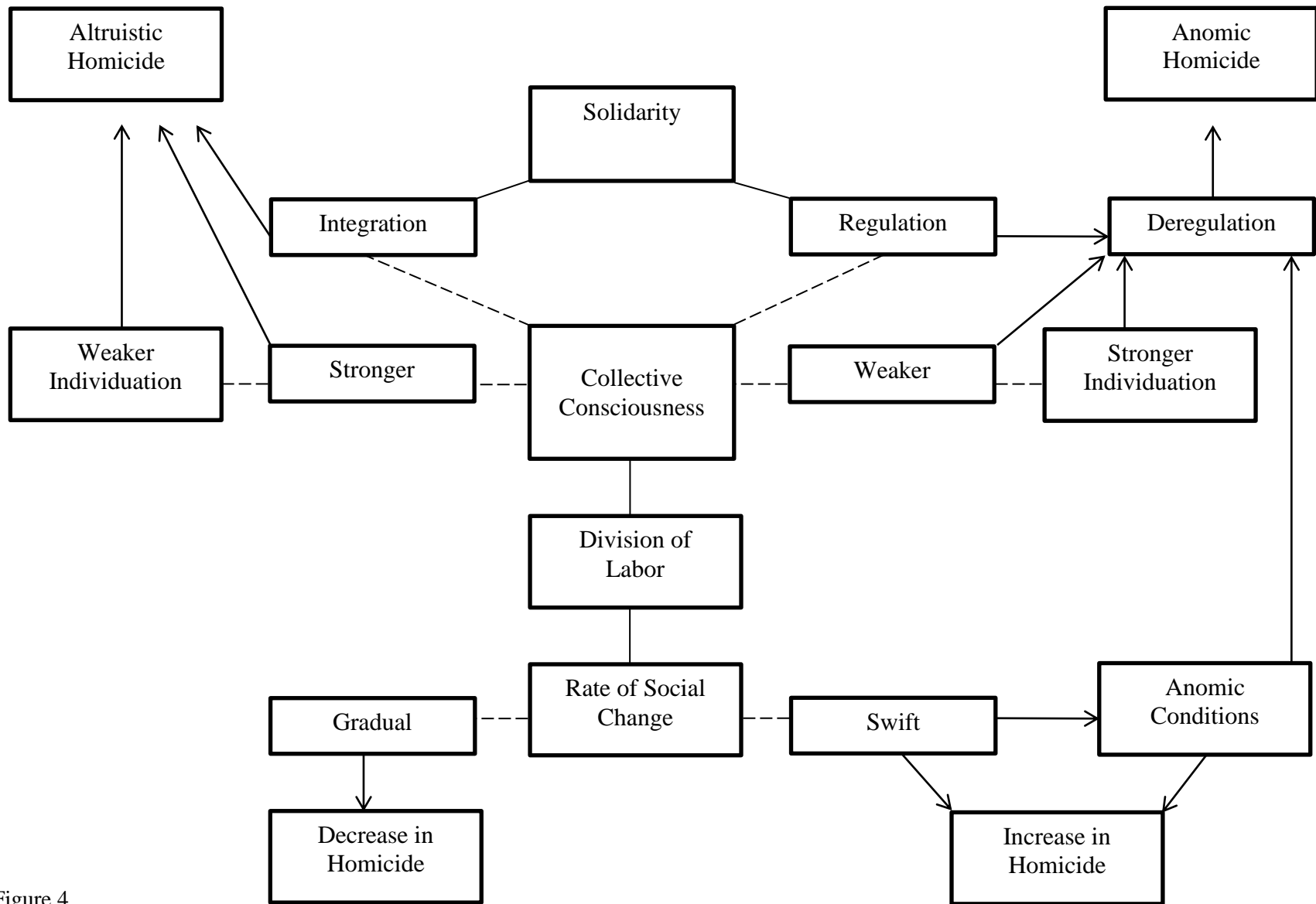
Figure 4
Relation of Homicide to the Collective Consciousness, Solidarity, Division of Labor, and Rate of Social Change

In sum, Durkheim (1951 [1897]) explores relationships between suicide and homicide by using the types of suicide. He discusses how egoistic suicide and homicide depend on opposite conditions. Egoistic suicide is characterized by a state of depression, a desire to live no longer, and an apathy produced by exaggerated individuation (Durkheim, 1951 [1897]). Homicide "is a violent act inseparable from passion" (Durkheim, 1951 [1897], p. 356). It is not imperative that the individual have an exaggerated individuation to refrain from homicide, but rather a respect for human nature. When the collective is strong and individuation is weak, altruistic homicide may exist. Altruistic homicides and suicides depend on social conditions that only differ in degree, instead of opposed conditions (Durkheim, 1951 [1897]). He furthers this by implying that regardless of the strength of the collective, "the average man [sic] tends to respect human personality in himself more than in his fellows" (Durkheim, 1951 [1897], p. 357). Due to having more respect for the self rather than for others, it would take a more powerful cause to commit suicide than homicide. Yet, Durkheim (1951 [1897]) suggests that anomic suicide is a "more modern form of suicide [than altruistic], equally capable of combination with homicide" (Durkheim, 1951 [1897], p.357). According to Durkheim (1951 [1897]), "anomy, in fact, begets a state of exasperation and irritated weariness which may turn against the person himself [sic] or another according to circumstances…" (p. 357). What causes the choice between suicide or homicide deals with the individual's moral constitution; low morality, or the shared system of values, are expected to result in homicide instead of suicide (Durkheim, 1951 [1897]).

Research Questions

The research questions for this study are based on the gaps in the literature on child homicide, mainly that the macro-perspective level has not been investigated. There are three parts to this work, one employs Durkheim's theory of homicide, one is considered exploratory and draws variables from other theories: social disorganization and anomie, and the third combines the first two. Research questions for all three parts are relatively similar as both have variables categorized as either integration or regulation. The overarching concern of this study is to find out if solidarity predicts child homicide. To measure solidarity, this inquiry follows Durkheim's ideas by using both integration and regulation.

The first set of three research questions focuses on the part of this study that follows Durkheim's theory of homicide.

1. *What measures of integration are associated with child homicide at the county level?*

2. *What measures of regulation are associated with child homicide at the county level?*

3. *What measures of solidarity are associated with child homicide at the county level?*

The second set of three research questions focuses on the part of this study that uses measures from social disorganization and anomie, but still follows Durkheim's theory of homicide. This part of my work is exploratory.

1. *What measures of exploratory integration are associated with child homicide at the county level?*

2. *What measures of exploratory regulation are associated with child homicide at the county level?*

3. *What measures of exploratory solidarity are associated with child homicide at the county*

   level?

The third set of three research questions focuses on the combination of both parts of this study to further test the concept of solidarity by using both integration and regulation.

1. *What measures of total integration are associated with child homicide at the county*

   level?

2. *What measures of total regulation are associated with child homicide at the county level?*

3. *What measures of total solidarity are associated with child homicide at the county level?*

CHAPTER 4: METHODOLOGY

The Present Study

The present study examines how the variables that are discussed above in relation to Durkheim's ideas of integration and regulation are related to child homicide. Essentially this study is testing whether child murder can be explained by social conditions related to Durkheim's concept of solidarity. Recall that integration refers to the degree to which collective sentiments are shared, while regulation generally refers to the degree of external constraints on individuals through society's norms, rules, and values. Therefore, social integration represents the strength of social bonds between the individual and society, while social regulation represents the strength of control of the individual by society. These two concepts are used to see if child murder can be explained by social conditions. I have two general hypotheses. First, I hypothesize that the more integrated a county is, the more child homicide there will be. This hypothesis was derived by using Durkheim's theory of homicide, which suggests that "strong sentiments related to collective things are stimulants to murder and that can overwhelm feelings of pity and sympathy" (Durkheim, 1990 [1957], p.115 as cited in DiCristina, 2004). My second hypothesis is that the less regulated a county is, the more child homicide there will be. Again, this was derived from using Durkheim's theory of homicide, which suggests that this type of county would experience a greater amount of "anomy."

Although this study is using Durkheim's views on solidarity and tests two general hypotheses related to his work, it is also an exploratory inquiry in some ways. This is because there are other macro-level variables that may be useful when examining child homicide, which

are drawn from other theoretical perspectives, such as social disorganization and anomie, that will be explored in this investigation. It is important to note the similarities among Durkheim's theoretical perspective, social disorganization, and anomie as several of the indicators are similar.

Other Theoretical Perspectives

Areas characterized by economic deprivation tend to have higher rates of population turnover and population heterogeneity, which were assumed to increase the likelihood of social disorganization (Bursik, 1988). Further, Park and Burgess (1924) suggest that the formulation of social control leads to the ability of a group to regulate them. Concerning strain theory, Lukes (1984) describes Durkheim's anomie as "the social, moral, and political isolation of individuals, their disassociation from social purposes and social regulation, the breakdown of social solidarity" (p. 15). Merton (1995) asserts that the basic structural concept of differential access to opportunities among people positioned in various locations in the social structure is often overlooked. He believed that an integrated society maintains equilibrium between the social structure, or the approved social means, and culturally approved goals (Merton, 1995). Agnew (1992) adds to strain theory by discussing three types of strain as the actual or anticipated; failure to achieve positively valued goals, removal of positively valued stimuli, or presentation of negatively valued stimuli. Both social disorganization and strain theory have concepts that can be seen in Durkheim's (1951 [1897]) theory of regulation and integration, where the lack of regulation may lead to increased violence. In this respect, multiple exploratory variables will be used (see Independent Variable section for further explanation).

As stated previously, child murder has been studied predominately by examining micro-level characteristics. It is common to find studies including offender characteristics, victim characteristics, and characteristics of the crime from a micro-level perspective. While it is impossible to ignore the value of such research, it is possible that prior studies overlook what a larger macro-level perspective may reveal. To my knowledge, macro-level characteristics of the society in which the child murders take place have not been studied. The purpose of the present study is to fill this gap in the literature by exploring child murder guided by a macro-level approach. While the individual characteristics are noteworthy, I believe that macro-level characteristics will offer more conservative statistical estimates of child murder. This means that we will see the bigger picture allowing for better understanding of the issue and not just the murder itself. This conservative estimate may help with proactive approaches to child homicide by better guiding law enforcement personnel, or other individuals in contact with at-risk offenders or victims, to areas where child murder is found to be most prevalent. This could be accomplished by establishing greater presence and availability for help, as well as providing education and other services in areas at risk.

Data

Homicide data utilized in this study come from National Incident-Based Reporting System (NIBRS), which are compiled by the Federal Bureau of Investigation for the Uniform Crime Reports (U. S. Department of Justice, Federal Bureau of Investigation, 2006-2010). NIBRS is an incident-based reporting system in which law enforcement agencies collect data on each single crime occurrence within 22 offense categories made up of 46 specific crimes called

Group A offenses, and arrests from 11 Group B offense categories (U.S. Department of Justice, Federal Bureau of Investigation, Criminal Justice Information Services Division, & Uniform Crime Reporting Program, 2000). According to the U.S. Department of Justice et al., (2000), Group A offenses include: arson, assault, burglary, drug/narcotic offenses, gambling offenses, homicide offenses, kidnapping, motor vehicle theft, prostitution offenses, sex offenses, and weapon law violations; while Group B offenses include, but are not limited to, disorderly conduct, drunkenness, voyeurism, runaway, trespassing, etc. Data from the administrative, incident, offender, and victim segments of the NIBRS were obtained from the Inter–University Consortium for Political and Social Research (ICPSR). NIBRS was used to provide a count of child murders in each county of the states that were 100% compliant for all years between 2006 and 2010. These data were aggregated to the county level and merged into a single file.

County level socio-demographics were obtained from the Census. Census data employed in this study were accessed from the American Community Survey five-year estimates and obtained through Social Explorer. The Census is a count and survey of a population recording details about individuals. Census data were used to obtain social economic status and demographic characteristics at the county-level for the years 2006-2010. An additional variable, political party change, using election results and only observing Republican or Democrat, comes from Politico. Politico is a website that shows election results of past elections. Politico data were used to obtain political party change characteristics at the county level for the 2004 and 2008 elections. Finally, data religion were collected by InfoGroup, organized into religious groups by the Association of Religion Data Archives, and obtained through Social Explorer.

<u>Sample</u>

The sample consists of county level aggregated child homicide counts for the years 2006-2010. The reason for including a range of years instead of looking at a single year is that it helps to eliminate potential problems that could be present if only using one year. First, it allows enough data to run appropriate analyses, and second, it helps to even out the picture, i.e., if only one year was used, potential patterns may be missed. Essentially, using multiple years, as opposed to only one, allows for better analysis due to having more non-zeros, or more child murder, and allows for patterns to be seen. It helps to even out the pattern for a relatively rare event like child murder. In order for the county to be included in this study, its state must be 100% compliant with NIBRS by 2006. This is important because it minimizes the risk of missing data. If the state is 100% compliant, all jurisdictions in each county are reporting. The states being used are: Delaware, Idaho, Iowa, Michigan, Montana, New Hampshire, North Dakota, Rhode Island, South Carolina, South Dakota, Tennessee, Vermont, Virginia, and West Virginia. The homicide data is a count of all child murders reported for the years being investigated. The inclusion criterion for the incident is that the victim is between the ages of birth and five years.

<u>Dependent Variable</u>

The dependent variable came from fully compliant NIBRS states for 2006-2010. To be included, the victim had to be between the ages of birth and five years old when murdered. The reason for stopping at age five is because usually children begin kindergarten at five years old. Since literature suggests that the offender is usually the child's parent(s), (Abel, 1986; Brewster

et al., 1998; Crittenden & Craig, 1990; Davis, 2005; Ewigman, et al., 1993; Goetting, 1988; Jason et al. 1983; Putkonen et al., 2011; Strang, 1996) it would be expected that the chances of murder would decrease after this age. The dependent variable is a count of child murders by county.

<div align="center">Independent Variables</div>

The independent variables were obtained through the U.S. Census Bureau's American Community Survey and Politico and are used. They are used as estimates of solidarity by considering both integration and regulation. Using variables suggested by Durkheim (1951 [1897]), I include indicators centered on religion, family, political society, and occupational groups. In particular, for testing integration, variables will include religion, family, political party, and military information. To test regulation, variables will include data about family, heterogeneity, and population change. All of the following variables were obtained from the American Community Survey five-year estimates, with the exception of political party change. Political party change came from Politico. Since all variables are county level, they are measured as a percentage, with the exception of political party change, the two heterogeneity variables, and urbanity. Their measurements will be discussed later.

<div align="center">Integration Variables</div>

Religion
The religion variable is operationalized as percent Catholic denomination per county. Durkheim (1951 [1897]) observed integration by examining religion. He found that Catholics committed less suicide due to their strong collective sentiments and beliefs, but committed more homicide

<div align="center">44</div>

due to offenses being regarded as a violation against the collective and morality (Durkheim, 1951 [1897]).

Family

The family variable used for integration is family density. The family density variable is operationalized as percent of households with children under the age of 18 living at home. Durkheim (1951 [1897]) observed integration by examining the family, and decided that the real insulating factor was the family itself. The insulation from suicide increases with family density. This factor is similar to religion in that it stimulates murder due to the strength of the integration. Family density is measured as percent of households in the county with children under the age of 18.

Political Party Change

The political variable is operationalized as political party change from the 2004 presidential election to the 2008 presidential election. Durkheim (1951 [1897]) observed integration by examining the political crisis. He suggests that in times of crisis, integration strengthens. However, since political crisis is not measurable in our current country, a proxy variable measuring political party change for each county from the presidential election in 2004 to that in 2008 will be used. The two political parties examined are Democrat and Republican. Any county where the majority of the votes were for one party over the other in the 2004 election, and then were the opposite in the 2008 election, will be considered a political party change. Counties that had a political party change are coded as one (1), and those that did not have a political party change are coded as zero (0).

<u>Military</u>
The military variable is operationalized as percent of population employed in the armed forces. Durkheim (1951 [1897]) observed integration by examining the military, and notes that suicide increases with length of time served, is higher among the higher ranked, and is stronger among volunteers and re-enlisted men. Although he didn't mention military when discussing homicide, he did discuss how in times of war, homicide increases (Durkheim, 1951 [1897]). Durkheim (1951 [1895]) continues by stating that "this increase [in homicide rates] will appear still more important if we reflect that the age at which most murders are committed is about thirty and that all young men were then with the colors" (p. 352). The measure of military was logged to help correct its original skewness.

