

EXPLORING THE RELATIONSHIP BETWEEN CHILDHOOD NEGLECT AND  
VIOLENCE IN A SAMPLE OF HIGH-RISK EARLY ADOLESCENTS: FINDINGS  
FROM A LONGITUDINAL STUDY

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## **ABSTRACT**

**BENYAMIN MARGOLIS: Exploring the Relationship between Childhood Neglect and Violence in a Sample of High-Risk Early Adolescents: Findings from a Longitudinal Study**

(Under the direction of Dr. Carol W. Runyan)

*Introduction.* Youth violence rates have increased more than adult rates since 2004. Child maltreatment is a key risk factor for violent behavior in youth. Although neglect is the most prevalent form of childhood maltreatment, its contribution to development of violence is unclear, as is the potential mediating role of social bonds. This dissertation assesses the relationship between childhood neglect before age 8 and the development of early adolescent violence (EAV) by age 14, and examines whether social bonds, defined according to Social Control Theory (SCT), mediate this relationship.

*Methods.* Data came from interviews of children ( $n = 352$ ) from two samples of the LONGSCAN (Longitudinal Studies of Child Abuse and Neglect) Consortium who completed the Conduct Disorder module of the Diagnostic Interview Schedule for Children-Version IV (DISC). The outcome was self-reported perpetration of serious violence in the previous 12 months. Additional data came from the child's caregivers and social service agency records. Data were analyzed to examine differences between violent and non-violent youths based on exposure to maltreatment. Negative binomial regression models assessed the neglect-EAV relationship by examining incidence rate ratios (IRR). Specific indirect effects were examined to

determine whether the four SCT constructs (attachment, commitment, belief, involvement) mediated the neglect-EAV relationship.

*Results.* Only 11% (n = 38) reported engagement in any EAV but nearly twice as many females (n = 24) than males (n = 14) reported EAV. The relationship between neglect and EAV was not significant (IRR = 1.04). Social bonds did not mediate the neglect-EAV relationship, although weaker commitment (B = -0.413; p < .05) and attachment (B = -0.385; p < 0.05) predicted higher EAV rates. However, there was a significant effect of peer criminality on the rate of EAV.

*Conclusion.* Though limited by lack of statistical power, this study demonstrated that social bonds are influential on the perpetration of violence in early teens. Social bonds, however, do not appear to mediate the neglect-EAV relationship. Further testing of this conceptual framework and exploration of sex differences are warranted. Efforts to facilitate strong attachments to caregivers, prosocial peers, and institutions are worth considering as preventive strategies.

## **DEDICATION**

To my parents, Zvia and Stuart (1927-2002) Margolis. I greatly appreciate all the sacrifices they made for me and all that I learned from them. It goes without saying that I miss my father very much and wish he were with me to share in this achievement.

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My wife Amy Margolis is the love of my life. And her love, support, encouragement, and help throughout every stage of this dissertation and my doctoral studies is beyond measure. I can say with certainty I would not have made it through this journey to this point without you. I may not have always expressed my appreciation and gratitude for all the little and big things you did for me along the way, but know that I did even when I did not say so, still do, and always will. It took a lot to put up with this (well, really mostly me) all these years. Hopefully the adjustment to me-as-not-a-student is easy.



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## **Chapter 1: Introduction**

### **1. Problem Statement**

Injuries due to violence are an important public health problem (Centers for Disease Control and Prevention [CDC] 2006a, 2006b; United States Department of Health and Human Services [USDHHS], 2001). In the United States, levels of violent crime (i.e. murder, robbery, rape) peaked in 1994 (Puzzanchera, Adams, & Kang, 2009), and then dropped steadily for almost a decade (Butts & Snyder, 2006; Federal Bureau of Investigation [FBI], 2009; Puzzanchera, 2009). Since 2004, the overall violent crime rate has increased slightly but arrests for youth below age 18 have increased more steeply than the overall rate (Puzzanchera et al., 2009).

Consequences of youth violence include erosion of communities' social wellbeing, increased health care costs, decreased property values, and disruptions in social services (Mercy, Butchart, Farrington, & Cerda, 2002). One comprehensive analysis estimated the annual cost of youth violence exceeds \$158 billion in the United States (Children's Safety Network Economics & Data Analysis Resource Center, 2000), which dwarfs the \$37 billion in direct medical costs and lost productivity estimated to result from all interpersonal assaults, regardless of perpetrator age (Corso, Mercy, Simon, Finkelstein, & Miller, 2007).

### **2. Public Health Significance**

Patterns of violent behavior are often established in adolescence (Loeber & Hay, 1997; Moffitt, 1993; Patterson, Forgatch, Yoerger, & Stoolmiller, 1998) and many

factors are associated with adolescent violence. Among these many factors, child maltreatment is widely recognized as a key risk factor for subsequent violent behavior among juveniles (Glueck & Glueck, 1950; Maas, Herrenkohl, & Sousa, 2008; Manly, Kim, Rogosch, & Cicchetti, 2001; McCord & McCord, 1959; Wekerle et al., 2001) and adults (Deater-Deckard, Dodge, Bates, & Pettit, 1998; Farrington, 1989; Herrenkohl et al., 1997; Stouthamer-Loeber, Loeber, Homish, & Wei, 2001; Widom, 1989a; 1989b, 1989c).

Although childhood neglect<sup>1</sup> is the most prevalent form of child maltreatment in the United States (Administration on Children, Youth, and Families [ACYF], 2009; Drotar, 2000; Dubowitz, Papas, Black, & Starr, 2002; Schumacher et al., 2001) it has not been adequately researched as a discrete factor contributing to violence (Dubowitz, 1994). Most research has been limited to studying the effects of physical abuse (see Fagan, 2005; Herrenkohl et al., 2003; Rebellon & van Gundy, 2005), sexual abuse (Lemmon, 1999), or has grouped childhood neglect with the other forms of maltreatment such as physical abuse (Brezina, 1998; Ireland, Smith, & Thornberry, 2002; Piquero & Sealock, 2000; Smith, Ireland, Thornberry, & Elwyn, 2008). This has made it difficult to extricate the specific effects of maltreatment subtypes – particularly childhood neglect – on later behaviors.

Adverse outcomes of childhood neglect include increased psychological distress, dysfunctional relationships, low achievement in school, and poor socioeconomic position in adulthood (Chapple, Tyler, & Bersani, 2005; Drotar, 2000; Dubowitz et al.,

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<sup>1</sup> A broad category, childhood neglect “refers to serious deficiencies in parents’ or caretakers’ provision of attention, stimulation, emotional availability, food, clothing, shelter, hygiene, nutrition, supervision, medical care, or education that may result in actual or potential harm to the child” (Drotar, 2000; p. 109).

2002; Goldstein, Grant, Ruan, Smith, & Saha, 2006; Lee & Hoaken, 2007; Liu, 2004; Zuravin & Fontanella, 1999; Zielinski, 2009). Childhood neglect has also been associated with higher rates of violent juvenile<sup>2</sup> delinquency (De Li, 1999; Maxfield et al., 2000; Widom & Ames, 1994; Zingraff, Leiter, Myers, & Johnsen, 1993; Zingraff, Leiter, Johnsen, & Myers, 1994) and increased odds of arrest for violence in adulthood (Rivera & Widom, 1990; Widom & Ames, 1994; Widom & Maxfield, 1996). Due to the paucity of research on neglect, little attention has been given to identifying mediators in the neglect-violence relationship. Social bonds may act as one such mediator.

Disrupted social bonds are associated with adolescent violent behaviors (Banyard, Cross, & Modecki, 2006; Brezina, 1998; Catalano, Haggerty, Oesterle, Fleming, & Hawkins, 2004; Catalano & Hawkins, 1996; Chapple, Tyler, & Bersani, 2005; Hirschi, 1969; Gardner & Shoemaker, 1989; Huebner & Betts, 2002; Ozbay & Ozcan, 2006, 2008; Payne & Salotti, 2007; Teague, Mazzerolle, Legosz, & Sanderson, 2008). Maltreatment predicts subsequent impaired social bonds to caregivers, peers, and prosocial institutions such as schools (Egeland, Yates, Appleyard, & van Dulmen, 2002; Stouthamer-Loeber, Wei, Homish, & Loeber, 2002; Weinfield, Sroufe, & Egeland, 2000) as well as subsequent general delinquency (Catalano, Haggerty, Oesterle, Fleming, & Hawkins, 2004; Krohn & Massey, 1980) and violent behavior (Herrenkohl, Huang, Tajima, & Whitney, 2003; Huang, Kosterman, Catalano, Hawkins, & Abbott, 2001). However, the specific impact of childhood neglect on social bonds has not been reported in the literature.

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<sup>2</sup> "Juvenile" is defined as being under age 18 (USDHHS, 2001).



Methodological problems, such as retrospective data collection from official records that often misclassify maltreatment subtypes (Runyan et al., 2005), and delinquent/criminal status (Ards, Chung, & Myers; 1998; Ards, Myers, Chung, Malkis, & Hagerty, 2003; Arnold, 1971; Dannefer & Schutt, 1982; Pettit & Western, 2004; Sampson & Laub, 1993; Sealock & Simpson, 1998; Unnever, Frazier, & Henretta, 1980) further complicate efforts to establish a causal link between neglect and violence. Other methodological limitations include skewed samples and inexact matching procedures, up to 20-year lags in data collection (see Maxfield & Widom, 1996; Rivera & Widom, 1990; Widom & Maxfield, 1996, Widom, 1989a, 1989b, 1989c) and otherwise outdated data (Rebellion & van Gundy, 2005), flawed analytic techniques (Grogan-Kaylor & Otis, 2005), and data of uncertain temporal sequence.

This dissertation addresses many theoretical and methodological shortcomings by specifically examining the relationship between childhood neglect, social bonds, and early adolescent<sup>3</sup> violence. Current, detailed, valid, and reliable longitudinal data from two sites within the five-site Longitudinal Studies of Child Abuse and Neglect (LONGSCAN) consortium on the full scope of maltreatment history, ecological context, participant characteristics, and self-reported violent behavior were used to examine the neglect-violence relationship. (Please refer to sections 2.1 and 3 of Chapter 4 for an overview of LONGSCAN and further information on LONGSCAN data collection procedures.) The longitudinal nature of these data provided an opportunity to examine the potential causal relationship between childhood neglect

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<sup>3</sup>This dissertation will follow prevailing practice in developmental psychology, which considers early adolescents to be those in the 13 to 14 age range (Berk, 2003; Cole, 1999, Crosson-Tower, 2005). See section 1.1 of Chapter 2 for more detail.

and early adolescent violence (EAV) as well as potential mediators of this relationship.

The theoretical model that guided this dissertation was Travis Hirschi's Social Control Theory (SCT). The four fundamental social bonds (*attachment, belief, involvement, and commitment*) theorized to control adolescent antisocial behavior (Hirschi, 1969) were recast as potential mediators of a putative relationship between childhood neglect and adolescent violence. This model integrates research on the effects of weakened social bonds on a variety of antisocial behaviors including adolescent violence (see Alston, Harley, & Lenhoff, 1995; Costello & Vowell, 1999; Friedman & Rosenbaum, 1988; Junger-Tas, 1992; Junger & Marshall, 1997; Knight & Tripodi, 1996; Krohn & Massey, 1980; Nagin & Paternoster, 1994) with that implicating childhood neglect as a factor in weakened social bonds (Chapple, Tyler, & Bersani, 2005; Crittenden & Ainsworth, 1989; Dubowitz, Black, Starr, & Zuravin, 1993; Fries, Ziegler, Kurian, Jacoris, & Pollak, 2005; Holden & Nabors, 1999; Lee & Hoaken, 2007).

### **3. Specific Aims**

The overall goal of this dissertation was to assess the effects of childhood neglect before age 8 on early adolescent violence (EAV) measured at age 14 while considering the mediating effects of social bonds defined according to Social Control Theory (SCT). The specific aims were to:

1. Describe the relationship between childhood neglect before age 8 and the perpetration of adolescent violence as measured at age 14; and

2. Determine whether social bonds mediate the relationship between childhood neglect and perpetration of early adolescent violence.

#### **4. Dissertation Overview**

This dissertation is organized into the following chapters. The next chapter, Chapter Two, reviews the literature on adolescent violence; child maltreatment, particularly neglect; previous studies examining the relationship between child maltreatment and later violent behavior; and discusses Social Control Theory. Chapter Three contains this study's conceptual model, research questions, and hypotheses. In Chapter Four, the study sample, instruments, data collection procedures, variables, and analytic procedures are described. Chapters Five and Six are self-contained manuscripts suitable for submission to peer-reviewed journals. Chapter Five is a descriptive paper that quantifies the relationship between childhood neglect and EAV. In Chapter Six, the mediating role of social bonds, defined according to SCT, in the relationship between childhood neglect and EAV is explored. The last chapter, Chapter Seven, is a synthesis of the overall results of this research, in which the implications for theory, future research, and intervention are discussed.

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## **Chapter 2: Background & Literature Review**

### **1. Adolescent Violence as a Public Health Problem**

#### **1.1 Defining Adolescent Violence**

Adolescence is recognized in the United States and other industrialized countries as the period of transition from childhood to adulthood. The onset of adolescence is usually marked by the biological changes involved in the development of sexual maturity, with progressive psychological and relative economic independence culminating in social status as an adult. This period usually lasts 7-9 years (Cole, 1999). There are diverse opinions regarding the breadth of the adolescent developmental stage, with some even disputing the validity of recognizing adolescence as a discrete developmental stage (Cole, 1999).

According to the Centers for Disease Control and Prevention, individuals between ages 12 and 19 are considered adolescents (CDC, 2006a). The World Health Organization (WHO) uses the 10-19 year age range to define adolescence, with additional separation into early adolescence (10-14) and late adolescence (15-19; Krug, Dahlberg, Mercy, Zwi, & Lozano, 2002).

In the field of juvenile justice, juveniles are those at least 10 years old but less than 18 years old. This is because those under 10 are rarely arrested, and those 18 and over are legally considered adults throughout the United States (McCord, Widom, & Crowell, 2001). The National Research Council (NRC) adopted this

nomenclature, distinguishing the general term of *juvenile* (ages 10 to 17) from a more specific term of *adolescent*.

According to the NRC, *adolescent* refers to any young person between the ages of 13 and 17. This definition of *adolescent* is used throughout this dissertation, meaning that adolescent refers to individuals between 13 and 17 years old. The distinction of “early adolescent” will refer to youth between 13 and 14 years old. This is based on prevailing practice in developmental psychology<sup>1</sup> (Berk, 2003; Cole, 1999, Crosson-Tower, 2005). In this dissertation, violence is defined as “behaviors by individuals that intentionally threaten, attempt, or inflict physical harm on others” (Reiss & Roth, 1993; p. 2). Based on this definition, the term “early adolescent violence” referred to aggressive acts attempted, threatened, or committed by participants between the ages of 13 and 14 years old.

## **1.2 Distinguishing Violence from Delinquency**

The term *delinquency* is a general expression that involves two categories of behaviors. The first category, criminal delinquency (also known as juvenile crime), consists of behaviors that are illegal no matter who commits them or under what circumstances they occur (McCord et al., 2001). Examples of criminally delinquent offenses are murder, armed robbery, rape, burglary, and theft. The second category is status delinquency. This refers to behaviors illegal only because of the offender’s age (e.g., truancy, running away from home, underage drinking).

Violence, as a category of behavior, is commonly subsumed within delinquency (Dahlberg, 1998). Accordingly, much of the research on the antecedents and

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<sup>1</sup> LONGSCAN interview data collected at the age 14 wave concentrates on events and experiences over ages 13-14. Interviews focus on the previous 12 months, when most participants were 13 years old.

correlates of antisocial behavior by adolescents explores delinquency without differentiating between criminal or status delinquency. Research that does separate the two often does not further examine the component offenses within each category of delinquency. Within the criminal delinquency category, however, there is a further important distinction. Namely, there are different classifications for certain types of crime: violent crime (e.g., murder, armed robbery), property crime (e.g., burglary, motor vehicle theft) and drug crime (e.g., conspiracy to distribute a controlled dangerous substance, distribution of narcotics). Violence is a distinct subcategory of criminal delinquency, which is likewise a category of delinquency.

Research distinguishing between criminal and status offenses usually does not further differentiate violent and non-violent acts (Dahlberg, 1998). Therefore, there is limited information on the specific outcome of violent behavior in adolescents.

### **1.3 The Scope of the Problem**

Violence committed by young people is a serious public health problem. Young people account for a disproportionate share of violent acts committed annually (Federal Bureau of Investigation [FBI], 2009). Although violent crime rates have generally declined overall since 1994 (Butts & Snyder, 2006; FBI, 2009; Puzzanchera, Adams, & Kang, 2009; Rand, 2009), statistical data show that violence committed by younger offenders has disproportionately increased since 2005 (see **Figure 2.1**<sup>2</sup>). Yet, an estimated 80% of all acts of violence perpetrated by

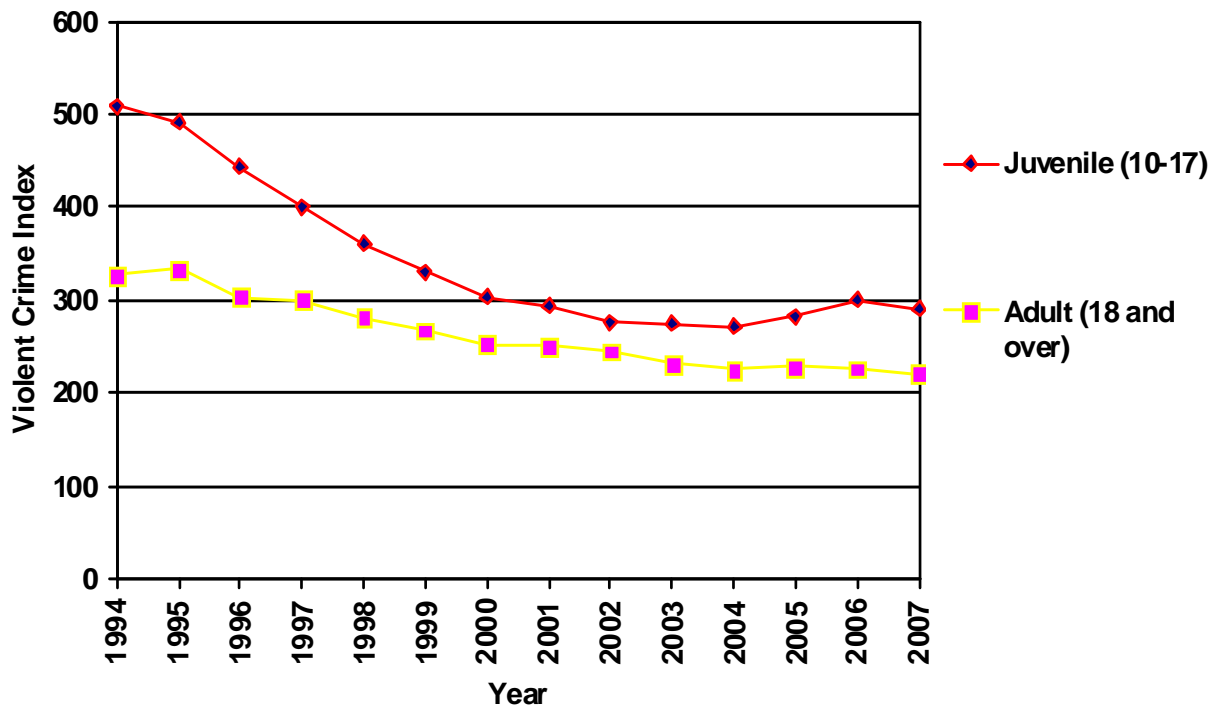
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<sup>2</sup> This figure displays the rates of arrest for violent crimes included in the FBI index of violent crime, which consists of murder and non-negligent manslaughter, forcible rape, robbery, and aggravated assault (FBI, 2008; McCord et al., 2001). The figures used to estimate these rates account for missing data and include county-level data submitted after the deadline for inclusion in FBI annual reports, resulting in omission from FBI annual reports (Puzzanchera, Adams, & Kang, 2009).

young people are unreported to authorities and not compiled in criminal statistics (Scott, 1999).

**Table 2.1** below provides an overview of the scope of violent behavior in youth between 10 and 17 within the context of other forms of criminal and status delinquency. Although the most recent figures on index violent crime are well below the peak percentages recorded for 1990, these figures still show a higher proportion of violent offenses than in the past.

**Figure 2.1. Violent Crime Rates (per 100,000) 1994-2007**



The decade of 2000-2010 was characterized by a substantial increase in less serious forms of violence (“other assaults”) and a gradual increase in arrests for the weapons-related crimes such as carrying or possessing weapons (“weapons”). As this table is a compilation of arrests voluntarily reported to the Federal government, it

is unlikely that these data are without limitations<sup>3</sup>. Most importantly, less extreme forms of violence go unreported (McCord et al., 2001) and hence would not involve arrest and subsequent reporting.