<div align="center">Regulation Variables</div>

<u>Family</u>
The family variable used for regulation is marital status. Marital status is operationalized as percent of the population who are divorced and separated per county. Durkheim (1951 [1897]) observed regulation by examining the family and suggested that through divorce, suicide increases for men, but decreases for women (Durkheim, 1951 [1897]). Also, due to the deregulation of the family unit, divorce should increase homicide.

<u>Heterogeneity</u>
The heterogeneity variable is operationalized as the difference within the counties for income and race/ethnicity. Durkheim (1951 [1897]) observed regulation by examining the economic crisis. He suggests that in times of crisis, regulation weakens. The Gini index is used to measure economic inequality and the Simpson Diversity Index is used for race/ethnicity. The Simpson Diversity Index was created for each county by using proportions of non-Hispanic white, non-

Hispanic black, non-Hispanic other, and Hispanic. Each proportion was squared, summed, and then subtracted from one to create a fraction which represents the heterogeneity of race/ethnicity in the county (Osgood & Chambers, 2000). The equation used to calculate this measure is as follows (Osgood & Chambers, 2000):

$$1 - (\textstyle\sum p_i^2).$$

This measure indicates further heterogeneity, which specifies weaker regulation. Both heterogeneity measures range from zero to one, where zero (0) represents complete homogeneity and one (1) represents complete heterogeneity. Henry and Short (1954), when discussing the business cycle, allude to a similar idea to Durkheim's deregulation by using the frustration-aggression hypothesis and suggesting that "suicide and homicide are acts of aggression undifferentiated with respect to their common source in frustration generated by the business status (p. 64).

Population Change
The population change variable is operationalized as the population change in the county from 2000 to 2010. Durkheim (1951 [1897]) discusses how division of labor can affect violence and in periods of rapid social change, deregulation exists. Population change is used to measure the amount of regulation.

In addition to the above list of variables, other variables that may also help explain solidarity will be explored. This is the part of the study termed "exploratory" because the variables do not come from Durkheim, but are still used to expand the test his idea of solidarity. Some of these variables are used to measure social disorganization or anomie, which tend to be

similar to Durkheim's ideas. The variables include individual poverty, household poverty, employment status, educational attainment, school enrollment, place of birth, and urbanity. Although many of these are similar variables, they will be tested in different models to see if some have greater explanatory power than others and to reduce potential problems with multicollinearity.

<div align="center">Exploratory Integration Variables</div>

Educational attainment
Educational attainment is operationalized as the percentage of people per county with a high school diploma or less. Education attainment was used in Goetting's (1988) study, and 69% of offenders achieved at least a high school education.

Place of birth
The place of birth variable is operationalized as the percentage foreign born per county. This variable was transformed and the log of it was used to help correct its original skewness.

School enrollment
School enrollment is operationalized as the percentage of individuals over three years old enrolled in school. In Crittenden and Craig's (1990) study, it was determined that the rate of child homicide decreased as the child got older. This may be because the child leaves home to go to school. When they spend less time with the parent, there is less opportunity for that parent to murder them.

Exploratory Regulation Variables

Poverty
Poverty is operationalized as percent of children under 18 years of age who are living in poverty per county. Jason and Andereck (1983) and Abel (1986) suggest that most child murder occurs in poor areas.

Employment status
Employment status is operationalized as the percent of the population 16years of age and older who are in the labor market, but who are unemployed in each county. There is some discrepancy among scholars about whether or not child homicide offenders are more likely to be employed or unemployed. For example, Brewster et al. (1998) found that 3/4 of the child homicide offenders were employed at the time of the incident, whereas in Goetting's (1988) study just over 2/3 of the child homicide offenders were unemployed.

Urbanity
Urbanity is operationalized as the percent of the population that is living in urban areas per county. Durkheim (1951 [1897]) asserts that there is a difference between urban and rural areas when examining homicide and suicide rates. He suggests that those in urban areas experience greater anomy or less regulation (Durkheim, 1951 [1897] which he expected would increase homicide rates. Therefore, a measure of urbanity is used to explore possible differences. Urbanity is coded so that one (1) represents urban areas, denoted by the census as Metropolitan Statistical Analysis (MSAs), and zero (0) represents non-MSAs.

Control Variables
The control variables, which are included in this inquiry, were split into two categories: the main control variables and the additional control variables. The reason for using two

categories of controls is to have one category, the main controls, that are commonly used in

criminal justice literature, and a second category, additional controls, to examine any additional

effect particular to child homicide. The main control variables include sex, age, region, and total

population of the county. Sex is operationalized as percent of the county population that is male.

There are two age variables used. The first age variable is operationalized as the percent of the

population over 25 years old. This variable is used for both integration and regulation models.

The second age variable is operationalized as the percent of the population over 65 years old.

This variable is used for the exploratory models. The reason for using two age variables is

because of multicollinearity, which is further explained in the Multivariate Analysis section.

Region is operationalized as the region of the U.S. in which each state falls. This variable created

four dummy variables: Northeast, South, West, and Midwest. South is used as the comparison

category. Total population is operationalized as the total population of the county. In addition to

the above control variables, five additional control variables were used for both the integration

and regulation models. Urbanity is operationalized as the percent of the population that is living

in urban areas per county. Poverty is operationalized as the percent of children under 18 years of

age living in poverty per county. Employment status is operationalized as the percent of the

population 16 years of age and older who are unemployed in the county. Racial heterogeneity,

operationalized as the racial/ethnic difference within each county, was taken from the regulation

group. Finally religion, operationalized as the percent of the county belonging to any religion, is

used for only integration models. Religion is used to help control for the results of the Catholic

variable for the integration models; to gauge rather it is specifically Catholic that makes a

difference, or religion as a whole. These variables were selected because of their suggested

importance in past research dealing with homicide.

Hypotheses
This study has two general hypotheses. However, the general hypotheses contain sub

hypotheses, that relate to integration and regulation as defined by Durkheim (1951 [1897]).

<u>Integration</u>
H1: The more integrated a county is, a higher rate of child homicide is expected.

Sub Integration Hypotheses
H1a: Counties with a higher percentage of Catholics are expected to be positively related

child murder.

H1b: Counties with a higher percentage of households containing children are expected

to be positively related child murder.

H1c: Counties with no political party change are expected to be positively related child

murder.

H1d: Counties with a higher percentage of employment in the armed forces are expected

to be positively related child murder.

<u>Regulation</u>
H2: The less regulated a county is, a higher rate of child homicide is expected.

Sub Regulation Hypotheses
H2a: Counties with a higher percentage of divorce and are expected to be positively

related child murder.

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H2b: Counties with a greater amount of income heterogeneity are expected to be

positively related child murder.

H2c: Counties with a greater amount of racial heterogeneity are expected to be positively

related child murder.

H2d: Counties with more population change, regardless of the direction, are expected to

be positively related child murder.

In addition, this study employs additional variables drawn from other theoretical

perspectives to further test the idea of solidarity. These exploratory variables have been put into

the categories of integration and regulation.

Exploratory Integration Hypotheses
H3: The more integrated a county is, a higher rate of child homicide is expected, using the

exploratory variables.

Sub Integration Hypotheses
      H3a: Counties with a lower percentage of low educational attainment are expected to be

      positively related child murder..

      H3b: Counties with a lower percentage of foreign born are expected to be positively

      related child murder.

      H3c: Counties with a higher percentage of school enrollment are expected to be

      positively related child murder.

Exploratory Regulation Hypotheses
H4: The less regulated a county is, a higher the rate of child homicide is expected, using the

exploratory variables.

Sub Regulation Hypotheses
   H4a: Counties with a higher percentage of poverty are expected to be positively related

   child murder.

   H4b: Counties with a higher percentage of unemployment are expected to be positively

   related child murder.

   H4c: Counties that are MSAs, that is urban, are expected to be positively related child

   murder.

<div align="center">Data Analysis</div>

All data files were combined to form one database and STATA was used to complete the

analyses. The unit of analysis for this study was the county. Prior to any analyses, frequencies

were run to examine the basic descriptive features of the variables, followed by univariate

analyses. Appropriate bivariate analyses were conducted for both of the dependent variables and

each of the independent and control variables. The bivariate analyses were dictated by the level

of measurement of the variables and included Pearson's correlations, T-tests, and chi squares. In

addition, all variables were checked for interactions with one another. Although there were a few

independent variables significantly related to one another in the correlation table, the correlations

were very weak, that is less than 0.3.

Concerning multivariate analyses, negative binomial regression was used. This is a count model since the dependent variable was a count of child murder per county. According to Long and Freese (2006), linear regression models can result in inconsistent, inefficient, and biased estimates when applied to count outcomes. Therefore a count model is a better fit than a linear regression. Preliminary multivariate analyses indicated that the variance of the dependent variable was larger than the mean, indicating overdispersion. This is a violation of the Poisson regression, which indicates that negative binomial regression is a better fit for the data. The consequences of selecting Poisson regression over negative binomial regression when overdispersion exists include incorrect significance tests for the coefficients (Osgood, 2000). Therefore, negative binomial regression was chosen in order to examine the relationships among the dependent, independent, and control variables. In addition, the Vuong test was used in STATA to determine if zero-inflated negative binomial regression was a better fit for the data. The results of the test implied that the zero-inflated model was a better fit. However, the zero-inflated model assumes that there are two latent groups, an always zero group and a not always zero group. The always zero group has an outcome of zero with a probability of one, and the not always zero group might have an outcome of zero, but has a nonzero probability of a positive outcome (Long & Freese, 2006). Concerning this study, every child has the probability of being murdered, but luckily most are not. Therefore, theoretically, it does not make sense to use a zero-inflated model for this study. Tables 1 through 3 present an overview of what variables are included in the multivariate analyses.

Twenty-six multivariate models were estimated. There were nine main groups with two to three models each. The main groups analyzed were: integration, regulation, integration and

regulation, exploratory integration, exploratory regulation, all exploratory, all integration, all regulation, and all variables. When estimating the integration, regulation, and the integration and regulation groups, three models were used for each group. One model for each group included the count of homicides per county and the independent variables; a second model for each group included the count of homicides per county, the independent variables, and the main control variables; and the third model for each group included the count of homicides per county, the independent variables, the main control variables, and the additional control variables. This made a total of three groups and nine models. Table 1 presents an overview of what variables are included in the integration and regulation group analyses.

Table 1

Overview of Independent and Control Variables Included in the Negative Binomial Regressions for Integration and Regulation Groups

	Integration			Regulation			Solidarity		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Independent Variables									
Percent Catholic	X	X	X				X	X	X
Family Density	X	X	X				X	X	X
Political Party Change	X	X	X				X	X	X
Percent Military	X	X	X				X	X	X
Marital Status				X	X	X	X	X	X
GINI Index				X	X	X	X	X	X
Racial/Ethnicity Heterogeneity			X	X	X	X	X	X	X
Population Change				X	X	X	X	X	X
Percent Poverty (<18 years)			X			X			X
Percent Unemployed			X			X			X

	Integration			Regulation			Solidarity		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Urbanity			X			X			X
Percent High School Diploma or Less									
Percent Foreign Born									
Percent Enrolled in School (>3 years)									
Control Variables									
Age									
25 and older		X	X		X	X		X	X
65 and older									
Male		X	X		X	X		X	X
Region		X	X		X	X		X	X
Religion			X						X
Total Population	X	X	X	X	X	X	X	X	X

When estimating the exploratory variables, they were broken into three groups: exploratory integration, exploratory regulation, and all exploratory. With these groups, three models were used for each group. One model for each group included the count of homicides per county and the independent variables; a second model for each group included the count of homicides per county, the independent variables, and the main control variables; and the third model for each group included the count of homicides per county, the independent variables, the main control variables, and the additional control variables. This made a total of three groups and nine models. Table 2 presents an overview of what variables are included in the exploratory group analyses.

Table 2

Overview of Independent and Control Variables Included in the Negative Binomial Regressions for the Exploratory Groups

	Exploratory Integration			Exploratory Regulation			Exploratory Solidarity		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Independent Variables									
Percent Catholic									
Family Density									
Political Party Change									
Percent Military									
Marital Status									
GINI Index									
Racial/Ethnicity Heterogeneity			X			X			X
Population Change									
Percent Poverty (<18 years)				X	X	X	X	X	X
Percent Unemployed				X	X	X	X	X	X

	Exploratory Integration			Exploratory Regulation			Exploratory Solidarity		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Urbanity				X	X	X	X	X	X
Percent High School Diploma or Less	X	X	X				X	X	X
Percent Foreign Born	X	X	X				X	X	X
Percent Enrolled in School (>3 years)	X	X	X				X	X	X
Control Variables									
Age									
25 and older									
65 and older		X	X		X	X		X	X
Male		X	X		X	X		X	X
Region		X	X		X	X		X	X
Religion									
Total Population	X	X	X	X	X	X	X	X	X

When estimating all of the variables, they were broken into three groups: all integration, all regulation, and all exploratory. These groups included all the variables used in the study that represent the given group. With these groups, three models were used for the all integration and all variables groups. One model for each group included the count of homicides per county and the independent variables; a second model for each group included the count of homicides per county, the independent variables, and the main control variables; and the third model for each group included the count of homicides per county, the independent variables, the main control variables, and the additional control variables. Only two models were used for the all regulation group because the additional controls are already included in the first model. The models for this group included a model for the count of homicides per county, and the independent variables, and a model for the count of homicides per county, the independent variables, and the main control variables. This made a total of three groups and eight models. Table 3 presents an overview of what variables are included in the all group analyses.

Table 3

Overview of Independent and Control Variables Included in the Negative Binomial Regressions for the "All" Groups

	All Integration			All Regulation		All Solidarity		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 1	Model 2	Model 3
Independent Variables								
Percent Catholic	X	X	X			X	X	X
Family Density	X	X	X			X	X	X
Political Party Change	X	X	X			X	X	X
Percent Military	X	X	X			X	X	X
Marital Status				X	X	X	X	X
GINI Index				X	X	X	X	X
Racial/Ethnicity Heterogeneity			X	X	X	X	X	X
Population Change				X	X	X	X	X
Percent Poverty (<18 years)				X	X	X	X	X
Percent Unemployed				X	X	X	X	X

	All Integration			All Regulation		All Solidarity		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 1	Model 2	Model 3
Urbanity				X	X	X	X	X
Percent High School Diploma or Less	X	X	X			X	X	X
Percent Foreign Born	X	X	X			X	X	X
Percent Enrolled in School (>3 years)	X	X	X			X	X	X
Control Variables								
Age								
25 and older								
65 and older		X	X		X		X	X
Male		X	X		X		X	X
Region		X	X		X		X	X
Religion			X					X
Total Population	X	X	X	X	X	X	X	X

CHAPTER 5: RESULTS

Descriptive Statistics

The dependent variable, a count of child homicide per county, came from NIBRS. There were 52 child murders between the years of 2006 and 2010 that did not have a FIPS code recorded. Forty-one of these cases were from Virginia and eleven were from Tennessee. Although NIBRS recorded the county FIPS code as missing, the city name was recorded. Therefore, the county FIPS code was found by performing a simple Google search for what the county name is that contains the city listed in NIBRS. For example, all 11 missing cases from Tennessee were in the city of Nashville. The Google search was: "what county is Nashville, TN in?" This search gave the county name, for Nashville, Davidson County. Looking at a map confirmed the county. Then, the census gave the FIPS code for the county. This technique was applied to every missing county FIPS, leading to finding all 52 cases and they were subsequently added to the final database.

Census variables, the political change variable and crime statistics were collected for each county in 15 states: Delaware, Idaho, Iowa, Michigan, Montana, New Hampshire, North Dakota, Rhode Island, South Carolina, South Dakota, Tennessee, Vermont, Virginia, and West Virginia. Counties within these states were determined by the U.S. Census Bureau (N=763). Of these counties, 198 (26%) counties had at least one child murder over the five year period between 2006 and 2010. From the counties with at least one child murder, there were 118 (60%)[3] counties with only one child murder, 32 (16%) counties with two child murders, 21 (11%) counties with three child murders, nine (5%) counties with four child murders, three (2%)

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[3] Added percentages may not equal 100 due to rounding.

counties with five child murders, six (3%) counties with six child murders, four (2%) counties

with seven child murders, one county with eight child murders, one county with nine child

murders, one county with 11 child murders, one county with 24 child murders, and one county

with 36 child murders. Descriptive statistics can be found in table 4.