**Table 2.1. Percentage of Arrests of Youth Age 10-17 by Offense (FBI, 1971-2009)**

|                             | 1970          | 1980          | 1990          | 2000          | 2005          | 2006          | 2007          | 2008          |
|-----------------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Murder                      | 0.08          | 0.09          | 0.15          | 0.05          | 0.06          | 0.06          | 0.06          | 0.06          |
| Rape                        | 0.20          | 0.22          | 0.27          | 0.19          | 0.19          | 0.16          | 0.16          | 0.16          |
| Robbery                     | 1.81          | 2.11          | 1.91          | 1.22          | 1.31          | 1.39          | 1.52          | 1.60          |
| Aggravated Assault          | 1.27          | 1.90          | 2.93          | 2.81          | 2.89          | 2.69          | 2.56          | 2.52          |
| <b>Index Violent Crime</b>  | <b>3.36</b>   | <b>4.32</b>   | <b>5.26</b>   | <b>4.27</b>   | <b>4.45</b>   | <b>4.29</b>   | <b>4.30</b>   | <b>4.34</b>   |
| Burglary                    | 8.82          | 10.61         | 6.35          | 4.15          | 3.71          | 3.92          | 3.72          | 3.93          |
| Larceny                     | 18.34         | 20.49         | 20.96         | 16.16         | 14.29         | 13.36         | 14.01         | 15.57         |
| Motor Vehicle Theft         | 4.49          | 2.97          | 4.25          | 2.08          | 1.54          | 1.40          | 1.29          | 1.10          |
| Arson                       | 0.28          | 0.35          | 0.32          | 0.38          | 0.38          | 0.39          | 0.34          | 0.32          |
| <b>Index Property Crime</b> | <b>31.92</b>  | <b>34.42</b>  | <b>31.89</b>  | <b>22.77</b>  | <b>19.92</b>  | <b>19.07</b>  | <b>19.35</b>  | <b>20.91</b>  |
| Other Assaults              | 3.13          | 4.02          | 6.76          | 9.60          | 11.18         | 11.65         | 10.81         | 10.84         |
| Weapons                     | 1.05          | 1.21          | 1.85          | 1.60          | 2.10          | 2.09          | 1.95          | 1.85          |
| Vandalism                   | 4.31          | 5.40          | 5.64          | 4.85          | 4.98          | 5.58          | 5.19          | 5.12          |
| Drug Abuse Violations       | 4.90          | 5.10          | 3.77          | 8.44          | 8.30          | 8.48          | 8.58          | 8.24          |
| Disorderly Conduct          | 7.48          | 5.96          | 5.49          | 6.16          | 9.10          | 9.42          | 9.11          | 8.90          |
| Curfew and Loitering        | 6.56          | 3.36          | 3.75          | 7.28          | 6.85          | 4.41          | 6.95          | 6.64          |
| Runaways                    | 10.99         | 7.11          | 7.95          | 6.49          | 5.38          | 5.61          | 5.21          | 5.10          |
| Other Offenses*             | 26.29         | 29.11         | 27.64         | 28.54         | 27.74         | 29.42         | 28.58         | 28.06         |
| <b>Non-index Crime</b>      | <b>64.72</b>  | <b>61.26</b>  | <b>62.85</b>  | <b>72.96</b>  | <b>75.63</b>  | <b>76.66</b>  | <b>76.37</b>  | <b>74.76</b>  |
| <b>Total</b>                | <b>100.00</b> | <b>100.00</b> | <b>100.00</b> | <b>100.00</b> | <b>100.00</b> | <b>100.00</b> | <b>100.00</b> | <b>100.00</b> |

\*Does not include traffic offenses.

Recent national surveys of high school students estimated that at least one-third of respondents had been in a physical altercation at least once in the 12 months prior to the survey (CDC, 2004, 2006b, 2008; Grunbaum et al., 2004). One-third (33%) of respondents reported engaging in a physical fight at least once in 2003 (CDC, 2004; Snyder & Sickmund, 2006), increasing to 35.5% in 2007 (CDC, 2008). This increase evidences an upward drift towards the robust 43% figure recorded in 1993 (Snyder & Sickmund, 2006). Because the scope of widely administered school-based surveys is limited, these figures likely underestimate the problem of

<sup>3</sup> Uniform Crime Reports (UCR), the source of the data for this table, are based on arrest data voluntarily submitted by states to the FBI. Although considered the most reliable indicator of trends in criminal behavior, this process makes each UCR subject to significant biases (See Cook & Laub, 1998; McCord, 1997) as a measure of crime.



violence perpetrated by youth. Those most likely to have engaged in serious violence are likely less inclined to report the full extent of their activities. Moreover, most youth who engaged in serious violence are no longer in school due to incarceration or drop out (Beauvais, Chavez, Oetting, Deffenbacher, & Cornell, 1996).

Representatively sampled studies have produced estimates suggesting more than half of older teens engage in some form of violent behavior (Ellickson, Saner, & McGuigan, 1997; Saner & Ellickson, 1996). These studies found that over half (54%) of 4,500 older teens (17- and 18-year olds), including dropouts, tracked for 6 years, reported engaging in some form of violence in the preceding year (Ellickson et al., 1997). Moreover, 23% of this sample reported ever attacking someone with the intention to hurt or kill, using physical force to rob or extort, engaging in a gang fight, or carrying a concealed weapon (Ellickson et al., 1997).

#### **1.4 Characteristics of Adolescent Violence**

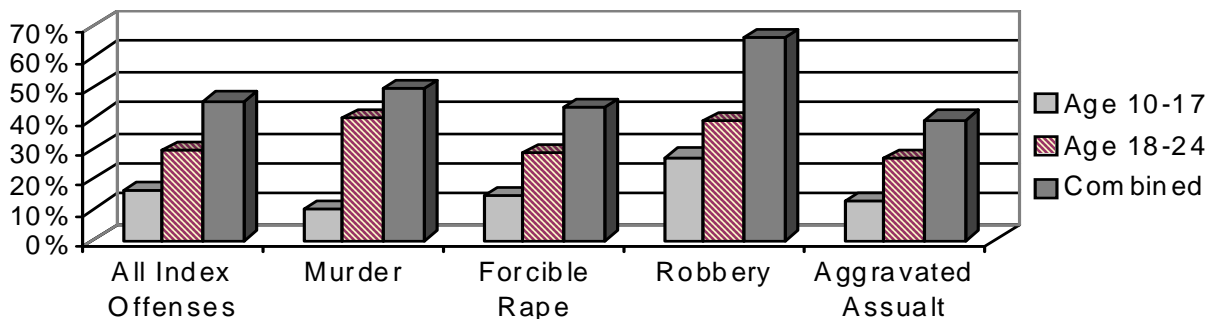
It has been hypothesized that violent behavior evolves over development. This pattern begins with aggression and behavior problems in childhood, followed by delinquency characterized by escalating violent behavior during adolescence (Widom, 2000). The pattern culminates in increased criminally violent behavior in adulthood (Widom, 2000). This hypothesis is borne out by the data. People younger than 25 years old<sup>4</sup> accounted for nearly half (45.8%) of the arrests for all

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<sup>4</sup> Offenders under the age of 10 committed a trivial percentage of violent crimes (8/16,916 forcible rapes [0.047%]; 61/100,738 robberies [0.061%]; and 399/329,913 aggravated assaults [0.12%]), and in the case of murders and non-negligent manslaughters, committed one of the 9,888 acts [0.010%] recorded during the reference period (FBI, 2009).

major violent offenses. Census data showed youth between 10 and 24 years old<sup>5</sup> were just over one-fifth (20.6%) of the total US population. The age 10-17 demographic comprised over one-tenth (10.8%) of the total US total population (United States Census Bureau, 2009) but accounted for almost one-sixth (16.1%) of the arrests for major violent offenses (FBI, 2009). **Figure 2.2** below illustrates the disproportionate share of violent crime attributed to younger persons.

**Figure 2.2. Violent Crime Arrests of Juveniles and Young Adults as a Proportion of Total Recorded Arrests in 2008 (FBI, 2009)**



### 1.5 The Consequences of Adolescent Violence

The consequences of adolescent violence are deaths, injuries, tremendous costs to our healthcare and legal systems, disruptions to social services, and decreases in property values (Mercy et al., 2002), along with the diminished quality of life among those who live in communities where violence is more prevalent. Similarly, those who were victims of violent acts committed by youthful offenders can experience permanent disabilities, lasting emotional distress, or death; for every one victim of homicides perpetrated by youth, there are 20-40 victims of non-fatal violence committed by this same age group (Dahlberg, 1998; Fox, 1999, McCord et al., 2001).

<sup>5</sup> This refers to youth between 10 and 24 years old on July 1, 2008 (the midpoint of 2008).

Over \$37 billion in direct medical costs and lost productivity is estimated to result from all interpersonal assaults, regardless of perpetrator age (Corso, Mercy, Simon, Finkelstein, & Miller, 2007). The total costs of violence perpetrated by youth is estimated to exceed \$158 billion annually when considering all tangible (e.g., medical, psychological, adjudication, incarceration, social services), intangible (e.g., quality of life), and hypothetical (e.g., lost productivity of victim and perpetrator) costs (Children's Safety Network Economics & Data Analysis Resource Center, 2000).

There are additional costs associated with co-occurring behaviors manifested by violent youth. Violent youth are more likely to engage in substance abuse (Ellickson et al., 1997; Farrington, 1989; Huizinga, Loeber, Thornberry, & Cothorn, 2000), nonviolent delinquency (e.g., property crimes; Ellickson et al., 1997; Mitchell & Rosa, 1981), and struggle in (Huizinga et al., 2000) or even drop out of school (Ellickson et al., 1997). Engagement in illegal behaviors also impairs one's future prospects for educational (Sweeten, 2006) and vocational success (Lerman, 1968; Menard, 2002), as does dropping out (Day & Newburger, 2002). The higher rates of mental health problems associated with youth who commit violent acts also lead to greater lifetime costs, as many problems are likely to continue into adulthood (United States Department of Health and Human Services [USDHHS], 1999).

## **2. Childhood Neglect Research**

### **2.1 Introduction**

Maltreatment is complex and difficult to measure because it is hard to define, often chronic, and rarely involves discrete events (English et al., 2005). In the past, under most circumstances, the treatment of children by their caregivers was

considered a private family matter outside the purview of non-relatives. Extreme incidences of antisocial behavior by children seem to have prompted some consideration of maltreatment in clinical investigations (see Duncan & Duncan, 1971; Easson & Steinhilber, 1961; King, 1975; Tuteur & Glotzer, 1966) and occasional inclusion as a covariate in large-scale, more rigorous studies (see Glueck & Glueck, 1950). The publication of the “The Battered Child Syndrome” (Kempe, Silverman, Steele, Droegemueller, & Silver, 1962) is considered the impetus for entry of physical abuse into wider discourse (Haugaard, 2006).

Greater awareness of the prevalence and consequences of physical abuse prompted shifts in social norms and subsequent governmental action (Knutson & Heckenberg, 2006; Nelson, 1984). This culminated in the passage of the Child Abuse Prevention and Treatment Act (CAPTA) in 1974 (Haugaard, 2006; Knutson & Heckenberg, 2006). The origins of the movement around physical abuse and the desire of the legislation’s sponsor to differentiate the prevention and treatment of physical abuse from general child welfare initiatives (Nelson, 1984) marginalized childhood neglect (Haugaard, 2006).

Childhood neglect is most often a failure to provide material things to a child. In fact, there was – and continues to be – a strong association between neglect and poverty. This made consideration of childhood neglect distasteful to those opposed to government involvement in welfare issues and antipoverty programs (Haugaard, 2006). CAPTA therefore focused primarily on physical abuse, with only minor consideration of childhood neglect (Nelson, 1984). This legislation and the creation of a diagnosable syndrome under the aegis of the medical establishment likely

accounts for the dominant position physical abuse occupies within the developing field of child maltreatment research (Haugaard, 2006).