There were four variables representing integration. On average, approximately 7% of

those living in the counties analyzed were Catholic (S.D. =8.76), and a little under one third of

those living in the counties analyzed had children under the age of 18 in their households

(30.47%; S.D. = 5.70). Only 124 counties (16%) changed political parties from the 2004 to the

2008 election. On average less than one percent of the population in the counties were employed

in the military (0.51%; S.D. = 1.6). However, this variable was skewed (4.16) and in order to

correct it, the log was taken. Using the log, which is reported in the table, the result was -4.41%

employed in the military (S.D. =   3.77).

There were four variables representing regulation. On average, approximately 12% of

those living in the counties analyzed were separated or divorced. Concerning the GINI index,

which ranges from 0 (homogenous) to 1 (heterogeneous), for the counties analyzed it ranged

from 0.33 to 0.58 with an average of 0.43 (S.D. = 0.03). In addition, racial and ethnic

heterogeneity, which ranges from 0 (homogenous) to 1 (heterogeneous), for the counties

analyzed ranged from 0.01 to 0.68 with an average of 0.22 (S.D. = 0.17). On average the

counties had a three percent population change with a range of -24% to 71.97% (S.D. = 10.68).

There were six variables representing exploratory work. Three of those variables

represented integration and three represented regulation. Concerning the measures for

integration, on average 52% of the population in the counties analyzed had a high school diploma or less (S.D. = 10.93), and approximately one quarter of those three years old and older were enrolled in school (24.44%; S.D. = 5.20). On average a little under three percent of the population in the counties were foreign born (2.9%; S.D. = 3.64). However, this variable was skewed (3.72); to correct it, the log was taken. Using the log, which is reported in the table, the result was less than one percent were foreign born (0.5%; S.D. = 1.38). Concerning the measures for regulation, on average approximately 20% of children under the age of 18 in the counties analyzed were in poverty (20.06%; S.D. = 9.50), while only seven percent of the population in the counties analyzed were unemployed (S.D. = 3.89). Only 262 (34%) counties were considered to be MSAs by the census.

There were five main controls used: age, male, region, religion, and total population. There were two age categories; one (25 years old and older) for the integration and regulation models, and a second (65 years old and older) for the exploratory models. The age group was chosen based on preliminary analysis concerning multicollinearity. On average, 68 % of the population within the counties were older than 25 (S.D. = 5.29) and 16% were older than 65 (S.D. = 4.32). Approximately 50% of the population within the counties were male (39.86; S.D. = 2.03). On average, approximately 43% of those living in the counties analyzed belonged to a religious affiliation within the county (43.11%; S.D. = 19.87). The range of this variable was 5.29% to 164.39%. Upon closer examination of the counties with more than 100%, it was determined that individuals most likely travel outside of their county to attend a religious[4] service of their choice. All regions in the U.S. were represented with 32 (4%) of the counties in

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[4] Religion was never significant.

the Northeast, 330 (43%) were in the South, 100 (13%) were in the West, and 301 (39%) were in the Midwest. The mean population of the counties analyzed was 54041.45 (S.D. = 123409.6). However, the variable was skewed (7.611) and in order to correct it, the log was taken. Using the log, which is reported in Table 4, the results were 9.960 (S.D. = 0.178)

Table 4

Descriptive Statistics for Counties, 2006-2010, N = 763

	Mean	S.D.	Minimum	Maximum
Dependent Variables				
Homicide count per County	0.59	1.96	0	36
Independent Variables				
Integration				
Percent Catholic	7.30	8.76	0	64.9
Family Density	30.47	5.70	13.88	65.63
Political Party Change	0.16			
Percent Military (log)	-4.41	3.77	-9.21	2.56
Regulation				
Marital Status	12.41	3.01	3.54	23.84
GINI Index	0.43	0.03	0.33	0.58
Racial/Ethnicity Heterogeneity	0.22	0.17	0.01	0.68
Population Change	3.00	10.68	-24.39	71.97
Exploratory				
Percent Poverty (<18 years)	20.06	9.50	1.62	59
Percent Unemployed	7.24	3.89	0	30.93
Urbanity	0.34			
Percent High School Diploma or Less	52.17	10.93	15.68	79.89
Percent Foreign Born (log)	0.50	1.38	-9.21	3.38
Percent Enrolled in School (>3 years)	24.44	5.20	9.57	56.3

	Mean	S.D.	Minimum	Maximum
Control Variables				
Age				
25 and older	68.32	5.29	36.68	82.04
65 and older	16.42	4.32	4.71	34.14
Male	49.86	2.03	43.31	66.25
Religion	43.11	19.87	5.24	164.39
Region[1]				
Northeast	0.04			
West	0.13			
Midwest	0.39			
South	0.43			
Total Population (log)	9.96	1.32	6.39	14.44

[1]Region does not add up to 100% due to rounding.

Bivariate Analyses

Bivariate analyses were conducted for all variables, and the results are presented in Table 5. Percent of households with children under the age of 18 years was the only measure of integration that was significant. As the percentage of households with children under the age of 18 years increased, the count of child homicide increased ($r = 0.11$, $p<0.001$). All of the measures used for regulation were significant, however. As the percentage of divorce and separation increased, the count of child homicide increased ($r = 0.11$, $p<0.01$). Also, the more heterogeneity that existed within the county, the more likely there was child homicide for both income ($r = 0.14$, $p<0.001$) and race/ethnicity ($r = 0.28$, $p<0.001$). In addition, the more population change a county had, the count of child homicide increased ($r = 0.12$, $p<0.01$). All of the exploratory measures for integration were significant. Findings suggest that the larger the percentage of individuals with a high school diploma or less, the less child homicide there was, i.e. the count of child homicide decreased ($r = -0.17$, $p< 0.001$). However, as the percentage of foreign born increased, so did the count of child homicide ($r = 0.20$, $p<0.001$). Please note that past literature has suggested the opposite effect of foreign born and crime rate. Sampson (2008) stated "immigration—even if illegal—is associated with lower crime rates…" (p. 29). In addition, Polczynski Olson, Laurikkala, Huff-Corzine, and Corzine (2009) found that crime rates among those who are foreign-born are not higher than those among native-born. Finally, in direct opposition to my expectation, as the percentage of those three years and older were enrolled in school increased, the count of child homicide increased ($r = 0.16$, $p< 0.001$). Only two of the measures for exploratory regulation were significant. As the percentage of those unemployed increased, the count of child homicide increased ($r =0.11$, $p<0.01$). Also, those counties regarded

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as MSAs were more likely to have a higher count of child homicide (t = -5.54, p<0.001). The mean count of homicides for an MSA county is 1.30 and that for a non-MSA county is 0.21.

Control variables were also analyzed. Percent male, those 25 years old and older, those 65 years old and older, total population, and both the West and Midwest regions of U.S. were significantly correlated with the count of child homicide. The counties with a larger percentage males is significantly correlated with less child homicide (r = -0.14, p<0.001). Also, counties with a higher percentage of those 25 years old and older (r = -0.14, p<0.001), as well as counties with a higher percentage of those 65 years old and older (r = -0.24, p<0.001) were negatively correlated with the count of child homicide. The greater the population of a county, the more likely an increase in the count of child homicide (r = 0.46, p<0.01). A one-way analysis of variance yields a significant F-statistic (F = 3.62, p<0.05) indicating that some regions have more child murder on average than others. The average for the South is 0.84, while the other regions vary from 0.32 to 0.59. According to the Scheffe test, the mean for the South (.084) is statistically different from the mean for the Midwest (0.39): counties in the South have more child homicides than counties in the Midwest.

Table 5

Bivariate Analyses between the All Variables and Count of Child Murders per County, 2006-2010, N = 763

Variables	Mean	Test Statistic
Integration		
Catholic		-0.04
Households with children		0.12***
Political change[a]		
Yes	0.52	0.61
No	0.60	
Armed Forces (log)		0.21***
Regulation		
Population change		0.12**
Divorce		0.11**
Racial heterogeneity		0.28***
GINI		0.14***
Exploratory		
Children in poverty		0.04
County MSA[a]		-5.543***
Yes	1.30	
No	0.21	
Unemployed		0.11**
High School Diploma or less		-0.17***
Foreign Born (log)		0.20***
3yrs+ Enrolled in School		0.16***
Control		
Male		-0.14***
Religion		-0.03
Age		
25 yrs. and older		-0.14***
65 yrs. and older		-0.24***
Region[b]		3.62*
South	0.85	
Northeast	0.59	
West	0.32	
Midwest	0.39	
Total Population (log)		

Note. All test statistics are correlations unless otherwise denoted
[a]T-test
[b]ANOVA
*$p<0.05$. **$p<0.01$. ***$p<0.001$.

<u>Multivariate Analyses</u>

Prior to these analyses, a check for multicollinearity was conducted with each of the variables in all groups: integration, regulation, exploratory integration, exploratory regulation, and all variables. For the integration models, Variance Inflation Factors (VIFs) ranged between 1.05 and 2.71 for all variables. According to Fisher and Mason (1981) VIFs under 4 are a conservative estimate and assumes multicollinearity is either nonexistent or that it would have no significant influence on the findings. The VIFs for the regulation models ranged from 1.20 to 2.83. The VIFs for integration and regulation ranged from 1.07 to 2.93. Originally, the age variable of 25 years old and older was used for the exploratory models, however, it yielded a VIF of 8.03 and caused a VIF of 8.63 for the school enrollment variable, those three years and older enrolled in a school. This meant that the age and enrollment variable were too collinear with each other to include in the same models. A common solution to dealing with multicollinearity is to combine the variables that are multicollinear, however, this was not a possibility here. Instead, a different age group, 65 years old and older, was selected causing all VIFs to fall under 3.17. In order to decide which age range to use, I tested age ranges in 10 year increments checking for multicollinearity, i.e.: 25 and up, 35 and up, 45 and up, etc. Essentially, 65 years old and older was selected because it was the first age range to yield a VIF under 4. The VIFs for exploratory integration ranged from 1.22 to 3.03, while the VIFs for exploratory regulation ranged from 1.17 to 2.56. All of the exploratory variables had VIFs ranging from 1.27 to 3.17. When checking for multicollinearity with the all integration models, the same problem arose between the VIFs of those 3 years and older enrolled in school (10.09) and 25 years old and older (10.99). Again, 65 years old and over was used to replace the age variable resulting in the VIFs ranging between 1.06 and 3.45. All of the regulation variables had VIFs between 1.20 and 2.83. When all of the

variables were combined, the VIFs ranged from 1.07 to 5.67. The high VIF was for the 65 years old and older variable. Multivariate analyses were estimated both with and without the 65 and older variable to see if it made a difference. It did not, so the variable was removed. When all multicollinearity issues were corrected, the VIFs ranged from 1.06 to 3.33.

It is common for Poisson regression and negative binomial regression models to incorporate an offset, or exposure, variable into the equation. Osgood (2000) notes that adding the natural logarithm of the population as an offset variable allows the researcher to interpret the results of the regression as "rates of events" rather than as a count (p. 27). Since the total population variable was skewed and corrected by transforming it into its log, it was used as an exposure variable for all negative binomial regressions.

<div align="center">Integration</div>

To test the integration variables, three models were estimated. The results can be seen in Tables 6-8. Negative binomial regressions were used to estimate all three models. The first model included only the independent variables for integration. Table 6 presents the result for model one. The significant chi-square statistic shows that at least one of the regression coefficients in the model is not equal to zero, meaning that the model itself is significant (LR $Chi^2 = 22.70$, p<.001). In contrast to Durkheim's idea that Catholics would be more likely to commit murder (Durkheim, 1951 [1897]), this model shows that as the percentage of Catholics in a county increases, the rate of child homicide would be expected to decrease by a factor of 0.96, holding all other variables in the model constant (p<0.001). In addition, for every one percent increase in the log of individuals in a county employed in the military, the rate of child homicide can be expected to increase by a factor of 1.061, holding all other variables in the

model constant (p<0.01). These findings are consistent with Durkheim's (1951 [1897])

discussion on how war, those in the military, and political crisis have a stronger collective and

therefore homicide is generally more prevalent.

Table 6

Negative Binomial Regression of Integration with Independent Variables, 2006-2010

	Unstandardized Coefficients	IRR (S.E.)
Independent Variables		
Percent Catholic	-0.041	0.960 (0.010)***
Family Density	-0.010	0.990 (0.012)
Political Party Change	-0.132	0.876 (0.146)
Percent Military (log)	0.060	1.061 (0.024)**
Log of Total Population		
(exposure variable)	1	1
Constant[1]	-10.713	0.000 (9.000)
LR Chi^2	22.70***	
Pseudo R^2	0.021	

Note. Sample size is 763 counties.
[1] Coefficient was -10.713 and IRR (S.E.) was 0.00002 (9.66e-06)
[a]$p<.1.$ * $p < .05.$ ** $p < .01.$ *** $p < .001.$

The second model included all of the independent variables for integration as well as the main control variables. Table 7 presents the results for model two. The chi-square statistic shows that the model is significant (LR Chi^2 = 33.83, p<.001). The same variables that were significant in the first model were also significant in this model, although the significance level decreased. As the percentage of Catholics in a county increases, the rate of child homicide can be expected to decrease by a factor of 0.97, holding all other variables in the model constant (p<0.05). In addition, a one percent increase in the log of individuals in a county employed in the military is expected to increase child homicide by a factor of 1.051, holding all other variables in the model constant (p<0.05). For the control variables, only one region was significant. The rate of child homicides are expected to decrease by a factor of 0.532 for counties in the Northeast as compared to counties in the South, holding all other variables constant (p<0.05). This finding is similar to McClain et al.'s (1994) findings that the highest rate of child homicide is in the South and West, while the lowest is in the Northeast. Past studies have also found that the rate of homicide is greatest in the South (Huff-Corzine, Corzine, & Moore, 1986) and the West (Nelson, Corzine, Huff-Corzine, 1994). However, there is a divergence between this finding and the results from Jason et al. (1983) where the Northeast and South had the highest homicide rate for infants less than 1 week old and the North Central region had the highest homicide rate for infants older than one week old.

Table 7

Negative Binomial Regression of Integration with Independent Variables and Main Controls, 2006-2010

	Unstandardized Coefficients	IRR (S.E.)
Independent Variables		
Percent Catholic	-0.027	0.974 (0.012)*
Family Density	-0.019	0.981 (0.013)
Political Party Change	-0.092	0.912 (0.151)
Percent Military (log)	0.049	1.051 (0.024)*
Main Control Variables		
Percent Male	-0.053	0.948 (0.044)
Percent 25yrs and Older	-0.02	0.980 (0.013)
Northeast	-0.631	0.532 (0.154)*
West	0.078	1.081 (0.251)
Midwest	-0.0291	0.748 (0.122)[a]
Log of Total Population (exposure variable)	1	
Constant	-6.464	0.002 (0.004)
LR Chi^2	33.83***	
Pseudo R^2	0.032	

Note. Sample size is 763 counties.
[a]p<.1.* p < .05. ** p < .01. *** p < .001.

The third model included all of the independent variables for integration, the main control variables, and the additional control variables. Table 8 presents the result for model three. The chi-square statistic shows that the model is significant (LR $Chi^2 = 45.14$, p<.001). The same independent variables that were significant in the second model were also significant in this model, although the significance level decreased for percent Catholic, while it increased for percent employed in the military. As the percentage of Catholics in a county increases, the rate of child homicide decreases by a factor of 0.977, holding all other variables in the model constant (p<0.1). In addition, a one percent increase in the log of individuals employed in the military in a county can be expected to increase the rate of child homicide by a factor of 1.069, holding all other variables in the model constant (p<0.01). Both the Midwest and the Northeast lost significance when the additional control variables were included. However, the additional control variables yielded one variable, poverty, which was significant. As the percentage of those 18 years old and under living in poverty in the county increases, the rate of child homicide can be expected to increase by a factor of 1.022, holding all other variables in the model constant (p<0.1). Durkheim (1951 [1897]) mentions that suicide is more prevalent among higher-income groups living in urban areas, while homicide is more prevalent in rural areas. This finding is consistent with past research suggesting that poverty is positively related to child homicide (Abel, 1986; Jason & Andereck, 1983).