Others have partially attributed the lack of adequate research on neglect to the conceptual complexity and challenges inherent in its measurement (Dubowitz et al., 2005). Most entities that fund childhood neglect research seek to avoid the impression that caregivers' lack of financial success is analogous to maltreatment of their children.

## **2.2 Definitions of Child Maltreatment Subtypes**

Although the exact operational definition of child maltreatment is disputed, it is an accepted term for referring to the different types of behaviors that constitute child abuse and neglect. Heeding Besharov's (1981) recommendation to clearly articulate how child maltreatment is defined in research studies, presented below and in **Table 2.2** are this dissertation's maltreatment-related terms and operational definitions. All were derived from a coding scheme (Modified Maltreatment Coding Scheme [MMCS]) used within LONGSCAN and described in Chapter 4.

The fundamental distinction between subtypes of maltreatment is whether the maltreatment involves acts of commission or omission (Barnett et al., 1993). The different forms of abuse (physical, sexual, and emotional) are considered "acts of commission" because they involve the active execution of inappropriate actions on the part of the caregiver. Neglect thus involves "acts of omission" because it entails the caregiver's failure to perform activities required to meet the child's minimal needs or avoid potential or actual harm (Dubowitz et al., 2005).

### **2.2.1 Definition of Physical Abuse**

Physical abuse occurs when a caregiver or other responsible adult intentionally inflicts physical injury (of any degree of severity or lasting consequence) on the child for whom he or she is responsible. This form of maltreatment is distinguished by physical injury (ranging from minor bruises to severe fractures or death) resulting from punching, beating, kicking, biting, shaking, throwing, stabbing, choking, hitting (with a hand, stick, strap, or other object), burning, or otherwise harming a child without regard to intent (Barnett et al., 1993; Knutson & Heckenberg, 2006). However, “culturally sanctioned physical alterations such as circumcision and ear piercing” (p. 55) are excluded from consideration as injuries evidencing physical abuse (Barnett et al., 1993). Similarly, threats without physical contact are considered a form of emotional abuse (defined below in Section 2.2.2.).

Physical injuries that directly result from sexual activity itself, such as rectal or vaginal tears, are considered within the sexual abuse category. On the other hand, if injuries occurred in the course of trying to force or coerce the child to engage in sexual activities, these injuries would be considered physical abuse, with sexual abuse coded for the sex act(s) and possible injuries resulting from sexual activity.

### **2.2.2 Definition of Emotional Abuse<sup>6</sup>**

Emotional abuse involves consistent and chronic acts, attitudes, or interaction patterns that interfere with and have cumulative effects on the child’s psychological or social development (Barnett et al., 1993; Brassard & Donovan, 2006). This category of maltreatment also includes isolated, but grossly inappropriate, events. Subsumed within this category are behaviors such as placing non-developmentally

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<sup>6</sup> This form of child maltreatment is occasionally referred to as “psychological” abuse.

appropriate expectations on the child or rejection of the child. Emotional abuse is distinguished by focus on caregiver actions that interfere with normal, developmentally-appropriate emotional development of the child. Emotional abuse consists of interference with the formation or maintenance of a psychologically safe and secure environment, development of healthy relationships with others, autonomy, and age-appropriate maturation.

### **2.2.3 Definition of Sexual Abuse**

Sexual abuse is defined as attempted or actual sexual contact or interaction of any form between the child and a caregiver or other responsible adult, for purposes of the adult's sexual gratification or financial benefit (Barnett et al., 1993; Trickett, 2006). This includes activities such as fondling a child's genitals, penetration, incest, rape, sodomy, indecent exposure, and exploitation through prostitution or the production of pornographic materials.

The definition of "caregiver or responsible adult" encompasses "any family member or friend who has a relationship with the child, or is in a position of authority over the child (e.g., baby-sitter)" (Barnett et al., 1993; p. 57). However, verbal threats to compel a child to engage in sexual activities with the adult, whether successful or not, are considered emotional abuse. In addition, emotional abuse occurs when a non-offending caregiver tells the child to keep sexual abuse secret or otherwise attempts to verbally coerce the child not to disclose this abuse.

### **2.2.4 Definition of Neglect**

Whether due to the legacy of the context surrounding CAPTA or the complexity of childhood neglect, most research on the topic lacks clear definition (Zuravin,

1999) despite earlier recognition that the lack of a clear, standard definition of neglect was impeding the development of neglect research (NRC, 1993). This dissertation uses a definition of neglect primarily comprised of two subtypes.

The first subtype of neglect, *failure to provide*, involves a caregiver or responsible adult's failure to meet the minimum physical needs of the child. In the case of families in poverty, physical neglect is scored if children's physical needs (adequate food, clothing, shelter, hygiene, and medical, dental, and mental health care) are not met because the parents did not take minimal actions to avail themselves of available community resources, such as food stamps or emergency shelters. Failure to provide can be further differentiated by subtype defined according to specific physical need (e.g., nutrition, hygiene).

The second subtype of neglect, *lack of supervision*, entails threats to the safety of the child. This type of neglect occurs when the caregiver or responsible adult does not take sufficient, developmentally appropriate action to assure the child's safety inside and outside of the home setting. Leaving the child unsupervised, inadequately supervised, supervised by an unsuitable or unsafe temporary caregiver, or exposed to an unsafe environment are elements of this subtype of neglect.

In this dissertation, also included in the definition of neglect is failure (an "act of omission") to meet the basic emotional needs of the child and failure to assist the child to integrate with societal expectations, including failure to ensure adequate education of the child (English & the LONGSCAN Investigators, 1997). From this point forward, childhood neglect refers to any neglect occurring at or before the age



of 8 and consists of the following: failure by caregiver to provide minimum levels of supervision, attention, stimulation, emotional availability, food, clothing, shelter, hygiene, nutrition, or medical care to the degree that actual or potential harm may result (Barnett et al., 1993; Drotar, 2000; Dubowitz, 2006; Zuravin, 1999).

**Table 2.2. Glossary of Maltreatment Terms**

| <b>Term</b>            | <b>Definition</b>  | <b>Sources</b>   |
|------------------------|--|--|
| <b>Physical Abuse</b>  | Physical injury (ranging from minor bruises to severe fractures or death) as a result of punching, beating, kicking, biting, shaking, throwing, stabbing, choking, hitting (with a hand, stick, strap, or other object), burning, or otherwise harming a child without regard to intent. | Barnett et al., (1993); Knutson & Heckenberg (2006)                    |
| <b>Emotional Abuse</b> | Consistent and chronic acts, attitudes, or patterns of interaction that interfere with and have cumulative effects on the child's psychological or social development.   | Barnett et al., (1993); Brassard & Donovan (2006)                      |
| <b>Sexual Abuse</b>    | Attempted or actual sexual contact or interaction of any form between the subject and a caregiver or other responsible adult, for purposes of the adult's sexual gratification or financial benefit  | Barnett et al., (1993); Trickett (2006)                                |
| <b>Neglect</b>         | Failure by caregivers to provide minimum levels of supervision, attention, stimulation, emotional availability, food, clothing, shelter, hygiene, nutrition, or medical care to the degree that actual or potential harm may result.   | Barnett et al., (1993); Drotar (2000); Dubowitz (2006); Zuravin (1999) |

### 2.3 The Scope of the Problem

Neglect is the most prevalent form of child maltreatment in the United States (Drotar, 2000; Dubowitz et al., 2002; Schumacher et al., 2001; USDHHS, 2009, 2010). Over the course of 2008, neglect accounted for at least<sup>7</sup> 73.3% (556,105/758,289) of *substantiated* incidents of child maltreatment in the United States (including the District of Columbia) and Puerto Rico (USDHHS, 2010) and accounted for the majority of substantiated incidents of maltreatment in every racial

<sup>7</sup> There were 68,498 cases of "other" and 2,546 cases of "unknown" forms of maltreatment in 2008 (USDHHS, 2010); there were 31,207 cases of "other," 792 cases of "unknown" forms of maltreatment, and 97,123 cases of "multiple maltreatments" in 2007 (USDHHS, 2009). Though not certain, it is likely neglect was present in some of those cases, pushing the proportion of neglect higher in each of those years.

category (USDHHS, 2010). Most recent data show that while the rate of maltreatment has dipped slightly to 10.3 per 1000 children in 2008, the rate of neglect rose to 7.6 per 1000 children (USDHHS, 2010) compared the previous year's 6.2 per 1000 rate of neglect<sup>8</sup> (USDHHS, 2009).

### **2.3.1 Consequences of Childhood Neglect**

The consequences of childhood neglect are myriad and complex. In 2008, neglect alone accounted for 33.4%<sup>9</sup> of an estimated 1,740 fatalities attributed to maltreatment (USDHHS, 2010). Some researchers even attribute a recognized clinical disorder – nonorganic failure to thrive (NOFTT) – to psychosocial neglect by the primary caregiver (Crouch & Milner, 1993).

Neglect can also cause problems in language and cognitive development in young children (Crouch & Milner, 1993; Hildyard & Wolfe, 2002). Kindergarten-aged neglected children perform the most poorly on standardized intelligence tests in comparison to other maltreated and non-maltreated peers (Strathearn, Gray, O'Callaghan, & Wood, 2001). Cognitive problems often extend throughout development, putting neglected children at greater risk for lower academic achievement and sub-optimal social interactions (Eckenrode, Laird, & Doris, 1993; Hildyard & Wolfe, 2002).

Many of the consequences of childhood neglect are subtle and insidious. For example, Koenig, Cicchetti, and Rogosch (2004) found that neglected children

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<sup>8</sup> The 2010 edition of *Child Maltreatment* eliminated the category of "multiple maltreatments." In the previous year, there were 97,123 cases of "multiple maltreatments" (USDHHS, 2009). It is possible that this definitional shift contributed to the substantial increase in the rate of neglect in 2010.

<sup>9</sup> According to *Child Maltreatment 2008* (USDHHS, 2010), physical abuse accounted for 22.9% of reported fatalities during this same period, with 39.7% of deaths attributed to more than one category of maltreatment; the remaining fatalities involved sexual abuse (0.4%), psychological abuse (1.3%), or other/unknown maltreatment (2.3%).

displayed impaired moral development. Problems with attachment and low self-esteem are additional consequences associated with a history of childhood neglect (Hildyard & Wolfe, 2002, MacFie, Cicchetti, & Toth, 2001). Other psychological problems theorized to result from neglect, such as difficulties establishing and maintaining appropriate social relationships, impairments in information processing, and attachment problems are also related to aggression in these children (Fonagy, 2003; Lee & Hoaken, 2007).

Besides lower relative educational and professional achievement (Zielinski, 2009), victims of childhood neglect are at increased risk for violence and delinquent behaviors (De Li, 1999; Knutson et al., 2004; Maxfield et al., 2000; Widom & Ames, 1994; Zingraff, Leiter, Myers, & Johnsen, 1993; Zingraff, Leiter, Johnsen, & Myers, 1994). In fact, a meta-analysis found neglectful parenting to be the most robust predictor of delinquency (Loeber & Stouthamer-Loeber, 1986). Among adults, a history of childhood neglect is associated with elevated rates of violent offending exceeding those found among victims of other forms of maltreatment and matched controls (Maxfield & Widom, 1996; Widom & Ames, 1994).

### **3. The Relationship between Child Maltreatment and Violence**

#### **3.1 Introduction**

Since the 1950s (Glueck & Glueck, 1950; McCord & McCord, 1959; Wilson, 1962), child maltreatment has been associated with delinquent behavior in youth. Subsequent longitudinal studies have strengthened evidence of this relationship. These studies have consistently shown that children who experience maltreatment early in development manifest delinquent behaviors as teens and young adults.

Some of these studies have refined the relationship between childhood maltreatment and antisocial behavior to show that exposure to child maltreatment increases the odds of manifesting subsequent violent behavior. By delineating the temporal sequence between childhood maltreatment and later violent behavior, these studies offer compelling evidence that adolescent violence is causally related to childhood maltreatment.

### **3.2 Violence Committed by Adults Maltreated as Children**

Although not a focus of this dissertation, many studies have demonstrated that adults with a history of maltreatment suffer deleterious effects as adults, including engaging in violent acts (Blount & Chandler, 1979; Climent & Ervin, 1972; Duncan & Duncan, 1971; Monane, Leichter, & Lewis, 1984; Tuteur & Glotzer, 1966). The preponderance of early evidence heavily skewed towards case studies and other non-experimental study designs. For instance, Easson and Steinhilber (1961) looked at the case histories of 8 male juvenile murderers. Similarly, Tuteur and Glotzer (1966) interviewed 10 mothers who had committed filicide (deliberately killing one's own child). These types of studies, due to their inferential limitations, did not substantively strengthen the emerging hypothesis postulating a causal link between maltreatment and aggression (Kakar, 1996). In contrast, the work of Cathy Spatz Widom represented a meaningful step forward in the assessment of the relationship between childhood maltreatment and adult violence (Kakar, 1996).

In the cohort tracked by Widom and others, a history of maltreatment was associated with a significantly elevated probability of arrest as an adult (Rivera & Widom, 1990; Widom, 1989a, 1989b, 1989c; Widom & Maxfield, 2001). Additional

analysis found differences related to maltreatment type. The odds that victims of neglect would be arrested for a violent offense were 1.55, 95% CI [1.12, 2.14] those of non-maltreated controls, with less precise but higher odds of 1.91, 95% CI [1.00, 3.68] for those who were physically abused (Widom & Ames, 1994). Similar results were found in an unrelated cohort as well. In a random sample of incarcerated male felons from a mid-Atlantic state, violent inmates reported significantly more childhood neglect than non-violent inmates; there were no significant differences between violent and non-violent felons on the basis of physical abuse history (Weeks & Widom, 1998).

### **3.3 Adolescent Violence Committed by Neglected Youths**

#### **3.3.1 Evidence of an Effect of Childhood Neglect on Adolescent Violence**

Numerous research studies support the link between childhood maltreatment and adolescent violence (Bank & Burraston, 2001; Bolger & Patterson, 2001; Fagan, 2005; Farrington, 1989; Hawkins et al., 2000; Heck & Walsh, 2000; Herrenkohl & Herrenkohl, 2007; Logan, Leeb, & Barker, 2009; Lemmon, 1999, 2006; Maas, Herrenkohl, & Sousa, 2008; Widom, 1989a; Widom & Maxfield, 2001). Less research parses the differential effects of the subtypes of maltreatment on adolescent violence. Although neglect is consistently the most common form of maltreatment (Sedlack & Broadhurst, 1996; USDHHS, 2009, 2010), little research has involved efforts to assess influence of childhood neglect on adolescent violence.

There is evidence, albeit limited, which supports a relationship between childhood neglect specifically and later perpetration of violence in adolescence. In a study involving five to eleven year-old participants (n = 235), childhood neglect was

the only maltreatment subtype that significantly ( $p < 0.0007$ ) predicted behavior problems measured through Child Behavior Checklist-Teacher Report Form (CBCL-TRF) scores (Manly, Kim, Rogosch, & Cicchetti, 2001). These results confirmed similar findings of a previous study that used similar methods (Manly, Cicchetti, & Barnett, 1994) and other work showing that childhood neglect led to increased disciplinary referrals, including those for aggressive behavior, among school-aged children when compared to matched controls (Eckenrode et al., 1993; Kendall-Tackett & Eckenrode, 1996).

Childhood neglect has been found to be a longitudinal predictor of antisocial behavior, even when this outcome has been measured in different ways. Exposure to childhood neglect has been found to lead to more official police arrests (Knutson et al., 2004), complaints of a delinquent act (Zingraff et al., 1994), or measures of aggression, captured through observational assessment of playground aggression, peer nominations, teacher report, and parent report (Knutson et al., 2004).

Childhood neglect has been found to increase the risk for delinquency, including violent delinquency, most substantially when compared to other maltreated and comparison children (Zingraff et al., 1994). Childhood neglect has also been found to be predictive of aggressive and antisocial behavior when controlling for social disadvantage and punitive discipline by caregivers (Knutson et al., 2004).

### **3.3.2 The Relationship between Childhood Neglect and Aggression in LONGSCAN Subjects**

A recent study conducted by Kotch et al. (2008) has contributed to addressing some of the research gaps concerning the impact of childhood neglect on later

aggressive behavior. This study examined data on maltreatment history, ecological context, participant characteristics, and caregiver-reported aggression provided by all five LONGSCAN<sup>10</sup> (Longitudinal Studies of Child Abuse and Neglect) consortium sites (located in four cities in the East, Northwest, Midwest, and Southwest, and one Southern state).

This cross-site analysis of LONGSCAN participants (n = 1318) examined the relationship between neglect and childhood aggressive behavior at two different developmental stages (0-2 and 2-4). The relationships between abuse and aggressive behavior and neglect and aggressive behavior at the same developmental stages were measured and compared. Neglect – especially early neglect (ages 0-4) – was the most robust predictor of elevated scores on the Child Behavior Checklist (CBCL/4-18) aggression subscale at age 8 (Kotch et al., 2008). In addition, Kotch et al. (2008) found that only early neglect (age 0-2) predicted scores indicating aggression at ages 4, 6, and 8; abuse at any stage was not significantly predictive of aggression in models including early and later neglect and abuse (Kotch et al., 2008). These findings prompted the conclusion that the evidence suggested that the most important precursor of later aggression in childhood was early neglect.

The longitudinal design of the study (Kotch et al., 2008) allowed inferences regarding the causal effect of neglect on aggression as measured by an instrument with high predictive validity and reliability. These findings support the need for further research on a logical extension of this result, namely to clarify the causal

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<sup>10</sup> Please refer to sections 2.1 and 3 of Chapter 4 for an overview of LONGSCAN and further information on LONGSCAN data collection procedures.

relationship between neglect and violence in the LONGSCAN cohort into adolescence.

### **3.4 Methodological Limitations in Determining the Effects of Childhood Neglect on Adolescent Violence**

#### **3.4.1 Failure to Effectively Isolate or Specify Childhood Neglect Variables**

Research exploring the relationship between childhood neglect and later aggressive behavior is limited for a number of reasons. For one, most researchers who investigate the specific effects of maltreatment subtypes on aggressive behavior fail to adequately consider neglect or isolate it for study. The vast majority of these studies focus exclusively on determining the effects of physical abuse on later aggression (see Maas et al., 2008), with occasional consideration of emotional abuse (see Herrenkohl, Herrenkohl, & Egolf, 2003). In other cases, neglect is combined with physical abuse and this combined factor is compared to sexual abuse (Lemmon, 1999) or grouped with the other forms of maltreatment (physical abuse, sexual abuse).

Distinguishing between different subtypes of maltreatment is occasionally overlooked entirely. For instance, Bolger and Patterson (2001) did not differentiate among maltreatment subtypes in their study involving data collected from 214 participants aged 8-10 (maltreated  $n = 107$ ; matched comparison peers  $n = 107$ ) and followed for four years as part of the Charlottesville Longitudinal Study (CLS). The investigators concluded that maltreatment is “likely to contribute to children’s propensity to use coercive, aggressive behaviors in their interactions with others” (Bolger & Patterson, 2001; p. 563) but did not consider whether different



maltreatment exposures affected this relationship. Similarly, based on data from the oldest children enrolled in another longitudinal study, the Pittsburg Youth Study (PYS), Stouthamer-Loeber, Loeber, Homish, and Wei (2001) declared that the association between childhood maltreatment and “more serious violence” (p. 952) was particularly robust.

The use of undifferentiated measures of maltreatment extends to diverse cross-sectional studies. In a study of 79 residents between 11-18 years old (60 males, 19 females) confined in a secure facility in the United Kingdom, 29 of the 30 subjects repeatedly abused were confined for violent offenses (Hamilton, Falshaw, & Browne, 2002). Overall, 79.2% had experienced maltreatment and nearly all those confined for violent offenses had a history of childhood maltreatment, the nature of which was not specified (Hamilton et al., 2002). Among Canadian youth, in a study which recruited from CPS rolls and relied on self-report of current behaviors and retrospective recall of childhood experiences, undifferentiated childhood maltreatment was also associated with elevated odds of involvement in violent acts (Wekerle et al., 2001). In a domestic sample of adjudicated youth (n = 388), a composite index of maltreatment was used to determine maltreatment status by Heck and Walsh (2000), who asserted “that maltreatment had greater unique impact on violent delinquency than any other variable” (p. 184).

The findings of these and other studies that failed to differentiate between different forms of maltreatment, (e.g., Crooks, Scott, Wolfe, Chiodo, & Killip, 2007; Haberstick et al., 2005; Loeber et al., 2005) although strengthening the association between maltreatment and later violent behavior, do not provide insight into whether

there are differential effects from the various forms of maltreatment. It could be argued that the practice of combining different forms of maltreatment into a unitary variable has made it difficult to extricate the specific effects of maltreatment subtypes on later behaviors.

Further exacerbating the problems created by failure to effectively specify or isolate childhood neglect variables is that the few explorations of the different effects of maltreatment subtype on adolescent violence frequently failed to clarify whether different forms of maltreatment produced differential effects. For example, Smith and Thornberry (1995) found a history of maltreatment (based on CPS records) was a significant predictor of future self- and officially-reported delinquency but there were no statistically significant differences according to type of maltreatment. Similarly, Zingraff et al. (1993) found a history of maltreatment was associated with juvenile arrest, but when status offenses were excluded, risk of arrests for violent offenses did not differ significantly across the other maltreated or comparison groups. A large-scale study of Australian youth involved with child protective services at least once (n = 5,849) provided detailed insights into the different trajectories of maltreatment experiences of the youth, but when juvenile offending was examined, conclusions could not be drawn about the particular effects of specific forms of maltreatment on violent behavior (Stewart, Livingston, & Dennison, 2008).