Table 8

Negative Binomial Regression of Integration with Independent Variables, Main Controls, and Additional Controls, 2006-2010

	Unstandardized Coefficients	IRR (S.E.)
Independent Variables		
Percent Catholic	-0.024	0.977 (0.012)[a]
Family Density	-0.012	0.988 (0.014)
Political Party Change	-0.596	0.942 (0.150)
Percent Military (log)	0.067	1.069 (0.026)**
Main Control Variables		
Percent Male	-0.026	0.974 (0.044)
Percent 25yrs and Older	-0.138	0.986 (0.014)
Northeast	-0.0429	0.651 (0.201)
West	0.207	1.230 (0.397)
Midwest	-0.163	0.850 (0.155)
Additional Control Variables		
Religion	0.003	1.002 (0.005)
Racial/ethnic Heterogeneity	0.523	1.687 (0.729)
Percent <18yrs in Poverty	0.022	1.022 (0.012)[a]
Percent Unemployed	-0.014	0.986 (0.028)
Urbanity	-0.155	0.856 (0.129)
Log of Total Population	1	1
(exposure variable)		

	Unstandardized Coefficients	IRR (S.E.)
Constant	-8.988	0.000 (0.000)
LR Chi^2	45.14***	
Pseudo R^2	0.0421	

Note. Sample size is 763 counties.
[1] Coefficient was –8.988 and IRR (S.E.) was 0.000125 (0.0003263)
[a]p<.1.* p < .05. ** p < .01. *** p < .001.

In conclusion, the integration measures that were significantly associated with child homicide in the counties were percent Catholic and percent employed by the military. Percent Catholic significantly decreased the rate of child homicide and the percent employed by the military significantly increased the rate of child homicide. When the main control variables were included in the second model, both percent Catholic and percent employed by the military decreased in their significance level. Finally, when adding the remaining control variables into the third model, percent Catholic became less significant while percent employed by the military became more significant. While the findings for percent employed by the military were expected, the result of Catholic decreasing homicide was not expected, at least not when applying Durkheim's theory. However, it is important to note that in Wasserman's (1978) study, Catholicism was negatively associated with homicide in all four states examined. It is interesting that neither family density nor political party change were found to be significant since both were significantly related to an increase in homicide in Durkheim's (1951 [1897]) *Suicide.* This may be because Durkheim (1951 [1897]) examined all homicide and not a specific type of homicide, as this study is specific to child homicides and not a specific type of homicide, such as child murder. According to Durkheim (1951 [1897]), strong integration may lead to homicide as it is used as a protective factor; where strong sentiments are related to the collective and can cause intense emotions. Further, in times of war and political crisis, there is a social condition that works to integrate individuals causing an increase in homicide (Durkheim, 1951 [1897]). Here, the proxy measure for political crisis was not significantly related to homicide. In addition, Durkheim (1951 [1897]) suggests that an increase in family size causes greater morality and integration to exist within the family unit and threats against it must be dealt with personally,

leading to an increase in the chance of homicide. Again, the measure used in this study for family size was not significantly related to homicide.

<div align="center">Regulation</div>

To test the regulation variables, three models were estimated. The results can be seen in Tables 9-12. Negative binomial regressions were used to estimate all three models. The first model included only the independent variables for regulation. Table 9 presents the results for model one. The chi-square statistic shows that the model is significant (LR Chi^2 = 32.51, p<.001). As expected, as the percentage of divorce and separation in a county increases, the rate of child homicide can be expected to increase by a factor of 1.125, holding all other variables in the model constant (p<0.001). Durkheim (1951 [1897]) suggests that unmarried men murder more than married men, which may be due to the deregulation that occurs from divorce. Other research has also supported this finding (Lymen et al., 2002; Putkonen et al., 2011). In addition, a one unit increase in racial/ethnic heterogeneity in a county leads to the rate of child homicide increasing by a factor of 2.372, holding all other variables in the model constant (p<0.05). This measure was used to examine regulation with the idea that the more differences observed in a county, the more likely there would be child homicide. Durkheim (1951 [1897]) suggests that anything leading to deregulation would increase homicide. This variable indicates that racial or ethnic difference within the county would lead to weak regulation and therefore increase the chance of child homicide.

Table 9

Negative Binomial Regression of Regulation with Independent Variables, 2006-2010

	Unstandardized Coefficients	IRR (S.E.)
Independent Variables		
Percent Divorced	0.117	1.125 (0.033)***
Income Inequality	2.937	18.868 (37.792)
Racial/Ethnic Heterogeneity	0.864	2.372 (0.819)*
Population Change	0.004	1.004 (0.006)
Log of Total Population	1	1
(exposure variable)		
Constant[1]	-14.578	4.000 (4.000)
LR Chi^2	32.51***	
Pseudo R^2	0.030	

Note. Sample size is 763 counties.
[1] Coefficient was -14.578 and IRR (S.E.) was 4.66e-07 (4.15e-07)
[a]$p<.1$.* $p < .05$. ** $p < .01$. *** $p < .001$.

The second model included all of the independent variables for regulation, as well as the main control variables. Table 10 presents the result for model two. The chi-square statistic shows that the model is significant (LR Chi^2 = 46.46, p<.001). The only measure for regulation that was significant in this model was divorce and separation, and its significance level decreased when compared to the first model. As the percentage of divorce and separation in a county increases, the rate of child homicide can be expected to increase by a factor of 1.132, holding all other variables in the model constant (p<0.01). For the control variables, age and two regions were significant. For counties with a higher percentage of those age 25 years and older, while holding all other variables constant, the rate of child homicide is expected to decrease by a factor of 0.962 (p<0.05). Durkheim (1951 [1897]) suggests that younger men are more likely to murder, although the age range he suggests is most likely to murder are those between the ages of 25 and 30 years of age. However, past research shows that offenders tend to be young adults (Brewster et al., 1998; Chew et al., 1999; Goetting, 1988; Lucas et al., 2001; Shelton et al., 2011). Comparing the counties in the Northeast and the Midwest to those in the South, while holding all other variables constant, the rate of child homicides are expected to decrease in both the Northeast by a factor of 0.485 (p<0.01), and the Midwest by a factor of 0.722 (p<0.05). As previously mentioned, this is consistent with other research (McClain et al., 1994).

Table 10

Negative Binomial Regression of Regulation with Independent Variables and Main Controls, 2006-2010

	Unstandardized Coefficients	IRR (S.E.)
Independent Variables		
Percent Divorced	0.124	1.132 (0.035)**
Income Inequality	1.520	4.572 (8.851)
Racial/Ethnic Heterogeneity	0.333	1.395 (0.511)
Population Change	-0.004	0.996 (0.006)
Main Control Variables		
Percent Male	-0.0004	0.100 (0.041)
Percent 25yrs and Older	-0.039	0.962 (0.016)*
Northeast	-0.724	0.485 (0.131)**
West	0.0017	1.017 (0.227)
Midwest	-0.326	0.722 (0.115)*
Log of Total Population	1	1
(exposure variable)		
Constant[1]	-11.087	0.000 (0.000)
LR Chi^2	46.46***	
Pseudo R^2	0.043	

Note. Sample size is 763 counties.
[1] Coefficient was -11.087 and IRR (S.E.) was 0.0000153 (0.0000397)
[a]p<.1.* $p < .05$. ** $p < .01$. *** $p < .001$.

The third model included all of the independent variables for regulation, the main control variables, and the additional control variables. Table 11 presents the results for model three. The chi-square statistic shows that the model is significant (LR Chi^2 = 49.10, p<.001). Again, the only measure for regulation that was significant in the second model was divorce and separation, and in this model, its significance level increased. As the percentage of divorce and separation in a county increases, the rate of child homicide would be expected to increase by a factor of 1.158, holding all other variables in the model constant (p<0.001). For the control variables, age and only one region were significant. For counties with a higher percentage of those age 25 years and older, while holding all other variables constant, the rate of child homicide is expected to decrease by a factor of 0.957 (p<0.01). For counties in the Northeast as compared to the South, while holding all other variables constant, the rate of child homicides are expected to decrease by a factor of 0.472 (p<0.01). None of the additional controls added to this model are significant.

Table 11

Negative Binomial Regression of Regulation with Independent Variables, Main Controls, and Additional Controls, 2006-2010

	Unstandardized Coefficients	IRR (S.E.)
Independent Variables		
Percent Divorced	0.146	1.158 (3.96)***
Income Inequality	2.342	10.407 (22.901)
Racial/Ethnic Heterogeneity	0.534	1.705 (0.670)
Population Change	-0.004	0.996 (0.007)
Main Control Variables		
Percent Male	-0.008	0.992 (0.041)
Percent 25yrs and Older	-0.044	0.957 (0.016)**
Northeast	-0.750	0.472 (0.132)**
West	-0.030	0.971 (0.219)
Midwest	-0.264	0.768 (0.132)
Additional Control Variables		
Percent <18yrs in Poverty	-0.006	0.994 (0.0133)
Percent Unemployed	-0.022	0.978 (0.0268)
Urbanity	-0.182	0.833 (0.124)
Log of Total Population (exposure variable)	1	1
Constant[1]	-10.686	0.000 (0.000)
LR Chi^2	49.10***	
Pseudo R^2	0.0457	

Note. Sample size is 763 counties.
[1] Coefficient was -10.686 and IRR (S.E.) was 0.0000229 (0.000061)
[a]p<.1.* p < .05. ** p < .01. *** p < .001.

In conclusion, the only regulation measures that were significantly associated with child homicide in counties were percent divorced and separated, and racial/ethnic heterogeneity. Both the percent divorced and separated, as well as racial/ethnic heterogeneity, significantly increased the rate of child homicide. When the main control variables were included in the second model, percent divorced and separated decreased in significance level, while racial/ethnic heterogeneity lost its significance. Finally, when adding in the additional control variables in the third model, percent divorced and separated became more significant than it was in the previous model. Applying Durkheim (1951 [1897]), the findings for both of these measures were expected. However, it is interesting that neither income inequality nor population change was significantly related to homicide. Again, applying the same ideas for income heterogeneity and population change that were applied for racial/ethnic heterogeneity, Durkheim (1951 [1897]) suggests that anything leading to deregulation or weak regulation would increase homicide. Further, Durkheim's (1951 [1897]) position is that in times of rapid change, individuals are freer to follow their own desires due to deregulation. Others have also studied this idea. Pridemore and Kim, (2007) found that socioeconomic change was positively and significantly associated with the regional homicide rates. Pridemore et al. (2007) suggest that during rapid social change, crime and deviance are increased due to a state of normlessness, where society fails to regulate escalating aspirations and expectations of its citizenry. In addition, the rapid social change in Russia during the 1990s threatened sentiments and increased homicide rates (Pridemore & Kim, 2006).

Solidarity (Integration and Regulation)

To test solidarity, three models were estimated, which included both measures for integration, as well as measures for regulation. The results can be seen in Tables 12-14. Negative binomial

regressions were used to estimate all three models. The first model included only the

independent variables for both integration and regulation. Table 12 presents the result for model

one. The chi-square statistic shows that the model is significant (LR Chi^2 = 44.43, p<.001). Only

three variables were significant, two integration measures and one regulation measure. As the

percentage of Catholics in the county increases, the rate of child homicide can be expected to

decrease by a factor of 0.971, holding all other variables in the model constant (p<0.001). As

previously discussed this result was not expected or aligned with Durkheim's (1951 [1897])

position. In addition, with a one percent increase in the log of individuals employed in the

military in a county, the rate of child homicide would be expected to increase by a factor of

1.055, holding all other variables in the model constant (p<0.05). As the percentage of divorce

and separation in a county increases, the rate of child homicide can be expected to increase by a

factor of 1.103, holding all other variables in the model constant (p<0.01). These two results

coincide with Durkheim's (1951 [1897]) position.

Table 12

Negative Binomial Regression of Solidarity with Integration and Regulation Independent Variables, 2006-2010

	Unstandardized Coefficients	IRR (S.E.)
Independent Variables		
Percent Catholic	-0.030	0.971 (0.011)**
Family Density	-0.002	0.998 (0.016)
Political Party Change	-0.049	0.952 (0.153)
Percent Military (log)	0.054	1.055 (0.025)*
Percent Divorced	0.098	1.103 (0.034)**
Income Inequality	2.672	14.465 (31.670)
Racial/Ethnic Heterogeneity	0.613	1.847 (0.707)
Population Change	-0.001	0.999 (0.006)
Log of Total Population	1	1
(exposure variable)		
Constant[1]	-13.720	1.000 (1.000)
LR Chi^2	44.43***	
Pseudo R^2	0.0414	

Note. Sample size is 763 counties.
[1] Coefficient was -13.720 and IRR (S.E.) was 1.10e-06 (1.40e-06)
[a]p<.1. * p < .05. ** p < .01. *** p < .001.

The second model included all of the independent variables for integration and regulation as well as the main control variables. Table 13 presents the results for model two. The chi-square statistic shows that the model is significant (LR Chi^2 = 55.23, p<.001). Two of the three variables that were significant in the first model are still significant; percent employed by the military and percent divorced or separated. However, percent Catholic is no longer significant. A one percent increase in the log of individuals employed in the military in a county is expected to increase child homicide by a factor of 1.055, holding all other variables in the model constant (p<0.05). In addition, as the percentage of divorce and separation in a county increases, the rate of child homicide would be expected to increase by a factor of 1.132, holding all other variables in the model constant (p<0.001). For the control variables, age and one region were significant. For counties with a higher percentage of those 25 years and older, while holding all other variables constant, the rate of child homicides are expected to decrease by a factor of 0.962 (p<0.05). Also, while holding all other variables constant, a county's location in the Northeast as compared to in the South is expected to decrease the rate of child homicide by a factor of 0.553 (p<0.05). These findings are all consistent with Durkheim's (1951 [1897]) position.

Table 13

Negative Binomial Regression of Solidarity with Integration and Regulation Independent Variables and Main Controls, 2006-2010

	Unstandardized Coefficients	IRR (S.E.)
Independent Variables		
Percent Catholic	-0.018	0.982 (0.012)
Family Density	-0.015	0.985 (0.016)
Political Party Change	-0.046	0.955 (0.149)
Percent Military (log)	0.054	1.055 (0.024)*
Percent Divorced	0.124	1.132 (0.037)***
Income Inequality	0.926	2.525 (5.785)
Racial/Ethnic Heterogeneity	0.304	1.356 (0.544)
Population Change	-0.004	0.996 (0.006)
Main Control Variables		
Percent Male	-0.002	0.998 (0.041)
Percent 25yrs and Older	-0.038	0.962 (0.016)*
Northeast	-0.592	0.553 (0.157)*
West	0.132	1.141 (0.259)
Midwest	-0.193	0.825 (0.142)
Log of Total Population	1	1
(exposure variable)		
Constant[1]	-10.092	0.000 (0.000)
LR Chi^2	55.23***	
Pseudo R^2	0.052	

Note. Sample size is 763 counties.

[1] Coefficient was -10.092 and IRR (S.E.) was 0.0000414 (0.0001239)

[a]p<.1.* p < .05. ** p < .01. *** p < .001.

The third model included all of the independent variables for integration and regulation, the main control variables, and the additional control variables. Table 14 presents the result for model three. The chi-square statistic shows that the model is significant (LR Chi^2 = 58.35, p<.001). The same independent variables that were significant in the second model were also significant in this model. A one percent increase in the log of individuals employed in the military in a county can be expected to increase the rate of child homicide by a factor of 1.061, holding all other variables in the model constant (p<0.05). Also, as the percentage of divorce and separation in a county increases, the rate of child homicide would be expected to increase by a factor of 1.144, holding all other variables in the model constant (p<0.001). For the control variables, age and one region were significant. For counties with a higher percentage of those 25 years and older, while holding all other variables constant, the rate of child homicides are expected to decrease by a factor of 0.960 (p<0.05). In addition, the rate of child homicides are expected to decrease by a factor of 0.578 for counties in the Northeast as compared to counties in the South, while holding all other variables constant, (p<0.1). Again, these findings are all consistent with Durkheim's (1951 [1897]) position.

Table 14

Negative Binomial Regression of Solidarity with Independent Variables, Main Controls, and Additional Controls, 2006-2010

	Unstandardized Coefficients	IRR (S.E.)
Independent Variables		
Percent Catholic	-0.019	0.981 (0 .012)
Family Density	-0.010	0.990 (0.017)
Political Party Change	-0.035	0.966 (0.151)
Percent Military (log)	0.060	1.062 (0.025)*
Percent Divorced	0.135	1.145 (0.043)***
Income Inequality	1.521	4.579 (11.779)
Racial/Ethnic Heterogeneity	0.450	1.568 (0.669)
Population Change	-0.003	0.997 (0.007)
Main Control Variables		
Percent Male	-0.008	0.992 (0.043)
Percent 25yrs and Older	-0.041	0.960 (0.017)*
Northeast	-0.548	0.578 (0.178)[a]
West	0.125	1.133 (0.269)
Midwest	-0.105	0.900 (0.171)
Additional Control Variables		
Religion	0.002	1.002 (0.006)
Percent <18yrs in Poverty	-0.001	0.999 (0.014)
Percent Unemployed	-0.020	0.980 (0.028)

	Unstandardized Coefficients	IRR (S.E.)
Urbanity	-0.215	0.807 (0 .122)
Log of Total Population	1	1
(exposure variable)		
Constant[1]	-10.053	0.0000 (0.000)
LR Chi^2	58.35***	
Pseudo R^2	0.054	

Note. Sample size is 763 counties.
[1] Coefficient was -10.053 and IRR (S.E.) was 0.000043 (0.0001329)
[a]p<.1.* p < .05. ** p < .01. *** p < .001.

In conclusion, the solidarity measures that were significantly associated with child homicide in counties were percent Catholic, percent employed by the military, and percent divorced or separated. Percent Catholic was a measure of integration and was found to significantly decrease the rate of child homicide. Percent employed by the military and percent divorced or separated were measures of regulation and were found to significantly increase the rate of child homicide. When the main control variables were included in the second model, percent Catholic lost significance, the percent employed by the military decreased in significance level, and the significance level of percent divorced or separated increased. Adding the additional controls did not change the outcome of the solidarity measures from the second model.

Exploratory Integration

To further test the idea of solidarity, some exploratory variables were used to examine both integration and regulation. These exploratory variables came from other theories, such as anomie and social disorganization. The exploratory variables were separated into either integration or regulation and analyzed separately at first and then together.

To further test integration with the exploratory variables, three models were estimated. The results can be seen in Tables 15-17. Negative binomial regressions were used to estimate all three models. The first model included only the independent variables for exploratory integration. Table 15 presents the result for model one, which shows that the model itself, as well as all the independent variables in the model, were not significant.

Table 15

Negative Binomial Regression of Exploratory Integration with Independent Variables, 2006-2010

	Unstandardized Coefficients	IRR (S.E.)
Independent Variables		
Percent with High School Diploma or less	0.014	1.014 (0.008)
Percent Foreign Born (log)	0.143	1.153 (0.104)
Percent >3yrs Enrolled in School	0.010	1.010 (0.016)
Log of Total Population	1	1
(exposure variable)		
Constant[1]	-12.546	3.560 (2.400)
LR Chi^2	4.21	
Pseudo R^2	0.004	

Note. Sample size is 763 counties.
[1] Coefficient was -12.546 and IRR (S.E.) was 3.56e-06 (2.40e-06)
[a]p<.1.* p < .05. ** p < .01. *** p < .001.

The second model included all of the independent variables for exploratory integration as well as the main control variables. Table 16 presents the result for model two. The chi-square statistic shows that the model is significant (LR Chi^2 = 22.53, p<.01). Again, none of the exploratory integration measures were significant. However, two regions were significant when observing the control variables. Counties in both the Northeast and the Midwest, as compared to counties in the South, were found to have lower rates of child homicide. While holding all other variables constant, the rate of child homicides is expected to decrease by a factor of 0.432 in the Northeast (p<0.01). In addition, while holding all other variables constant, the rate of child homicides are expected to decrease by a factor of 0.641 in the Midwest (p<0.01). As previously mentioned, this is consistent with other research (McClain et al., 1994).

Table 16

Negative Binomial Regression of Exploratory Integration with Independent Variables and Main Controls, 2006-2010

	Unstandardized Coefficients	IRR (S.E.)
Independent Variables		
Percent with High School Diploma or less	0.008	1.008 (0.008)
Percent Foreign Born (log)	0.078	1.081 (0.099)
Percent >3yrs Enrolled in School	0.011	1.011 (0.018)
Main Control Variables		
Percent Male	-0.056	0.946 (0.045)
Percent 65yrs and Older	0.0001	1.0001 (0.027)
Northeast	-0.839	0.432 (0.125)**
West	0.042	1.043 (0.249)
Midwest	-0.445	0.641 (0.104)**
Log of Total Population (exposure variable)	1	1
Constant[1]	-9.278	0.000 (0.000)
LR Chi^2	22.53**	
Pseudo R^2	0.021	

Note. Sample size is 763 counties.
[1] Coefficient was -9.278 and IRR (S.E.) was 0.0000935 (0.0002439)
[a]p<.1.* p < .05. ** p < .01. *** p < .001.

The third model included all of the independent variables for exploratory integration, the main control variables, and the additional control variables. Table 17 presents the results for model two. The chi-square statistic shows that the model is significant (LR Chi^2 = 26.78, p<.01). Again, none of the exploratory integration measures were significant. However, two regions and racial/ethnic heterogeneity were significant when observing the control variables. For counties in the Northeast as compared to the South, while holding all other variables constant, the rate of child homicides is expected to decrease by a factor of 0.504 (p<0.05). In addition, for counties in the Midwest as compared to the South, while holding all other variables constant, the rate of child homicides is expected to decrease by a factor of 0.691 (p<0.05). Again, as previously mentioned, this is consistent with other research (McClain et al., 1994). Also, a one unit increase in racial/ethnic heterogeneity in a county can be expected to increase the rate of child homicide by a factor of 2.705, holding all other variables in the model constant (p<0.05). Durkheim (1951 [1897]) suggests that anything leading to deregulation or weak regulation would increase homicide.

Table 17

Negative Binomial Regression of Exploratory Integration with Independent Variables, Main Controls, and Additional Controls, 2006-2010

	Unstandardized Coefficients	IRR (S.E.)
Independent Variables		
Percent with High School Diploma or less	0.006	1.006 (0.007
Percent Foreign Born (log)	-0.023	0.978 (0.095)
Percent >3yrs Enrolled in School	0.012	1.012 (0.018)
Main Control Variables		
Percent Male	-0.036	0.964 (0.443)
Percent 65yrs and Older	0.015	1.016 (0.028)
Northeast	-0.685	0.504 (0.151)*
West	0.141	1.152 (0.275)
Midwest	-0.369	0.691 (0.114)*
Additional Control Variables		
Racial/Ethnic Heterogeneity	0.995	2.705 (1.280)*
Log of Total Population	1	1
(exposure variable)		
Constant[1]	-10.634	0.00002 (0.00006)
LR Chi^2	26.78**	
Pseudo R^2	0.025	

Note. Sample size is 763 counties.
[1] Coefficient was -10.634 and IRR (S.E.) was 0.0000241 (0.0000617)
[a]p<.1.* p < .05. ** p < .01. *** p < .001.

In conclusion, none of the exploratory integration measures were significant. Even after adding in both sets of controls, the measures remained insignificant. As these measures were drawn from other theoretical paradigms, it is somewhat surprising that no significance was found. For example, anomie theory discusses how frustration may lead to corrective action that may be deviant or criminal. One of the basic ideas of anomie deals with frustrations from economic situations (Merton, 1995). Here, a variable used is percent with a high school diploma or less. While this variable is used to measure integration, it may also indicate a level of frustration, knowing that college is prevalent and somewhat expected in this day-and-age. While Anomie theory suggests that frustrations may lead to an increase in crime, this measure was not found to be significantly related to child homicide. Also, from a social disorganization theory standpoint, it has been suggested that individuals who reside in areas that are characterized by low income and education levels, among other issues, are more likely to experience deviance (Park & Burgess, 1924; Bellair & Browning, 2010). Further, social disorganization theory explores community level indicators (Park & Burgess, 1924) such as residential stability. Strong networks of association are prevented by increased social mobility in and out of the area (Bursik & Grasmick., 1993) In this study, percent foreign born was examined to measure integration. Using social disorganization theory, residential stability should impact crime. A lower percentage of foreign born may not only indicate higher levels of integration, but also higher levels of residential stability. Yet, this measure was not found to be significantly related to child homicide. Finally percent three years old and older enrolled in school is measuring community integration. Durkheim (1951 [1897]) discusses how more integration should lead to homicide. While this may be the case for some homicide, it may not be the case for child homicide. As some scholars have suggested, younger children are most at risk for homicide (Abel, 1986; Levine et al., 1995;

McClain et al., 1993), and once they start school they are less likely to be murdered because a majority of offenders are parents. This variable could be used as a measure of routine activities theory since the motivated offender (parent), suitable target (child), and capable guardian (school) exists. Of course, since the capable guardian is not absent, it should negatively affect the rate of child homicide. Still, this variable was found to be insignificantly related to child homicide.

Exploratory Regulation

To further test regulation with the exploratory variables, three models were estimated. The results can be seen in Tables 18-20. Negative binomial regressions were used to estimate all three models. The first model included only the independent variables for exploratory regulation. Table 18 presents the result for model one. The chi-square statistic shows that the model is significant (LR Chi^2 = 14.53, p<0.01). As expected and previously mentioned, poverty was significantly related to child homicide. As the percentage of children 18 years and younger living in poverty in a county increases, the rate of child homicide would be expected to increase by a factor of 1.035, holding all other variables in the model constant (p<0.001). Durkheim (1951 [1897]) mentions that suicide is more prevalent among higher-income groups living in urban areas, while homicide is more prevalent in rural areas. This finding is consistent with past research suggesting that poverty is positively related to child homicide (Abel, 1986; Jason & Andereck, 1983). In addition, poverty has been used as a community-level measure (Goetting, 1988; Jason & Andereck, 1983) when applying social disorganization.

Table 18

Negative Binomial Regression of Exploratory Regulation with Independent Variables, 2006-2010

	Unstandardized Coefficients	IRR (S.E.)
Independent Variables		
Percent <18yrs in Poverty	0.0346	1.035 (0.010)***
Percent Unemployed	-0.029	0.972 (0.025)
Urbanity	0.117	1.123 (0.147)
Log of Total Population	1	1
(exposure variable)		
Constant[1]	-11.989	6.000 (1.000)
LR Chi^2	14.53**	
Pseudo R^2	0.014	

Note. Sample size is 763 counties.
[1] Coefficient was -11.989 and IRR (S.E.) was 6.21e-06 (1.30e-06)
[a]p<.1.* p < .05. ** p < .01. *** p < .001.

The second model included all of the independent variables for exploratory regulation as well as the main control variables. Table 19 presents the results for model two. The chi-square statistic shows that the model is significant (LR Chi^2 = 29.68, p<0.001). As expected, the percentage of children 18 years and younger living in poverty was significant. In addition, two regions were significant when observing the control variables. As the percentage of children 18 years and younger living in poverty in a county increases, the rate of child homicide can be expected to increase by a factor of 1.024, holding all other variables in the model constant (p<0.05). While holding all other variables constant, for counties in the Northeast, the rate of child homicides are expected to decrease by a factor of 0.502 compared to counties in the South (p<0.05). In addition, for counties in the Midwest the rate of child homicides decreases by a factor of 0.678, as compared to counties in the South while holding all other variables constant (p<0.05). As previously mentioned, this is consistent with other research (McClain et al., 1994).

Table 19

Negative Binomial Regression of Exploratory Regulation with Independent Variables and Main Controls, 2006-2010

	Unstandardized Coefficients	IRR (S.E.)
Independent Variables		
Percent <18yrs in Poverty	0.023	1.024 (0.011)*
Percent Unemployed	-0.009	0.991 (0.027)
Urbanity	-0.075	0.928 (0.142)
Main Control Variables		
Percent Male	-0.046	0.955 (0.043)
Percent 65yrs and Older	-0.027	0.973 (0.020)
Northeast	-0.689	0.502 (0.142)*
West	0.021	1.022 (0.228)
Midwest	-0.389	0.678 (0.102)*
Log of Total Population (exposure variable)	1	
Constant[1]	-8.99	0.000 (0.000)
LR Chi^2	29.68***	
Pseudo R^2	0.028	

Note. Sample size is 763 counties.
[1] Coefficient was -8.99 and IRR (S.E.) was 0.0001246 (0.0002896)
[a]p<.1.* p < .05. ** p < .01. *** p < .001.

The third model included all of the independent variables for exploratory regulation, the main control variables, and the additional control variables. Table 20 presents the result for model three. The chi-square statistic shows that the model is significant (LR Chi^2 = 32.07, p<0.001). The percentage of children 18 years and younger living in poverty was still significant. In addition, two regions were significant when observing the control variables. As the percentage of children 18 years and younger living in poverty in a county increases, the rate of child homicide can be expected to increase by a factor of 1.021, holding all other variables in the model constant (p<0.05). This was an expected finding. In addition, counties in the both the Northeast and the Midwest, as compared to the South, are expected to have lower rates of child homicide by factors of 0.529 (p<0.05) and 0.715 (p<0.05), respectively, while holding all other variables constant. As previously mentioned, this is consistent with other research (McClain et al., 1994).

Table 20

Negative Binomial Regression of Exploratory Regulation with Independent Variables, Main Controls, and Additional Controls, 2006-2010

	Unstandardized Coefficients	IRR (S.E.)
Independent Variables		
Percent <18yrs in Poverty	0.021	1.021 (0.011)*
Percent Unemployed	-0.014	0.986 (0.027)
Urbanity	-0.114	0.892 (0.140)
Main Control Variables		
Percent Male	-0.035	0.965 (0.043)
Percent 65yrs and Older	-0.010	0.990 (0.023)
Northeast	-0.637	0.529 (0.152)*
West	0.075	1.078 (0.243)
Midwest	-0.335	0.715 (0.111)*
Additional Control Variables		
Racial/Ethnic Heterogeneity	0.670	1.954 (0.851)
Log of Total Population	1	1
(exposure variable)		
Constant[1]	-9.898	0.000 (0.000)
LR Chi^2	32.07***	
Pseudo R^2	0.030	

Note. Sample size is 763 counties.

[1] Coefficient was -9.898 and IRR (S.E.) was 0.0000503 (0.0001173)

[a]p<.1.* p < .05. ** p < .01. *** p < .001.

In conclusion, the only exploratory regulation measure that was significantly associated with child homicide in counties was the percentage of children 18 years and younger living in poverty. As these measures were drawn from other theoretical paradigms, it is somewhat surprising that the other two variables were not significant. After adding both sets of controls, this measure stayed significant. As previously mentioned, this was expected when examining Durkheim's (1951 [1897]) position, as well as when examining past research (Abel, 1986; Goetting, 1988; Jason & Andereck, 1983). From a social disorganization theory standpoint, it has been suggested that individuals who reside in areas that are characterized by impoverished conditions and low income and education levels, among other issues, are more likely to experience deviance (Park & Burgess, 1924; Bellair & Browning, 2010). Employment status was examined by scholars and mixed results were found. While Abel (1986) and Goetting (1998) found unemployment to be positively associated with child homicide, Brewster et al. (1998) and Putkonen et al. (2011) found that the majority of offenders were employed. In addition Durkheim (1951 [1897]) discussed how individuals in rural areas should have a higher rate of homicide due to their stronger collective. However, Durkheim (1951 [1897]) suggests that anomic conditions may result in an increased rate of homicide. He further points out that those in urban areas are more likely to experience anomic conditions, which leads to deregulation. However, neither urbanity nor unemployment was significantly related to child homicide.

Exploratory Solidarity

To test exploratory solidarity, three models were estimated, which included both measures for exploratory integration, as well as measures for exploratory regulation. The results can be seen in Tables 21-23. Negative binomial regressions were used to estimate all three models. The first model included only the independent variables for exploratory integration and

exploratory regulation. Table 21 presents the result for model one. The chi-square statistic shows that the model is significant (LR Chi^2 = 17.93, p<0.01). None of the measures for exploratory integration were significant, and only one measure from exploratory regulation was significant. As the percentage of children 18 years and younger living in poverty in a county increases, the rate of child homicide can be expected to increase by a factor of 1.040, holding all other variables in the model constant (p<0.001). As previously stated, these findings are all consistent with Durkheim's (1951 [1897]) position, as well as other scholar's positions (Abel, 1986; Goetting, 1988; Jason & Andereck, 1983).

Table 21

Negative Binomial Regression of Exploratory Solidarity with Independent Variables, 2006-2010

	Unstandardized Coefficients	IRR (S.E.)
Independent Variables		
Percent <18yrs in Poverty	0.039	1.040 (0.011)***
Percent Unemployed	-0.031	0.969 (0.026)
Urbanity	0.002	1.002 (0.149)
Percent with High School Diploma or less	-0.001	0.999 (0.009)
Percent Foreign Born (log)	0.126	1.134 (0.101)
Percent >3yrs Enrolled in School	0.004	1.004 (0.016)
Log of Total Population (exposure variable)	1	1
Constant[1]	-12.183	5.000 (3.000)
LR Chi^2	17.93**	
Pseudo R^2	0.017	

Note. Sample size is 763 counties.
[1] Coefficient was -12.183 and IRR (S.E.) was 5.12e-06 (3.43e-06)
[a]p<.1.* p < .05. ** p < .01. *** p < .001.