#### **3.4.2 Problems with Data Sources and Sources of Other Biases**

Another issue that has obscured the relationship between maltreatment – including neglect – and delinquency is that poverty is strongly associated with both

of these factors (United States Department of Justice, 1995). In other words, whether or not a youth comes to the attention of authorities as a victim of maltreatment, the perpetrator of delinquent acts, or both is heavily dependent on socioeconomic status.

It is unknown whether being known to CPS affects reported rates of delinquency. It could be that these youths are under more scrutiny, resulting in arrests and prosecutions for delinquency more often than other demographically similar youth. The converse could apply as well; youths with prior histories involving certain types of maltreatment might be arrested or prosecuted differently for identical acts to those perpetrated by youth without this history. Simply, there are uninvestigated potential systematic biases that might have affected discernment of delinquency outcomes in previous research.

More obvious methodological problems handicap study of the relationship between childhood neglect and adolescent violence. Widom's sample – which has produced numerous key publications (see Maxfield & Widom, 1996; Rivera & Widom, 1990; Widom & Maxfield, 1996, Widom, 1989a, 1989b, 1989c) on this topic – is characterized by up to a 20-year lag in collection of retrospective data, inexact matching procedures, and nearly absolute reliance on institutional records to determine maltreatment status and history of antisocial behavior.

Institutional records, such as those used by Widom are of limited value to social science researchers. These records do not adequately specify the child's maltreatment experience (English, Bangdiwala, & Runyan, 2005) and often misclassify the different forms of maltreatment (Runyan et al., 2005). These

considerations are in addition to the discernment bias related to who is reported to social service agencies for maltreatment, likelihood of investigation for this allegation, and subsequent adjudication of the maltreatment allegations (Ards, Chung, & Myers; 1998; Ards, Myers, Chung, Malkis, & Hagerty, 2003; Morton, 1999; Williams, 1997). This bias drives the overrepresentation of the most economically disadvantaged, who are disproportionately of racial and ethnic minorities, in the ranks of those who have maltreatment allegations lodged against their caregivers, have those allegations investigated, and have them substantiated and especially result in out-of-home placements.

Reliance on official records for assessing antisocial behavior can produce substantially biased results in much the same manner, leading to further skewing from the overrepresentation of the economically disadvantaged. Likelihood of arrest (Dannefer & Schutt, 1982; Sealock & Simpson, 1998), outcome of court dispositions (Arnold, 1971; Sampson & Laub, 1993; Unnever, Frazier, & Henretta, 1980), and lifetime incarceration experiences (Pettit & Western, 2004; Tonry, 1994) are highly biased by race and social class/socioeconomic status. Because race and other demographic factors influence arrest and adjudication (Arnold, 1971; Dannefer & Schutt, 1982; Pettit & Western, 2004; Sampson & Laub, 1993; Sealock & Simpson, 1998; Unnever et al., 1980), studies that assessed the influence of neglect and other forms of maltreatment on violence using arrest or similar records and study samples lacking in diversity on race and other key factors underestimated the prevalence of violent behavior. In fact, self-report is considered the most accurate means to collect data on socially censured behaviors (Babor, Steinberg, Anton, & Del Boca,

2000; Patrick et al., 1994). This is particularly true for adolescents and young adults (Brener, Billy, & Grady, 2003; Freier, Bell, & Ellickson, 1991; Turner et al., 1998).

The implication is that the full scope of antisocial and aggressive behavior was likely not captured by those who relied solely on official records.

### **3.4.3 Analytic Flaws**

Contributing to the inadequate consideration of the relationship between childhood neglect and later antisocial behavior have been analytic flaws of previous studies. Of specific relevance to this dissertation is the work of Grogan-Kaylor and Otis (2003). These investigators reexamined data from Widom's (1989b) cohort to disentangle the specific effects of maltreatment type on arrest in early adulthood. Widom (1989b) recoded data on the dependent variable of number of arrests into a binary variable because most children who experienced maltreatment were not arrested as young adults. This binary variable, however, likely led to biased results in the logistic regression models because transformation of continuous variables into dichotomous variables results in a loss of information (Grogan-Kaylor & Otis, 2003).

Grogan-Kaylor and Otis used an econometric analytic technique known as tobit regression, useful for analyzing continuous variables when there are large proportions of zero values, to reanalyze the data while avoiding the analytic limitations they identified in the original work. Upon reanalysis using tobit regression, neglect was found to be the only statistically significant ( $p = 0.02$ ) form of maltreatment that predicted arrest (Grogan-Kaylor & Otis, 2003).

Besides the copious work of Widom and her co-investigators, influential researchers such as Zingraff et al. (1994), Brezina (1998), Herrenkohl, Huang,

Tajima, and Whitney (2003), and Rebellon and van Gundy (2005) published research on the relationship between maltreatment and later antisocial behavior with methodological shortcomings such as imprecise measures of maltreatment and antisocial behavior reliant on systematically biased records, skewed samples, and data of uncertain temporal sequence. These methodologically handicapped studies have influenced subsequent research by defining the questions asked and the methods used. The consistency of findings in longitudinal studies linking childhood maltreatment with later antisocial behaviors has led investigators to continue to explore mediators, such as social bonds, of the neglect-violence relationship.

### **3.5 Social Bonds and the Childhood Neglect-Adolescent Violence Relationship**

In the most general terms, social bonds are “the connection between the individual and society” (Shoemaker, 2005; p. 176). Social bonds are best understood as the social and affective ties between an individual and the many components of the greater socioecological context in which he or she exists. Social bonds are a key element of some of the most widely accepted criminological theories such as SCT (Hirschi, 1969), Self-Control Theory (Gottfredson & Hirschi, 1990), the Social Development Model (Hawkins & Weis, 1985), and General Strain Theory (Thaxton & Agnew, 2004).

A number of studies have found that maltreatment predicts impaired social bonds to caregivers, peers, and prosocial institutions such as schools (Egeland et al., 2002; Stouthamer-Loeber, Wei, Homish, & Loeber, 2002; Weinfield, Sroufe, & Egeland, 2000). Others have found violent (Herrenkohl, Huang, et al., 2003; Huang, Kosterman, Catalano, Hawkins, & Abbott, 2001) and delinquent (Catalano,

Haggerty, Oesterle, Fleming, & Hawkins, 2004; Krohn & Massey, 1980) behavior associated with deficiencies in social bonds. Studies focused on understanding the impact of childhood neglect on social bonds could not be found in the literature. Accordingly, there were no studies that focused on the role of social bonds, specified as SCT constructs, as mediators of the childhood neglect-adolescent violence relationship.

#### **4. Theoretical and Conceptual Factors**

##### **4.1 Introduction**

Few specific theories have been proposed to explain the connection between childhood neglect and subsequent violent behavior. Most often, however, physical abuse is the sole exposure considered, likely due to the assumption that those who were victims of physical aggression will be most prone to develop this behavior later in life. Albert Bandura's Social Learning of Aggression theory (Bandura, 1978) provides some support for the belief that experiencing physical abuse will predispose the victim to later aggression.

The work of Spatz Widom introduced the "Cycle of Violence" interpretation for the observed pattern of maltreated youth later engaging in violence at a disproportionate rate. This explanation is predicated on the belief that childhood maltreatment leads to the development of subsequent abusive parenting through modeling and direct experience sanctioning violence as an appropriate strategy to accomplish instrumental goals (Widom, 1989b, 1992). In time, however, this concept of a cycle was expanded to include the belief that abusive treatment in youth leads to later violent behavior through these social learning avenues (Zingraff et al., 1993).

Though Widom's "Cycle of Violence" theory (Widom, 1989b) and Bandura's "Social Learning Theory of Aggression" (Bandura, 1978) might seem suitable to help explain the relationship between physical abuse and adolescent violence, these frameworks do not sufficiently consider multiple levels of influence. According to the Social Learning Theory of Aggression, child maltreatment leads to later violent behavior patterns through the process of modeling interpersonal interaction. This theory implies aggression is simply learned through multiple avenues in different settings (Bandura, 1978).

Widom (1989b) noted that the overwhelming majority of children who were abused and neglected did not engage in violence or other antisocial behavior, calling the strength of the "Cycle of Violence" notion into question. More importantly, both of these theories are based on the premise that involvement with violence in some fashion is, in effect, a catalyst for later violence.

#### **4.2 Rationale**

One of the effects of inadequate parental care is impaired personality development in children (Bolen, 2000; Crittenden & Ainsworth, 1989); this relationship has been proposed as one of the possible links between maltreatment and delinquency (Bolen, 2000; Crittenden & Ainsworth, 1989; Lemmon, 2006). Research on the psychobiology of neglect has shown that early neglect most adversely affects brain development, resulting in psychological and educational difficulties (De Bellis, 2005). These findings are consistent with considerable evidence suggesting early childhood neglect deleteriously affects social bonding (Ainsworth, 1980; Chisholm, 1998; Cicchetti, Toth, & Lynch, 1995; Crittenden, 1985;



Crittenden & Ainsworth, 1989; Egeland & Sroufe, 1981; Gaensbauer & Harmon, 1981; Harden, 2004; Leslie et al., 2005; O'Connor & Rutter, 2000; Pearce & Pezzot-Pearce, 2007; Perry, 2002; Smyke, Dumitrescu, & Zeanah, 2002; Zeanah, Smyke, & Dumitrescu, 2002).

Neglect is distinguished from other forms of maltreatment by the absence of supervision, attention to child needs, and parental interaction. When experienced early in development, neglect not only disrupts the formation of attachment to the caregiver, but also the socialization process. Deficient socialization in turn presents a barrier to internalizing conventional norms and values, as well as developing skills such as self-regulating the use of aggression to meet immediate needs and resolve conflicts. Moreover, the lack of attention to the child and his or her needs would be expected to result in fewer opportunities to become involved in productive activities outside the home.

Children who are neglected are forced to become less dependent on their caregivers and must learn to develop behavioral patterns that allow them to independently advance their self-interests. This orientation further precludes internalization of conventional norms and values, as their primary interests are oriented towards meeting basic needs (Crittenden & Ainsworth, 1989). Neglected children are also characterized by lack of academic achievement (Kendall-Tackett & Eckenrode, 1996; Leiter & Johnsen, 1997; Strathearn et al., 2001; Tan, 2006; Tyler, Allison, & Winsler, 2006) and social interaction skills (Eckenrode et al., 1993; Fonagy, 2003; Hildyard & Wolfe, 2002; Lee & Hoaken, 2007). Combined with the fact that neglect by definition involves caregiver failure to provide necessary

resources to a child, it follows that neglected children would perceive their stake in society and prospects for future success as limited.

### **4.3 Social Control Theory**

This study adapted a theory in the field of sociology and criminology – Social Control Theory (SCT) – to explicate the neglect-violence relationship. SCT is a widely accepted sociological theory based on the premise that people commit delinquent acts when their bonds to society are weakened or abrogated (Hirschi, 1969). In essence, this is an extension of the common sociological understanding of social control, where the social group inhibits the behavior of its members (Hirschi, 1969). The fundamental assumption of Hirschi's conception of this theory is that individuals are by nature uninhibited; social bonds (*involvement, commitment, and attachment* constructs) and internalization of social norms (*belief* construct) are hypothesized to restrain the commission of illegal acts. In other words, the focus of this theory is on the pathways through which behavior is regulated and conformity to the prevailing value system is ensured. SCT is parsimonious and has been validated by repeated empirical testing in various settings. (See Alston, Harley, & Lenhoff, 1995; De Li, 2004; Gardner & Shoemaker, 1989; Junger-Tas, 1992; Junger & Marshall, 1997; Knight & Tripodi, 1996; Krohn & Massey, 1980; Linden, 1978; Nagin & Paternoster, 1994; Wright, Cullen, & Miller, 2001.)

According to Hirschi, through prevailing, generally codified social norms and standards of behavior, children learn what is right and what is wrong, and similarly what is legally acceptable and what would be a violation of the law. Hirschi (1969) labeled this socialization process "bonding" and proposed the four aforementioned

social bonds are the pathways through which proper socialization occurs, inhibiting antisocial behavior. The fundamental role these bonds play in Hirschi's theory is reflected by his theory being alternatively referred to as "Social Bonding Theory."

#### **4.3.1 The Attachment Bond**

According to Hirschi (1969), an individual's acceptance of social norms is mediated by the value they place on maintaining important relationships: The *attachment* construct. In Hirschi's original formulation of SCT, attachment was considered the most important bond, with the strength of this bond to parents more important than bonds to schools or to peers (Hirschi, 1969). Hirschi suggested that quality and depth – of which time spent together is an important measure – of the parent-child relationship could be used to assess the strength of the attachment bond.

The basic idea was that the more attached a teen is to his or her parents, the less likely the teen would be to engage in antisocial behavior. Hirschi hypothesized that teens who most valued their relationships with their parents avoided delinquent acts because the consequences for these acts would lead to disapproval, disappointment, and other factors that would jeopardize the parent-child relationship. Thus, strong attachment to parents or caregivers serves as a deterrent to engaging in activities that would most likely lead to arrest, such as assault or robbery.

The rationale for weighting attachment to parents the most heavily was that parents (or equivalent caregivers) are usually the first to socialize their children and have the best, in terms of time and quality, opportunity to form bonds with their children (Cole, 1999). Therefore, when children have strong attachment bonds with

their parents, it is both easier and more likely for them to internalize prosocial norms and values, and to develop respect for other authority figures such as teachers (Laundra, Kiger, & Bahr, 2002). If the socialization process is disrupted, however, the child will not adequately internalize these norms and values. The very nature of child neglect, particularly the failure of the caregiver to provide adequate attention and nurturance, impedes socialization, disrupting internalization of prosocial norms and values (Garbarino & Collins, 1999). Hence, as neglect is distinguished from other forms of maltreatment by the absence of supervision, attention to child needs, and parental interaction, it could be hypothesized that neglected children would have weak or otherwise compromised attachments to caregivers.

Supporting Hirschi's conceptualization, various studies have since found attachment bonds to family a key predictor of antisocial behavior and juvenile delinquency (De Li, 2004; Demuth & Brown, 2004; Kierkus & Baer, 2002; Knight & Tripodi, 1996; Rankin & Wells, 1990; Wright et al., 2001) regardless of social class (Linden, 1978) or geography (Gardner & Shoemaker, 1989). Of particular relevance to this dissertation is the finding that juveniles with weak attachment bonds to family engaged in more serious (e.g., violent) and more frequent delinquent acts (Poole & Regoli, 1979). In addition, factors that would interfere with the formation and maintenance of strong attachment bonds to caregivers, such as residential instability and changes in family structure, affected delinquent behavior in maltreated children (Herrenkohl, Herrenkohl, et al., 2003). Specifically, instability, especially caregiver transitions, is associated with greater delinquency and antisocial behavior in

maltreated children, even when controlling for socioeconomic status (Herrenkohl, Herrenkohl, et al., 2003).

#### **4.3.2 The Commitment Bond**

The bond of *commitment* is conceptualized as the extent to which an individual is devoted to conventional forms of action (Hirschi, 1969). Hirschi (1969) defines commitment as one's perceived stake in society, such as current material resources or future employment. In the most basic conception of this bond, strong commitment involves devotion of time and energy to conventional behaviors.

Hirschi (1969) proposed that those with higher commitment would perceive they had more to lose by engaging in antisocial behaviors. This investment of time and energy, along with concern regarding loss of this investment, would translate into conformity with conventional norms and behaviors. Accordingly, this bond has been found by a number of researchers to be a statistically significant predictor of lower levels of delinquency (Agnew, 1991; De Li, 2004; Shoemaker & Gardner, 1988; Wiatrowski, Griswold, & Roberts, 1981; Wright et al., 2001) and violence (Cretacci, 2003). In fact, Krohn and Massey (1980) determined that commitment was the bond most strongly related to delinquency in a sample of 3065 adolescents drawn from six communities in three Midwestern states. This bond was found to explain the highest proportion of variance on minor delinquent behaviors (e.g., running away, truancy) and serious delinquent behaviors (e.g., assault, use of or threatening to use a weapon, car theft) variables.

Notably, Krohn and Massey (1980) found attachment to be the weakest predictor of delinquency among the social bonds examined (involvement was not assessed).

Similar conclusions were reached by Nagin and Pasternoster (1994), who found commitment to be more influential than attachment in the prevention of delinquency. Somewhat different results were found by De Li (2004), who determined commitment had the least effect on delinquency relative to the other three social bonds. The effect of attachment, however, was only marginally more robust and the effects of all bonds were significant (De Li, 2004).

As neglected youth are characterized by lesser academic achievement (Kendall-Tackett & Eckenrode, 1996; Maxfield et al., 2000), it follows that their perceptions of future job prospects would be poor. Most importantly, neglect, by definition, involves a caregiver's failure (not due to poverty) to provide resources to a dependent (Barnett et al., 1993). Hence, it is hypothesized that loss of resources would be less of a consideration for neglected youth for they have less to lose.

#### **4.3.3 The Involvement Bond**

*Involvement* is conceptualized as the proportion of time spent engaged in conventional activities (e.g., school, youth groups, work). The construct of involvement therefore relates to the opportunities an individual has to commit antisocial acts. When time is spent on conventional activities, there is less time available to engage in antisocial behavior. Therefore, the stronger the involvement bond (meaning amount of time devoted to prosocial activities), the lower the chance of engaging in delinquency because as one is more involved in conventional activities, correspondingly less time is available for illegal activities, such as violent confrontations with others (Hirschi, 1969). It has since been noted that conventional

activities tend to be informally monitored by the participants (Hawdon, 1999; Lauderdale, 1984), further diminishing opportunities to commit violence.

Despite somewhat ambiguous results in the original study (Hirschi, 1969) and the exclusion of involvement in the study conducted by Krohn and Massey (1980) because of their conceptualization of this bond as being an element of commitment, others have found this bond to be significantly related to delinquency. For instance, Waitrowski et al. (1981), De Li (2004), and Shoemaker and Gardner (1988) found that higher levels of involvement were associated with lowered levels of delinquency. A more recent cross-sectional study of a sample of 911 students in grades 7-12 in a southwestern community conducted by Huebner and Betts (2002) found that certain aspects of involvement were associated with delinquency, broadly defined (9 items ranging from fighting, carrying weapons to school to using false identification, damaging property and “trouble with police”). The conceptual pathway proposed by Hirschi (1969) has also been found in studies not directly grounded in SCT. For instance, Larson (1994) found participation in youth activities seemed to lead to lower participation in delinquent activities.

#### **4.3.4 The Belief Bond**

As defined by Hirschi (1969), the construct of *belief* concerns the conviction one has in the conventional moral order. This is based on the principle that people who live in common social settings share similar values. Personal assent to normative values is conveyed through respect for laws, social standards, and expectations. In Hirschi’s conception, the prosocial belief pattern is defined by valuing fairness, respect for the police, faith in the government, and high academic, economic, and

social status aspirations. In fact, Hirschi refers to this belief pattern as “middle-class values.”

The fundamental element of this construct is that individuals have internalized the basic moral order and value system, hence sharing common aspirations and expectations. The mechanism for this is socialization (Hirschi, 1969). In this study it is postulated that adolescents who experienced neglect would be deprived of proper socialization due to lack of caregivers’ attention, stimulation, emotional availability, supervision, and education characteristic of neglectful parenting (Drotar, 2000).

Hirschi (1969) measured belief by probing the thoughts individuals had on moral norms, particularly in relation to conventional values and respect for authority. It was hypothesized that those who had negative beliefs about delinquency and felt that he or she should follow the conventional norms would be less likely to be involved in delinquency (Hirschi, 1969). In fact, Shoemaker and Gardner (1988) found belief to be most consistently associated with lower levels of delinquency. Measuring this bond through an index measuring truthfulness, cheating, and lying, Wiatrowski et al. (1981) also found belief significantly related to lower levels of delinquency. Notably, De Li (2004) found belief to be the most influential social bond on juvenile delinquency among all four of the social bonds proposed by Hirschi (1969). Akers (1994) also found weakened belief in conventional norms predicted higher rates of participation in crime and delinquency, as did others (Agnew, 1991; Costello & Vowell, 1999; Krohn & Massey, 1980; Wright et al., 2001).



#### **4.3.5 Other Conceptualizations of Social Control Theory**

Partial specification SCT and frequent differences in the measurement of social bonds has hindered the cross-study comparability of SCT research (Kempf, 1993). A common practice among researchers is to use one or two social bonds and ignore the others (Booth, Farrell, & Varano, 2008; Liska & Reed, 1985; Menard & Huizinga, 1994; Nelson & Rubin, 1997; Smith, Visher, & Jarjoura, 1991; Thaxton & Agnew, 2004; Vazsonyi & Pickering, 2003). Another frequent shortcoming of studies testing social bonds is the use of data between 30 and 40 years old (e.g., Brezina, 1998; De Li, 1999; Ford, 2005; Rebellon & van Gundy, 2005).

Some researchers, whether or not testing SCT directly or using it to structure their studies, have integrated elements of SCT into their attempts to understand antisocial behavior in youth. Oftentimes, some or all social bonds are combined into an index and used examine the relationship of social bonds to antisocial or juvenile delinquent behaviors (e.g., De Li, 1999; Gover, 2002; LeBlanc, Vallieres, & McDuff, 1993; Mason & Windle, 2002; May, 1999). Nonetheless, a number of these studies provide valuable insights into the role social bonds may play in the relationship between child maltreatment and later violent behavior. Of particular relevance to this dissertation is the cross-sectional retrospective study conducted by Gover (2002) on the effects of child maltreatment on violent offending in institutionalized youth.