The second model included all of the independent variables for exploratory integration and exploratory regulation, as well as the main control variables. Table 22 presents the result for model two. The chi-square statistic shows that the model is significant (LR Chi^2=32.01, p<0.001). Again, none of the measures for exploratory integration were significant, and only one measure from exploratory regulation was significant. As the percentage of children 18 years and younger living in poverty in a county increases, the rate of child homicide would be expected to increase by a factor of 1.028, holding all other variables in the model constant (p<0.05). As previously stated, these findings are all consistent with Durkheim's (1951 [1897]) position, as well as other scholar's positions (Abel, 1986; Goetting, 1988; Jason & Andereck, 1983). Two regions were significant when observing the control variables. For counties in the Northeast, as compared to the South, the rate of child homicides is expected to decrease by a factor of 0.471 (p<0.01), while holding all other variables constant. In addition, counties in the Midwest are also expected to have lower rates of child homicides by a factor of 0.635 (p<0.01) when compared with counties in the South, while holding all other variables constant. This is consistent with past research (McClain et al., 1994).

Table 22

Negative Binomial Regression of Exploratory Solidarity with Independent Variables and Main Controls, 2006-2010

	Unstandardized Coefficients	IRR (S.E.)
Independent Variables		
Percent <18yrs in Poverty	0.028	1.028 (0.011)*
Percent Unemployed	-0.004	0.996 (0.028)
Urbanity	-0.139	0.870 (0.142)
Percent with High School Diploma or less	-0.008	0.992 (0.009)
Percent Foreign Born (log)	0.069	1.072 (0.096)
Percent >3yrs Enrolled in School	0.003	1.003 (0.018)
Main Control Variables		
Percent Male	-0.027	0.973 (0.046)
Percent 65yrs and Older	-0.007	0.994 (0.028)
Northeast	-0.754	0.471 (0.135)**
West	-0.063	0.939 (0.225)
Midwest	-0.046	0.635 (0.109)**
Log of Total Population	1	1
(exposure variable)		
Constant[1]	-10.095	0.000 (0.000)
LR Chi^2	32.01***	
Pseudo R^2	0.030	

Note. Sample size is 763 counties.

[1] Coefficient was -10.095 and IRR (S.E.) was 0.0000413 (0.0001081)

[a]p<.1.* p < .05. ** p < .01. *** p < .001.

The third model included all of the independent variables for exploratory integration and exploratory regulation, the main control variables, and the additional control variables. Table 23 presents the result for model two. The chi-square statistic shows that the model is significant (LR $Chi^2 = 32.83$, p<0.05). Again, none of the measures for exploratory integration were significant, and only one measure from exploratory regulation was significant. As the percentage of children 18 years and younger living in poverty in a county increases, the rate of child homicide would be expected to increase by a factor of 1.025, holding all other variables in the model constant (p<0.05). As previously stated, these findings are all consistent with Durkheim's (1951 [1897]) position, as well as other scholar's positions (Abel, 1986; Goetting, 1988; Jason & Andereck, 1983). Two regions were significant when observing the control variables. Counties in the Northeast and Midwest, as compared to South, are negatively associated with the rate of child homicide. While holding all other variables constant, the rate of child homicides are expected to decrease in the Northeast by a factor of 0.501 (p<0.05). In addition, while holding all other variables constant, the rate of child homicides are expected to decrease in the Midwest by a factor of 0.665 (p<0.05). This is consistent with past research (McClain et al., 1994).

Table 23

Negative Binomial Regression of Exploratory Solidarity with Independent Variables, Main Controls, and Additional Controls, 2006-2010

	Unstandardized Coefficients	IRR (S.E.)
Independent Variables		
Percent <18yrs in Poverty	0.024	1.025 (0.012)*
Percent Unemployed	-0.001	0.992 (0.029)
Urbanity	-0.141	0.869 (0.142)
Percent with High School Diploma or less	-0.006	0.994 (0.010)
Percent Foreign Born (log)	0.024	1.025 (0.102)
Percent >3yrs Enrolled in School	0.005	1.005 (0.018)
Main Control Variables		
Percent Male	-0.024	0.976 (0.045)
Percent 65yrs and Older	0.0002	1.0002 (0.029)
Northeast	-0.0692	0.501 (0.148)*
West	-0.005	0.995 (0.245)
Midwest	-0.408	0.665 (0.119)*
Main Control Variables		
Racial/Ethnic Heterogeneity	0.487	1.627 (0.871)
Log of Total Population	1	1
(exposure variable)		
Constant[1]	-10.463	0.000 (0.000)
LR Chi^2	32.83**	
Pseudo R^2	0.031	

Note. Sample size is 763 counties.
[1] Coefficient was -10.463 and IRR (S.E.) was 0.0000286 (0.0000748)
[a]p<.1.* p < .05. ** p < .01. *** p < .001.

In conclusion, the only exploratory solidarity measure that was significantly associated with child homicide in counties came from exploratory regulation and was the percentage of children 18 years and younger living in poverty. After adding both sets of controls, this measure stayed significant.

All Integration

To further test the idea of integration, variables from both integration and exploratory integration were used, and three models were estimated. The results can be seen in Tables 24-26. Negative binomial regressions were used to estimate all three models. The first model included only the independent variables for integration and exploratory integration. Table 24 presents the result for model one. The chi-square statistic shows that the model is significant (LR $Chi^2 =$ 24.90, p<0.001). Only two measures were significant. As the percentage of Catholics in the county increases, the rate of child homicide can be expected to decrease by a factor of 0.962, holding all other variables in the model constant (p<0.01). In addition, a one percent increase in the log of individuals employed in the military in a county results in the rate of child homicide increasing by a factor of 1.063, holding all other variables in the model constant (p<0.05). As previously stated, only the percent employed in the military is consistent with Durkheim's (1951 [1897]) position. This is consistent with past research (McClain et al., 1994).

Table 24

Negative Binomial Regression of Integration using Integration and Exploratory Integration Independent Variables, 2006-2010

	Unstandardized Coefficients	IRR (S.E.)
Independent Variables		
Percent Catholic	-0.039	0.0962 (0.011)**
Family Density	-0.014	0.986 (0.013)
Political Party Change	-0.131	0.877 (0.147)
Percent Military (log)	0.061	1.063 (0.026)*
Percent with High School Diploma or less	0.009	1.010 (0.008)
Percent Foreign Born (log)	0.106	1.112 (0.100)
Percent >3yrs Enrolled in School	0.010	1.010 (0.015)
Log of Total Population	1	1
(exposure variable)		
Constant[1]	-11.421	0.000 (8.000)
LR Chi^2	24.90***	
Pseudo R^2	0.023	

Note. Sample size is 763 counties.
[1] Coefficient was -11.421 and IRR (S.E.) was 0.000011 (8.30e-06)
[a]p<.1.* p < .05. ** p < .01. *** p < .001.

The second model included all of the independent variables for integration and exploratory integration as well as the main control variables. Table 25 presents the result for model two. The chi-square statistic shows that the model is significant (LR Chi^2 = 34.39, p<0.001). The same variables that were significant in the first model were also significant in this model, although the significance level decreased for percent Catholic. As the percentage of Catholics in the county increases, the rate of child homicide can be expected to decrease by a factor of 0.976, holding all other variables in the model constant (p<0.1). In addition, a one percent increase in the log of individuals employed in the military in a county leads to the rate of child homicide increasing by a factor of 1.063, holding all other variables in the model constant (p<0.05). For the control variables, one region was significant. County location in the Northeast as compared to the South, while holding all other variables constant, can be expected to decrease the rate of child homicides by a factor of 0.539 (p<0.05). This is consistent with past research (McClain et al., 1994).

Table 25

Negative Binomial Regression of Integration using Integration and Exploratory Integration Independent Variables and Main Controls, 2006-2010

	Unstandardized Coefficients	IRR (S.E.)
Independent Variables		
Percent Catholic	-0.025	0.976 (0.012)[a]
Family Density	-0.023	0.978 (0.153)
Political Party Change	-0.089	0.914 (0.151)
Percent Military (log)	0.0601	1.063 (0.027)*
Percent with High School Diploma or less	0.012	1.012 (0.009)
Percent Foreign Born (log)	0.086	1.089 (0.101)
Percent >3yrs Enrolled in School	0.007	1.007 (0.018)
Main Control Variables		
Percent Male	-0.063	0.939 (0.044)
Percent 65yrs and Older	-0.017	0.983 (0.033)
Northeast	-0.617	0.539 (0.158)*
West	0.262	1.299 (0.320)
Midwest	-0.199	0.820 (0.144)
Log of Total Population	1	1
(exposure variable)		
Constant[1]	-7.873	0.000 (0.001)
LR Chi^2	28.75***	
Pseudo R^2	0.036	

Note. Sample size is 763 counties.
[1] Coefficient was -7.873 and IRR (S.E.) was 0.0003807 (0.00105)
[a]p<.1.* p < .05. ** p < .01. *** p < .001.

The third model included all of the independent variables for integration and exploratory integration, the main control variables, and the additional control variables. Table 26 presents the result for model three. The chi-square statistic shows that the model is significant (LR Chi^2 = 44.91, p<0.001). The same independent variables that were significant in the second model were also significant in this model, but the significance level increased. As the percentage of Catholics in the county increases, the rate of child homicide would be expected to decrease by a factor of 0.974, holding all other variables in the model constant (p<0.05). In addition, a one percent increase in the log of individuals employed in the military in a county can be expected to increase the rate of child homicide by a factor of 1.070, holding all other variables in the model constant (p<0.01). Also, as the percentage of those 18 years old and under living in poverty in the county increased, the rate of child homicide can be expected to increase by a factor of 1.025, holding all other variables in the model constant (p<0.1). As previously stated, only the military and poverty measures are consistent with Durkheim's (1951 [1897]) position, while the poverty measure is consistent with other scholar's positions as well (Abel, 1986; Jason & Andereck, 1983).

Table 26

Negative Binomial Regression of Integration using Integration and Exploratory Integration
Independent Variables, Main Controls, and Additional Controls, 2006-2010

	Unstandardized Coefficients	IRR (S.E.)
Independent Variables		
Percent Catholic	-0.026	0.974 (0.013)*
Family Density	-0.010	0.990 (0.016)
Political Party Change	-0.055	0.946 (0.152)
Percent Military (log)	0.067	1.070 (0.027)**
Percent with High School Diploma or less	-0.002	0.998 (0.010)
Percent Foreign Born (log)	0.038	1.039 (0.108)
Percent >3yrs Enrolled in School	0.002	1.002 (0.018)
Main Control Variables		
Percent Male	-0.025	0.975 (0.046)
Percent 65yrs and Older	-0.011	0.989 (0.035)
Northeast	-0.424	0.654 (0.205)
West	0.221	1.247 (0.326)
Midwest	-0.144	0.866 (0.169)
Additional Control Variables		
Religion	0.004	1.004 (0.006)
Racial/Ethnic Heterogeneity	0.342	1.408 (0.818)
Percent <18yrs in Poverty	0.025	1.025 (0.013)*
Percent Unemployed	-0.013	0.987 (0.029)

	Unstandardized Coefficients	IRR (S.E.)
Urbanity	-0.180	0.835 (0.134)
Log of Total Population	1	1
(exposure variable)		
Constant[1]	-9.889	0.000 (0.000)
LR Chi^2	44.91***	
Pseudo R^2	0.042	

Note. Sample size is 763 counties.
[1] Coefficient was -9.889 and IRR (S.E.) was 0.0000507 (0.0001456)
[a]p<.1.* p < .05. ** p < .01. *** p < .001.

In conclusion, the integration measures that were significantly associated with child homicide in counties were percent Catholic and percent employed by the military. Percent Catholic significantly decreased the rate of child homicide and the percent employed by the military significantly increased the rate of child homicide. When the main control variables were included in the second model, percent Catholic decreased in significance level and the percent employed by the military increased in significance level. Finally, when adding in the additional control variables into the third model, both variables became more significant. This means that none of the exploratory integration models, as well as two measures used in the original integration regressions, were significantly associated with child homicide.

All Regulation

To further test the idea of regulation, variables from both regulation and exploratory regulation were used, and two models were estimated. The reason that there are only two models for the all regulation regressions, as compared to the three models used for the other regressions, is because all of the additional controls for the other regressions are measures taken from exploratory regulation. Since the all regulation regressions use the measures in the exploratory regulation regressions, the third model, which adds additional controls, is not necessary. The results can be seen in Tables 27 and 28. Negative binomial regressions were used to estimate both models. The first model included only the independent variables for regulation and exploratory regulation. Table 27 presents the result for model one. The chi-square statistic shows that the model is significant (LR Chi^2 = 35.25, p<.001). Two measures were significant. As the percentage of divorce and separation in a county increases, the rate of child homicide would be

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expected to increase by a factor of 1.120, holding all other variables in the model constant (p<0.01). In addition, a one unit increase in racial/ethnic heterogeneity in a county leads to the rate of child homicide increasing by a factor of 2.847, holding all other variables in the model constant (p<0.01). As previously stated, these measures are consistent with Durkheim's (1951 [1897]) position.

Table 27

Negative Binomial Regression of Regulation using Regulation and Exploratory Regulation Independent Variables, 2006-2010

	Unstandardized Coefficients	IRR (S.E.)
Independent Variables		
Percent Divorced	0.113	1.120 (0.037) **
Income Inequality	2.627	13.828 (31.399)
Racial/Ethnic Heterogeneity	1.046	2.847 (1.083)**
Population Change	0.005	1.005 (0.006)
Percent <18yrs in Poverty	0.008	1.008 (0.013)
Percent Unemployed	-0.033	0.968 (0.026)
Urbanity	-0.145	0.865 (0.129)
Log of Total Population (exposure variable)	1	1
Constant[1]	-14.256	6.000 (6.000)
LR Chi^2	35.25***	
Pseudo R^2	0.033	

Note. Sample size is 763 counties.
[1] Coefficient was -14.256 and IRR (S.E.) was 6.44e-07 (6.50e-07)
[a]p<.1.* p < .05. ** p < .01. *** p < .001.

The second model included all of the independent variables for regulation as well as the main control variables. Table 28 presents the result for model two. The chi-square statistic shows that the model is significant (LR Chi^2 = 43.21, p<.001). The only measure for regulation that was significant in the second model was divorce and separation, and the significance level stayed the same. As the percentage divorced and separated in a county increases, the rate of child homicide can be expected to increase by a factor of 1.119, holding all other variables in the model constant (p<0.01). As previously stated, this is consistent with Durkheim's (1951 [1897]) position. For the control variables, one region was significant. For counties in the Northeast as compared to the South, the rate of child homicides is expected to decrease by a factor of 0.491 (p<0.05), while holding all other variables constant. This is consistent with past research (McClain et al., 1994).

Table 28

Negative Binomial Regression of Regulation using Regulation and Exploratory Regulation Independent Variables and Main Controls, 2006-2010

	Unstandardized Coefficients	IRR (S.E.)
Independent Variables		
Percent Divorced	0.112	1.119 (0.039)**
Income Inequality	2.807	16.562 (37.311)
Racial/Ethnic Heterogeneity	0.703	2.020 (0.880)
Population Change	-0.002	0.998 (0.007)
Percent <18yrs in Poverty[3]	-0.000	0.100 (0.013)
Percent Unemployed	-0.020	0.980 (0.028)
Urbanity	-0.182	0.833 (0.131)
Main Control Variables		
Percent Male	-0.019	0.981 (0.041)
Percent 65yrs and Older	-0.022	0.979 (0.025)
Northeast	-0.712	0.491 (0.140)*
West	0.103	1.108 (0.247)
Midwest	-0.195	0.823 (0.144)
Log of Total Population	1	1
(exposure variable)		
Constant[1]	-12.749	2.000 (7.000)
LR Chi[2]	43.21***	
Pseudo R[2]	0.040	

Note. Sample size is 763 counties.
[1] Coefficient was -12.749 and IRR (S.E.) was 2.91e-06 (7.47e-06)
[3] Coefficient was -0.0001582 and IRR (S.E.) was 0.9998 (0.0134)
[a]$p<.1.$ * $p < .05.$ ** $p < .01.$ *** $p < .001.$

In conclusion, the only regulation measures that were significantly associated with child homicide in counties were percent divorced and separated, and racial/ethnic heterogeneity. Both the percent divorced and separated, as well as racial/ethnic heterogeneity, significantly increased the rate of child homicide. When the main control variables were included in the second model, racial/ethnic heterogeneity became not significant, while percent divorced and separated did not change. This means that when all the regulation measures are included, the exploratory regulation variable, poverty, that was significant when regressed on the count of child homicide alone, lost its significance.

All Solidarity

To further test the idea of solidarity and to see which parts are more influential, all independent variables were used: integration, regulation, exploratory integration, and exploratory regulation. Three models were estimated. The results can be seen in Tables 29-30. Negative binomial regressions were used to estimate all three models. The first model included all of the independent variables. Table 29 presents the result for model one. The chi-square statistic shows that the model is significant (LR $Chi^2 = 50.86$, p<0.001). Only three variables were significant, two integration measure and one regulation measure. As the percentage of Catholics in the county increases, the rate of child homicide would be expected to decrease by a factor of 0.972, holding all other variables in the model constant (p<0.05). In addition, a one percent increase in the log of individuals employed in the military in a county can be expected to increase the rate of child homicide by a factor of 1.061, holding all other variables in the model constant (p<0.05). Also, as the percentage of divorce and separation in a county increases, the rate of child homicide can be expected to increase by a factor of 1.132, holding all other variables in the

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model constant (p<0.01). As previously suggested, the results for Catholic was not expected when applying Durkheim's (1951 [1897]) theory, however, the other two results are consistent with his work.

Table 29

Negative Binomial Regression of Solidarity with All Independent Variables, 2006-2010

	Unstandardized Coefficients	IRR (S.E.)
Independent Variables		
Percent Catholic	-0.029	0.972 (0.012)*
Family Density	-0.003	0.997 (0.017)
Political Party Change	-0.048	0.953 (0.151)
Percent Military (log)	0.059	1.061 (0.026)*
Percent Divorced	0.124	1.132 (0.043)**
Income Inequality	1.187	3.278 (8.853)
Racial/Ethnic Heterogeneity	0.580	1.785 (0.890)
Population Change[3]	-0.000	0.100 (0.007)
Percent <18yrs in Poverty	0.013	1.013 (0.015)
Percent Unemployed	-0.035	0.965 (0.026)
Urbanity	-0.228	0.796 (0.121)
Percent with High School Diploma or less	-0.004	0.996 (0.009)
Percent Foreign Born (log)	0.003	1.003 (0.101)
Percent >3yrs Enrolled in School	0.029	1.027 (0.018)
Log of Total Population	1	1
(exposure variable)		
Constant[1]	-13.744	1.000 (1.000)
LR Chi[2]	50.86***	
Pseudo R[2]	0.047	

Note. Sample size is 763 counties.
[1] Coefficient was -13.744 and IRR (S.E.) was 1.07e-06 (1.73e-06)
[3] Coefficient was -0.0003514 and IRR (S.E.) was 0.9996486 (0.0066984)
[a]$p<.1.$ * $p < .05.$ ** $p < .01.$ *** $p < .001.$

The second model included all of the independent variables, as well as the main control variables. Table 30 presents the results for model two. The chi-square statistic shows that the model is significant (LR Chi^2 = 56.72, p<0.001). Two of the three variables that were significant in the first model remained significant, percent employed by the military and percent divorced or separated, however, percent Catholic was no longer significant. As previously suggested, these two findings were expected and consistent with Durkheim's (1951 [1897]) theory. In addition, a third variable, percent three years and older enrolled in school, became significant. This was also an expected finding when applying Durkheim's (1951 [1897]) theory, however, it is not consistent with other scholars' position that once school begins, children are less likely to be murdered (Abel, 1986; Levine et al., 1995; McClain et al., 1993). A one percent increase in the log of individuals employed in the military in a county leads to the rate of child homicide increasing by a factor of 1.064, holding all other variables in the model constant (p<0.05). In addition, as the percentage of divorce and separation in a county increases, the rate of child homicide can be expected to increase by a factor of 1.144, holding all other variables in the model constant (p<0.01). Finally, as the percentage of those three years old and older enrolled in school in a county increases, the rate of child homicide would be expected to increase by a factor of 1.037, holding all other variables in the model constant (p<0.1). Only one region was significant when observing the control variables. For counties in the Northeast as compared to counties in the South, while holding all other variables constant, the rate of child homicides are expected to decrease by a factor of 0.538 (p<0.05). This is consistent with past research (McClain et al., 1994).

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Table 30

Negative Binomial Regression of Solidarity with All Independent Variables and Main Controls, 2006-2010

	Unstandardized Coefficients	IRR (S.E.)
Independent Variables		
Percent Catholic	-0.020	0.980 (0.012)
Family Density	0.003	1.003 (0.019)
Political Party Change	-0.342	0.966 (0.152)
Percent Military (log)	0.062	1.064 (0.026)*
Percent Divorced	0.134	1.144 (0.045)**
Income Inequality	1.528	4.609 (12.737)
Racial/Ethnic Heterogeneity	0.414	1.514 (0.842)
Population Change	-0.003	0.997 (0.007)
Percent <18yrs in Poverty[1]	0.007	1.007 (0.015)
Percent Unemployed	-0.028	0.975 (0.028)
Urbanity	-0.224	0.799 (0.126)
Percent with High School Diploma or less	-0.003	0.997 (0.011)
Percent Foreign Born (log)	0.044	1.045 (0.110)
Percent >3yrs Enrolled in School	0.036	1.037 (0.022)[a]
Main Control Variables		
Percent Male	0.003	1.003 (0.045)
Percent 65yrs and Older	0.021	1.021 (0.037)
Northeast	-0.621	0.538 (0.159)*
West	0.120	1.127 (0.286)
Midwest	-0.137	0.872 (0.179)

	Unstandardized Coefficients	IRR (S.E.)
Log of Total Population	1	1
(exposure variable)		
Constant	-14.817	3.000 (1.000)
LR Chi^2	56.72***	
Pseudo R^2	0.053	

Note. Sample size is 763 counties.
[1] Coefficient was -14.817 and IRR (S.E.) was 3.67e-07 (1.25e-06)
[a]p<.1.* p < .05. ** p < .01. *** p < .001.

The third model included all of the independent variables, the main control variables, and the additional control variables. Table 31 presents the result for model two. The chi-square statistic shows that the model is significant (LR Chi^2 = 56.97, p<0.001). The same independent variables that were significant in the second model were also significant in this model. However, percent Catholic became significant. As the percentage of Catholics in the county increases, the rate of child homicide can be expected to decrease by a factor of 0.978, holding all other variables in the model constant (p<0.1). Again, this was not an expected finding. However, the findings for military, divorce/separation, and school enrollment were expected. A one percent increase in the log of individuals employed in the military in a county leads to the rate of child homicide increasing by a factor of 1.065, holding all other variables in the model constant (p<0.05). Also, as the percentage of divorce and separation in a county increases, the rate of child homicide would be expected to increase by a factor of 1.143, holding all other variables in the model constant (p<0.01). Finally, as the percentage of those three years old and older enrolled in school in a county increases, the rate of child homicide can be expected to increase by a factor of 1.035, holding all other variables in the model constant (p<0.1). Yet again, consistent with past research, only the Northeast was found to be significantly related to child homicide. For counties in the Northeast as compared to South, while holding all other variables constant, the rate of child homicides are expected to decrease by a factor of 0.567 (p<0.1).

Table 31

Negative Binomial Regression of Solidarity with All Independent Variables, Main Controls, and Additional Controls, 2006-2010

	Unstandardized Coefficients	IRR (S.E.)
Independent Variables		
Percent Catholic	-0.22	0.978 (0.013)[a]
Family Density	0.002	1.002 (0.020)
Political Party Change	-0.032	0.969 (0.152)
Percent Military (log)	0.063	1.065 (0.026)*
Percent Divorced	0.134	1.143 (0.045)**
Income Inequality	1.168	3.216 (9.169)
Racial/Ethnic Heterogeneity	0.311	1.365 (0.811)
Population Change	-0.003	0.997 (0.007)
Percent <18yrs in Poverty	0.007	1.007 (0.015)
Percent Unemployed	-0.025	0.976 (0.029)
Urbanity	-0.218	0.804 (0.127)
Percent with High School Diploma or less	-0.003	0.997 (0.011)
Percent Foreign Born (log)	0.053	1.054 (0.113)
Percent >3yrs Enrolled in School	0.035	1.035 (0.022)[a]
Main Control Variables		
Percent Male	0.007	1.007 (0.046)
Percent 65yrs and Older	0.017	1.017 (0.038)
Northeast	-0.568	0.567 (0.178)[a]
West	0.147	1.158 (0.300)
Midwest	-0.123	0.884 (0.183)

	Unstandardized Coefficients	IRR (S.E.)
Main Control Variables		
Religion	0.003	1.003 (0.006)
Log of Total Population	1	1
(exposure variable)		
Constant[1]	-14.851	3.000 (1.000)
LR Chi^2	56.97***	
Pseudo R^2	0.053	

Note. Sample size is 763 counties.
[1] Coefficient was -14.851 and IRR (S.E.) was 3.55e-07 (1.20e-06)
[a]p<.1.* p < .05. ** p < .01. *** p < .001.

In conclusion, the only solidarity measures that were significantly associated with child homicide in counties were percent Catholic; percent employed by the military; percent divorced or separated; and the percent of children three years and older enrolled in school. Percent Catholic significantly decreased the rate of child homicide, the percent employed by the military significantly increased the rate of child homicide, the percent divorced or separated significantly increased the rate of child homicide, and the percent of children three years and older enrolled in school increased the rate of child homicide. When only the independent variables were used, all of the above measures were significant except the percent of children three years and older enrolled in school. After adding the main controls, percent Catholic lost significance, the percent of children three years and older enrolled in school became significant, and both the percent employed by the military and the percent divorced or separated remained constant. After adding the additional control variables, percent Catholic became significant, the percent of children three years and older enrolled in school increased in significance, and the significance for both the percent employed by the military and the percent divorced or separated remained constant.

CHAPTER 6: CONCLUSION

Discussion

This study examined child homicide from a macro-level perspective using Durkheim's concept of solidarity. I broke this investigation into three parts: the first part employs Durkheim's theory of homicide, the second is considered exploratory and draws variables from social disorganization and anomie theories, and the third combines the first two.

To test the effects of solidarity on child homicide, I used measures for both integration and regulation. The measures employed in this study also came from Durkheim and were used in his study on suicide. Some of the variables, political party change, and income and racial/ethnic heterogeneity, used in the first section were proxy measures to represent the variables used by Durkheim. A total of nine regressions were estimated to examine integration, regulation, and solidarity. There were three groups of regressions estimated, one for integration, a second for regulation, and a third for solidarity (combining both integration and regulation). Each group had three models: the first model included only the independent variables, the second model included the independent variables and the main control variables, and the third model included the independent variables, the main control variables, and the additional control variables.

The first research question aimed to understand what measures of integration were associated with child homicide in counties. Percent Catholic and percent employed by the military were significantly associated with child homicide in all three models. Hypothesis 1: *the more integrated a county is, the more child homicide there will be,* dealt directly with the first research question. Hypothesis 1a, *counties with a higher percentage of Catholics are expected to be*

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positively related child murder, was not supported because counties with a higher percentage of Catholicism was associated with less child murder, not more. Hypotheses 1b, c*ounties with a higher percentage of households containing children are expected to be positively related child murder,* and 1c, *counties with no political party change are expected to be positively related child murder,* were also not supported because neither an increase in households containing children 18 years old or under or political party change were significantly associated with child murder. However, Hypothesis 1d, *counties with a higher percentage of employment in the armed forces are expected to be positively related child murder,* was supported because counties with a higher percentage of employment in the military was associated with more child murder. Therefore, partial support was found for Hypothesis 1, the more integrated a county is the more child homicide there is, because only one of the sub-hypotheses were supported.

The second research question aimed to understand what measures of regulation were associated with child homicide in counties. Percent divorced and separated and racial heterogeneity were significantly associated with child homicide in one model. When both models that included controls were estimated, racial heterogeneity lost significance, while percent divorced or separated remained significant. Hypothesis 2: *the less regulated a county is, the more child homicide there will be,* dealt directly with the second research question. Hypothesis 2a, *counties with a higher percentage of divorce and separation are expected to be positively related child murder,* was supported because a higher percentage of divorce and separation was associated with more child murder. Hypothesis 2b, *counties with a greater amount of income heterogeneity are expected to be positively related child murder,* was partially supported because counties with increased racial heterogeneity was associated with more child murder, but only

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when the controls were not included. Hypotheses 2c, *counties with a greater amount of racial heterogeneity are expected to be positively related child murder,* and 2d, *counties with more population change, regardless of the direction, are expected to be positively related child murder,* were not supported because neither income inequality nor population change were significantly associated with child murder. Therefore, only partial support was found for Hypothesis 2, the more less regulated a county is the more child homicide there is, because only two of the sub hypotheses had some level of support.

The third research question aimed to understand what measures of solidarity, using both integration and regulation, were associated with child homicide in counties. Percent Catholic, percent employed by the military, and percent divorced or separated were significantly associated with child homicide in one model. When both models that included controls were estimated, percent Catholic was not significant, while percent employed by the military and percent divorced or separated stayed significant. There is not a direct hypothesis linked to this research question, but it ultimately uses hypotheses 1 and 2 since it combines variables from both integration and regulation. By using these two hypotheses, it can be said that both are partially supported by themselves and in combination with each other.

The second part of this study also used Durkheim's concept of solidarity. To test the effects of solidarity on child homicide, measures for both integration and regulation were used. However, the difference between this part and the last is that the measures employed came from social disorganization and anomie. A total of nine regressions were estimated to examine exploratory integration, exploratory regulation, and exploratory solidarity. There were three groups of regressions estimated, one for exploratory integration, a second for exploratory

regulation, and a third for exploratory solidarity (combining both exploratory integration and exploratory regulation). Each group had three models: the first model included only the independent variables, the second model included the independent variables and the main control variables, and the third model included the independent variables, the main control variables, and the additional control variables.

The fourth research question aimed to understand what measures of exploratory integration were associated with child homicide in counties. None of the measures were significantly associated with child homicide in any of the three models. Hypothesis 3: *the more integrated a county is, the more child homicide there will be,* dealt directly with the fourth research question. Therefore, hypothesis 3a, *counties with a lower percentage of low educational attainment are expected to be positively related child murder,* 3b, *counties with a lower percentage of foreign born are expected to be positively related child murder,* and 3c, *counties with a higher percentage of school enrollment are expected to be positively related child murder,* were not supported because a higher percentage of those with a high school diploma or less, percent foreign born, and percent of those three years old and older enrolled in school were not significantly associated with child murder. No support was found for Hypothesis 3, the more integrated a county is the more child homicide there is, because none of the sub-hypotheses were supported.

The fifth research question aimed to understand what measures of exploratory regulation were associated with child homicide in counties. Percent of those 18 years old and under living in poverty was significantly associated with child homicide in all three models. Hypothesis 4: *the less regulated a county is, the more child homicide there will be,* dealt directly with the fourth research question. Hypothesis 4a, *counties with a higher percentage of poverty are expected to be*

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positively related child murder, was supported because counties with a higher percentage of those 18 years old and under living in poverty had higher levels of child murder. Hypotheses 4b, *counties with a higher percentage of unemployment are expected to be positively related child murder,* and 4c, *counties that are MSAs, that is urban, are expected to be positively related child murder,* were not supported because neither percent unemployment nor MSA counties were significantly associated with child murder. Therefore, only partial support was found for Hypothesis 4, the less regulated a county is the more child homicide there is, because only one of the sub hypotheses was supported.

The sixth research question aimed to understand what measures of exploratory solidarity, using both exploratory integration and exploratory regulation, were associated with child homicide in counties. Only the percentage of those 18 years old and under living in poverty was significantly associated with child homicide in all of the models. While there is not a direct hypothesis linked to this research question, it ultimately uses hypotheses 3 and 4 since it combines exploratory integration and exploratory regulation. By using these two hypotheses, it can be said that only exploratory regulation is partially supported by itself and in combination.

The third part of this study combined variables from the first and second part to further test Durkheim's concept of solidarity. A total of eight regressions were estimated to examine all integration, all regulation, and all solidarity. Two of the groups, all integration and all solidarity, had three models: the first model included only the independent variables, the second model included the independent variables and the main control variables, and the third model included the independent variables, the main control variables, and the additional control variables. All regulation only had two models: the first model included only the independent variables, and the

second model included the independent variables and the main control variables. The reason for not including the third model is because the additional controls are already present in the independent variables.

The seventh research question aimed to understand what measures of integration were associated with child homicide in counties. This was done by combing all integration measures. Percent Catholic and percent employed by the military were significantly associated with child homicide in all three models. Again, counties with a higher percentage of Catholicism were associated with less child murder, while counties with a higher percentage of employment in the military were associated with more child murder. No other measures of integration were significantly associated with child murder. While there is not a direct hypothesis linked to this research question, it ultimately uses hypotheses 1 and 3 since it combines integration and exploratory integration. By using these two hypotheses, it can be said that only integration is partially supported by itself and in the combination.

The eighth research question aimed to understand what measures of regulation were associated with child homicide in counties. This was done by combining all regulation measures. Only percent divorced and separated were significantly associated with child homicide in both of the models. While there is not a direct hypothesis linked to this research question, it ultimately uses hypotheses 2 and 4 since it combines regulation and exploratory regulation. By using these two hypotheses, it can be said that only regulation is partially supported by itself and in the combination.

The ninth research question aimed to understand what measures of solidarity were associated with child homicide in counties. This was accomplished by using all measures for integration, regulation, exploratory integration and exploratory regulation. Percent Catholic, percent employed by the military, and percent divorced or separated were significantly associated with child homicide in one model. When the first model that included controls was estimated, percent Catholic became not significant, while percent employed by the military and percent divorced or separated stayed significant, and percent of those three years old and older became significant. In the last model, percent Catholic became significant again. While there is not a direct hypothesis linked to this research question, it ultimately uses hypotheses 1, 2, 3, and 4 since it combines integration, regulation, exploratory integration, and exploratory regulation. By using these four hypotheses, it can be said that only the hypotheses concerning integration, regulation, and exploratory integration are partially supported by themselves and in combination with each other.

Implications for Theoretical Development

This study was a modern application of Durkheim's theory of homicide. Past research has explored child homicide through micro-level approaches, but none have used a macro-level perspective. The main focus of this work was to test if Durkheim's theory of homicide was applicable to child murder. To do this, the inquiry employed Durkheim's concept of solidarity by using measures that represent integration and regulation. The measures used in this study were similar, if not the same, as those used by Durkheim in his book, *Suicide* (Durkheim, 1951 [1897]). In this book, Durkheim (1951 [1897]) discusses two types of homicide: altruistic and anomic. To describe the types of homicide, one must understand solidarity. According to

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Durkheim (1951 [1897]), solidarity consists of integration and regulation. Integration can be

thought of as the degree to which collective sentiments are shared among individuals. This

shared collective is most often referred to as the collective consciousness (Durkheim, 1951

[1897]). Essentially, social integration is the strength of the social bonds between the individual

and society. Regulation can be thought of as the degree of external constraints on individuals

through society's norms, rules, and values. Basically, social regulation is the strength of control

over the individual by society. Further, it is important to understand Durkheim's ideas about how

the division of labor and social change affect homicide. Mainly, as the society progresses from

mechanical solidarity to organic solidarity, individuation increases while the collective decreases

(Durkheim, 1951 [1897]). This is generally a slow change ultimately resulting in less homicide,

due to the weakening of the collective, which frees individuals of their sacred obligations to the

group (Durkheim, 1951 [1897]). However, if something occurred that caused a swift change,

anomy would result causing deregulation and an increase in homicide to occur (Durkheim, 1951

[1897]).

One type of homicide discussed, altruistic homicide, exhibits a strong collective and

weak individuation (Durkheim, 1951 [1897]). A parallel exists between altruistic homicide and

integration in this study. The variables used for integration included measures that examined a

high collective and low individuation. According to Durkheim (1951 [1897]), high integration

would lead to more homicide. The four measures used in this study were also examined in

Suicide (Durkheim, 1951 [1897]), and include religion, family, political change, and military

employment. When using Durkheim's concept of integration, all of these measures should have a

positive association with murder (Durkheim, 1951 [1897]).

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When exploring integration, I found some contradictions to such a claim when applied to child murder. First family density, or the percent of households with children, was not significantly associated with child homicide. Durkheim (1951 [1897]), suggested that homicide would increase due to threats against the group. Also, political party change was not significantly associated with child homicide. Here political party change was used as a proxy variable for political crisis. According to Durkheim (1951 [1897]), integration is higher in times of political crisis and creates a type of social bond. These ideas were neither proven nor disproven.

Two of the most interesting findings from this investigation deal with the religion and military variables. The religion variable, percent Catholic, was significantly associated with a decrease in child homicide. This is not supportive of Durkheim's (1951 [1897]) finding where Catholicism increases the rate of homicide. This contradiction could very well be because when Durkheim was studying homicide, he looked at general homicide. His reasoning behind why Catholics murder more (than Protestants and Jews [sic]) is because they have an obligation to the group; the sentiments inspired by their collective stimulate murder (Durkheim, 1951 [1897]). Essentially, one can think of it as a protection from an affront to the group. As previously discussed, a common finding concerning the victim/offender relationship amongst research is that children are most likely to be murdered by someone they know, usually a parental figure (Brewster et al, 1998; Clifford-Wittekind, et al., 2003; Crittenden and Craig, 1990; Mayhew, 2007). In this context then, murdering a child, would not be to protect the group against an affront, but rather it would be attacking the group itself; hurting the group by destroying one of its members. When the relationship between murder and Catholicism is thought of in this way, it makes sense why percent Catholic seems to be an insulating factor and is associated with less

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child murder. It may simply be that the strong collective, or a higher level integration, works as a protective factor, limiting the chance of child murder occurring. Another possibility worth noting is the fact that during Durkheim's study, Catholicism was the major religion practiced in France. Therefore, Catholicism was examined when exploring solidarity. However, for the counties in this work, Catholicism, while practiced, does not appear to be the major tradition. Therefore, there may be a more appropriate religion that would test the concept of integration relating to solidarity.

Another intriguing outcome of this investigation was also the effect of an integration variable, percent employed by the military. This variable was positively associated with the child murder rate and does support Durkheim's claim. While I think it is necessary to examine this relationship more closely to better understand the results, I do a have a few ideas about why this relationship may exist which do not exactly follow Durkheim's reasoning for the relationship. Durkheim (1951 [1897]) points to the concept of morality, the strength of bonds and similar beliefs, which cause a protective reaction against those individuals or groups in contrast with the group when explaining the positive association. This is very similar to the description concerning Catholicism and homicide. Essentially, the high level of integration creates a strong morality which causes members to take care of any affront against the group in an aggressive and often fatal way. It is important to recall that Durkheim examined general homicide when coming to these conclusions. This investigation considers the murder of children between the ages of birth and 5 years old. Once more, murdering of a child would seem to be an attack on the group and not against the group. However, unlike the Catholic variable, this military variable is positively associated with child murder. I believe there may be two issues surrounding this outcome. First,

when one parental figure is deployed, they usually are leaving the other parental figure in charge of everything on the home front. If an individual was used to having help from their partner with the childcare and other tasks prior to the deployment, and has to do everything by themselves after the deployment, they may face a lot of stressors. Applying this to Durkheim, the deployment of a partner is a form of deregulation. This deregulation and the anomic conditions that accompany it may cause an increased risk of child homicide. Second, after deployment, when the individual returns home again, they most likely will be facing anomic conditions. Apart from the deregulation of being taken out of their daily routine to return to home, they may encounter stressful situations once they arrive at home. Another important factor is that of Post-Traumatic Stress Disorder (PTSD). Some of these individuals may have gone through a lot of stress while deployed and may face some problems readjusting to life back at home. According to Durkheim (1951 [1897]) these anomic conditions should cause an increase in the homicide rate. Therefore, it is possible that the anomic conditions brought on by the deployment or after returning home from the deployment could be the reason for the positive association between the percent employed by the military and child murder.

Both percent Catholic and percent employed by the military variables were used to measure integration following Durkheim's (1951 [1897]) study, *Suicide*. As previously stated, a parallel exists between altruistic homicide and integration in this study. However, while percent Catholic was found to be in direct opposition to Durkheim's finding and percent employed by the military supported Durkheim's findings, they both are best explained through the use of the second type of homicide, anomic homicide.

Anomic homicide exhibits a weak collective and strong individuation. A parallel exists between anomic homicide and regulation in this study. The variables used for regulation included measures that examined a low collective and high individuation. According to Durkheim (1951 [1897]), low regulation would lead to more homicide. The four measures used in this investigation were also examined in *Suicide* (Durkheim, 1951 [1897]) and include marital status, heterogeneity, and population change. When using Durkheim's concept of regulation, all of these measures should have a positive association with murder (Durkheim, 1951 [1897]).

When exploring regulation, I also found some contradictions to Durkheim's (1951 [1897]) claims. First, the only measure that was consistent with significance was the percentage of divorced or separated. This measure was in agreement with Durkheim's ideas. Durkheim (1951 [1897]) suggested that married men murder less than unmarried men. While his study included single men, my inquiry only examined individuals who were divorced or separated. The reasoning for this is because of past research, which suggests that family disintegration is relevant to child homicide (Lucas et al., 2002; Lyman et al., 2003; Putkonen et al., 2011). This disintegration, divorce or separation of the family, is due to a deregulation of the family. According to Durkheim (1951 [1897]) where deregulation exists, so does anomic conditions which increase the homicide rate. Next, two measures of heterogeneity were used: racial/ethnic and income. Racial/ethnic heterogeneity was significantly associated with an increase in child homicide for one model. Income heterogeneity was never significantly associated with child homicide. Again, Durkheim (1951 [1897]), suggests that due to the heterogeneity, there would be stronger individuation causing less regulation and more homicide. Finally, population change was suggested to be more of a swift change causing anomic conditions and more homicide

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(Durkheim, 1951 [1897]). In this investigation, population change was never significantly associated with child homicide. Concerning the exploratory variables, the only measure that was significantly associated with child homicide was poverty, a measure of regulation. This falls in line with Durkheim's ideas since it would fit within his concept of deregulation, which is due to a weak collective.

This study explored Durkheim's idea of solidarity by applying it to child homicide. In his studies, he focused on general, unpremeditated murder (Durkheim, 1951 [1897]). To do this, he suggested that one type of murder, altruistic, was committed as a protection of the developed morality…a strong collective (Durkheim, 1951 [1897]). The other type of murder, anomic, was committed due to deregulation of the society/group…a weak collective (Durkheim, 1951 [1897]). While his concept of solidarity may still be applicable and relevant to certain types of murder, it does not appear to help explain child homicide. This is most likely because to murder a child, your child, tends to be a very personal and intimate type of homicide. It does not appear to be an act committed to protect the group/family; in stark contrast, it is an offense to the group/family. While some types of child murder probably can fit nicely into Durkheim's idea of anomic homicide, or deregulation, such as killing a child out of revenge or due to frustration, it seems that solidarity may be more easily applied to other types of homicide not dealing with an attack within the family/group. In conclusion, Durkheim's (1951 [1897]) study provided scholars with a lot of detail and understanding when dealing with suicide and other social pathologies. However, while his concepts appeared to be valid in his era, they may not be currently. It appears that his concept of solidarity falls short when attempting to explain child murder. He is most likely not wrong in his conceptualization, but when discussing child murder his theory should

undergo some modernization. Furthermore, it is important to remember that this investigation examined child murder and his theoretical perspectives may still be very relevant in explaining general homicide.

Limitations

As is the case with any study, there are limitations that need to be discussed. First, this inquiry utilized secondary data. While some of the data sources appear less problematic, such as data obtained from the actual census and not the estimates given between the 10 years, it is reasonable to be cautious when using NIBRS. NIBRS is very effective when it comes to providing details about incidents. However, it is not a database that is representative of the U.S. That being said, the sample for this study only consisted of 15 states in four regions of the U.S. The small sample, concerning states that are represented, presents an issue of reliability. In addition, these states tend to be more rural than the states that are not 100% compliant. Due to this, if this study is replicated after more states become 100% compliant and 100% covered, the findings may differ.

Also, as with all crime data, one should be aware of the dark figure of crime. As previously noted, research shows that child murder and fatal cases of child abuse are undercounted (Herman-Giddens, Brown, Verbiest, Carlson, Hooten, Howell, & Butts, 1999; Jason & Andereck, 1983; Overpeck, 2002). This underreporting may be due to SIDs, poor documentation, unfound corpses, or undocumented births due to pregnancy denial (Herman-Giddens et al., 1999, Spinelli, 2005). Underreporting may also be due to inadequacies in coding

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the cause of death, incomplete information or lack of a death certificate, or varying definitions (Lymen et al., 2003). Other reasons for inaccurate estimations may be investigators' lack of skills or training, failure to communicate with other personnel involved (doctors, family members, child services, etc.), and lack of record keeping. This would suggest that the overall rate of child homicide is considerably higher than the official data suggest.

Another limitation of this work is the ecological fallacy. The ecological fallacy assumes that what is learned from analysis of a larger unit of analysis says something about the individuals within that unit of analysis (Babbie, 2007). It is important to remember the unit of analysis used for each study and equally important to not confuse multiple units of analysis when discussing findings. This study examined variables on a county level. The findings discuss the differences between counties and are not predictions of individual-level behaviors.

Limitations also exist with the variables used in this study. First, validity may be improved with additional measures to better grasp the concepts of integration and regulation. For example, using a categorical variable for marital status instead of just "divorced or separated" and "not divorced or separated" may provide better results. In addition, including more religious variables, such as Protestant, would allow a more thorough evaluation of Durkheim's ideas on religion. Furthermore, other measures could be used, such as a diversity index measuring religion or age, and county crime rates. Concerning the religion variable, which was used as a control, some of the counties had over 100%. As previously stated, it is most likely the case that these counties were over 100% due to individuals traveling outside of their county, and subsequently into another county, to attend a religious service. Although this variable was never significant, it could have some effect on the results.

Finally, the size of the counties may be skewing the results. As previously stated, I originally had 52 missing cases. When these 52 cases were missing, I did not have any significance with any of the regressions. In fact, none of the models themselves were significant. Only after finding and placing all of Virginia's "city-counties," did I end up with the results presented here. Therefore, I believe that a county may be too large, and too diverse, of an area to obtain valid and reliable results.

Future Directions

To increase the reliability of the study, future research should attempt to obtain a more representative sample. Additionally, different levels of aggregation should be considered. Counties are quite large, and some tend to be quite diverse. This diversity may have been an obstacle to obtaining valid outcomes. It is suggested that future researches should attempt to obtain data on a smaller aggregate, such as census tracts or block groups. However, this may prove very difficult depending upon how the homicide data are obtained. Further, it is important to realize that there is a difference between neonaticide, infanticide, and child murder. The younger the child is, the more vulnerable they are. Not only are their bodies more delicate and fragile, but they also rely 100% on somebody else for just about everything. Therefore, if a large enough sample size can be found, it may be interesting to break up child homicide into separate age groups.

Second, careful consideration should be given to the variables selected. Researchers should be mindful of different theoretical perspectives and consider what they suggest concerning murder. Some contradictions do exist. For example, O'Brien and Stockard (2006),

suggest that a lack of social integration is positively associated with homicide, and they draw upon control theory for validation. Durkheim (1951 [1897]), however, saw a lack of integration as decreasing homicide in modern societies; it is a force of direction. Furthermore, additional variables should be used to better measure the concepts of integration and regulation. It may be necessary to do additional research from Durkheim's era to improve understanding of his conceptualizations. More thought should definitely be given to the religion variable taking into consideration that Catholicism may not be the best measure of integration today. In addition it may be a good idea to include some type of control variable for the amount of crime in the counties. Furthermore, the positive association between the percent employed in the military and homicide should be further examined. One should seek to find data, on whether the employee is living in the county or not. It would also be interesting to include a dummy variable for whether or not there is a military base within or near the county. It would be especially insightful if the data Durkheim used could be re-analyzed with modern statistical techniques.

Finally, as already discussed, Durkheim's concepts may be best applied to general homicide as opposed to specific kinds of homicide. Investigations of other types of homicide, including general homicide, using Durkheim's (1951 [1897]) notions of solidarity may help to test his theoretical perspective's relevancy in modern times.

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