Inmates from 48 participating juvenile correctional facilities across the United States (n = 3,694) volunteered to complete a 9-item scale adapted from the Conflict Tactics Scale (CTS) in an attempt to measure all subtypes of maltreatment (Gover,

2002); this scale – which excludes neglect – provided a general score and therefore did not allow examination by subtype of maltreatment. The investigator also created a violent criminal history index based on self-report of the number of times arrested for a violent offense and the individual's commitment offense, if violent, as well as peer criminality, gang involvement, family criminality, and alcohol abuse (Gover, 2002). Other factors examined were attachment to parents, attachment to school, and parental control, a vaguely-described construct based on an amalgamation of other SCT constructs.

Ultimately, Gover (2002) found that a self-reported history of child maltreatment led to a significant increase in the likelihood of violent arrest. More importantly, parental control and attachment to school were prime mediators of the effects of child maltreatment on the frequency of violent arrests (Gover, 2002). Interestingly, SCT factors served as protective factors from violent offending even though the respondents were juveniles who admitted to – or were incarcerated for – mostly serious violent offenses. Despite the interesting results, there are considerable limitations to this study. The maltreatment measure was poor, and the age range of the sample was broad, probably resulting in wide variations in the developmental stages. Most importantly, the conception of SCT in this study was seriously flawed because only one social bond, attachment, was distinctly measured with the other constructs measured in an uncommon way.

#### **4.4 Social Bonds as Mediators of the Maltreatment-Violence Relationship**

The few studies to have explored the mediating role of social bonds in the relationship between maltreatment and violence provided promising but somewhat

contradictory evidence. Further complicating this issue is that these studies, much like most other studies involving SCT (Kempf, 1993), frequently measure social bonds in different ways. For example, Zingraff et al. (1994) explored whether good school performance – measured primarily using scores on standardized tests from school records, grade point average (GPA) reported by teachers, and attendance and discipline records – mediated the relationship between maltreatment and delinquency. The investigators concluded that among maltreated youth, bond to school predicted lower rates of delinquency (Zingraff et al., 1994). Similar results were found in an analysis of Youth in Transition (YIT) survey data, where bond to school – measured using student self-report of GPA and two subjective self-assessments of effort in school – mediated the relationship between maltreatment and delinquency (Brezina, 1998).

Benda and Corwyn's (2002) study found that the relationship between physical abuse and violence was mediated by attachment to one's father, beliefs, and religiosity but did not consider neglect. Although this study added support for the supposition that social bonds to some degree mediate the maltreatment-violence relationship (Benda & Corwyn, 2002), it did not provide insight into whether neglect predicts violence, and if so, whether social bonds mediate this relationship.

Similarly, Herrenkohl, Huang, et al. (2003) examined Lehigh Longitudinal Study data to consider different bonds as putative mediators of physical abuse in the prediction of violence among adolescents. Further complicating the issue, the results of this study were mixed.

Although bonds to caregiver and school mediated violence (relying exclusively on youth self-report and assessed using different measures from the aforementioned studies), these bonds did not mediate the relationship between mother-reported physical abuse and adolescent violence (Herrenkohl, Huang, et al., 2003). Adding confusion over whether social bonds mediate the maltreatment-violence relationship are findings from Rebellon and van Gundy (2005). These investigators found that physical abuse contributed to violent offending, as well as property crimes, but that social bonds did not mediate the relationship between abuse and antisocial behavior (Rebellon & van Gundy, 2005). Besides mostly overlooking neglect, inconsistency in the results of the few studies examining the role of social bonds as mediators of the relationship between maltreatment and violence, and differences in how bonds were measured, methodological shortcomings limited these studies in much the same manner as other examinations of SCT. For example, Rebellon and van Gundy (2005) used data from the first three waves of the National Youth Survey collected in 1976-1978. Brezina (1998) analyzed data collected in 1966. Data of these ages may not be fully applicable today.

Another common methodological limitation is the use of weak maltreatment measures (Brezina, 1998; Rebellon & van Gundy, 2005; Zingraff et al., 1994). In most cases, the examination of maltreatment is extremely narrowly defined. For example, in Rebellon & van Gundy's (2005) study, not only is maltreatment constrained to just physical abuse, but only one measure of this form of maltreatment is used ("beaten up by a parent," p. 259). Brezina (1998) also excluded neglect and assessed maltreatment with a four-item index consisting of

comparatively mild items such as “give out undeserved blame or criticism” (p. 80). Moreover, Brezina (1998) failed to distinguish between violent and non-violent acts in the outcome measure.

Use of samples with limited generalizability (Brezina, 1998; Herrenkohl, Huang, et al., 2003; Zingraff et al., 1994) further limits the applicability of the findings from the few studies that examined social bonds as mediators of the maltreatment-violence link. Specifically, Brezina (1998) relied on an exclusively male sample of public school students; Zingraff et al. (1994) used data sampled from only one urban North Carolina county; and Herrenkohl et al. (2003) utilized a sample recruited from only two counties in eastern Pennsylvania. An excellent example of the complications posed by using these non-generalizable samples is that the sample used by Herrenkohl, Huang, et al. (2003) was characterized by an unusually high incidence of at least one lifetime violent act (81%) and history of physical abuse (76% in the full sample, 60% in the study-specific sample). This would suggest that this sample is unique and it is therefore unlikely that the findings of a study using this sample would be applicable to others.

Methodological issues aside, the study by Zingraff et al. (1994) provides particular insights because these investigators looked at the separate categories of maltreatment (neglect, physical abuse, and sexual abuse); the other investigators discussed above overlooked neglect entirely. Distinguishing between the different forms of maltreatment allowed assessment of whether the relationship between childhood neglect and delinquency was mediated by school performance. Specifically, youth with a history of neglect who also evidenced better school

performance and attendance (which could be interpreted to mean a stronger bond to school) were found to have a lower risk for delinquency (Zingraff et al., 1994).

Nevertheless, it is difficult to ignore the exclusive reliance of this study on official records for maltreatment and delinquency histories. As discussed above, official records are highly biased, likely leading to skewed results. Taken together, although providing some tantalizing findings, this and other studies failed to produce conclusive evidence that social bonds mediate the relationship between maltreatment – specifically childhood neglect – and youth violence.

## **5. Synthesis**

Though childhood neglect is the most common form of child maltreatment, the preponderance of research on maltreatment and later antisocial behavior fails to isolate neglect or entirely overlooks this form of maltreatment for study. This practice exacerbates a key gap in the research literature in that “there is yet no reliable information about the relative severity of effect of each of the different categories of maltreatment” (Glaser, 2002; p. 711).

Investigations into the origins of adolescent violence and other juvenile antisocial conduct have found disrupted social bonds associated with these behaviors (e.g., Catalano & Hawkins, 1996). A number of studies have also found that maltreatment predicts subsequent impaired social bonds to caregivers, peers, and prosocial institutions such as schools (Egeland, Yates, Appleyard, & van Dulmen, 2002; Stouthamer-Loeber et al., 2002; Weinfield et al., 2000). Others have found violent (Herrenkohl, Huang, et al., 2003; Huang et al., 2001) and delinquent (Catalano et al., 2004; Krohn & Massey, 1980) behavior associated with deficiencies in social bonds.

Studies focused on understanding the impact of childhood neglect on social bonds could not be found in the literature.

Although previous studies provide some clues, there is minimal information on the role of social bonds in the neglect-violence relationship. An exhaustive review of the literature did not reveal any previous studies devoted to determining possible mediation by social bonds on the relationship between childhood neglect on adolescent violence. Coupled with the dearth of work on childhood neglect, a well-constructed study devoted to the exploration of social bonds as possible mediators of the childhood neglect-violence relationship would fill a clear gap in the research literature. Vital to addressing this gap is specification of the complete Social Control theory and measurement of the social bond constructs closely guided by the precepts of the theory as defined by Hirschi (1969). This dissertation endeavors to help address the aforementioned gap in the research literature.

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## Chapter 3: Research Questions, Hypotheses, and Conceptual Model

### 1. Introduction

The overall goal of this dissertation is to better understand the relationship between childhood neglect and early adolescent violence (EAV). Using a two-manuscript format, I have examined two specific aims, which describe and explore, respectively, the relationship between childhood neglect and EAV.

The specific aim of Manuscript 1 is to determine whether a direct relationship between childhood neglect and EAV exists and to determine whether this relationship differs in comparison to those with different maltreatment histories. The specific aim of Manuscript 2 is to determine whether *attachment, belief, commitment, and involvement*, social bonds defined according to Social Control Theory (SCT), mediate the direct effect of childhood neglect on EAV. Thus, the research questions and associated hypotheses for Manuscript 2 (**Table 3.3**) build upon the research questions from Manuscript 1 (**Table 3.1**). **Figure 3.1** below presents a graphic representation of the proposed conceptual pathway (Earp & Ennett, 1991) of the effect of childhood neglect on EAV mediated by social bonds.

## **2. Manuscript 1**

### ***The Effects of Childhood Neglect on Rates of Violence in a Sample of High-Risk Adolescents***

#### **2.1 Research Questions and Hypotheses**

**2.2.1 Specific Aim 1:** *Describe the relationship between childhood neglect before age 8 and the perpetration of adolescent violence in the last 12 months, measured at age 14.*

The hypotheses (see **Table 3.1**) are based on a synthesis of previous findings indicating individuals with a history of neglect are at elevated risk for violent behavior. As presented in Chapter 2, individuals who experienced childhood neglect are at high risk to become involved in later aggressive (Eckenrode et al., 1993; Kendall-Tackett & Eckenrode, 1996; Kotch et al., 2008; Knutson, DeGarmo, & Reid, 2004; Manly, Cichetti, et al., 1994; Manly, Kim, et al., 2001) and violent behavior (Grogan-Kaylor & Otis, 2003; Knutson et al., 2004; Maxfield & Widom, 1996; Rivera & Widom, 1990; Widom, 1989a; Widom & Ames, 1994; Widom & Maxfield, 2001; Zingraff et al., 1994) when compared to demographically similar peers or others who experienced different forms of abuse in the same developmental periods.

**Table 3.1. Manuscript 1 Research Questions and Hypotheses**

| <b>Research Question</b>  | <b>Hypothesis</b>  |
|---|--|
| <b>RQ<sub>1a</sub>:</b> What is the effect of childhood neglect on the rate of early adolescent violence?   | <b>H<sub>1a</sub>:</b> Neglected youths will commit violence against others at a higher rate than non-maltreated youths will.                        |
| <b>RQ<sub>1b</sub>:</b> Does rate of early adolescent violence among youth with a history of neglect-only differ from that of other-maltreated (abuse-only, abuse and neglect) youth? | <b>H<sub>1b</sub>:</b> Youths with a history of only neglect will commit violence against others at a higher rate than other-maltreated youths will. |

### **3. Manuscript 2**

#### ***Exploring Social Bonds as Mediators of the Relationship between Neglect and Early Adolescent Violence: Findings from a Longitudinal Study***

##### **3.1 Conceptual Model**

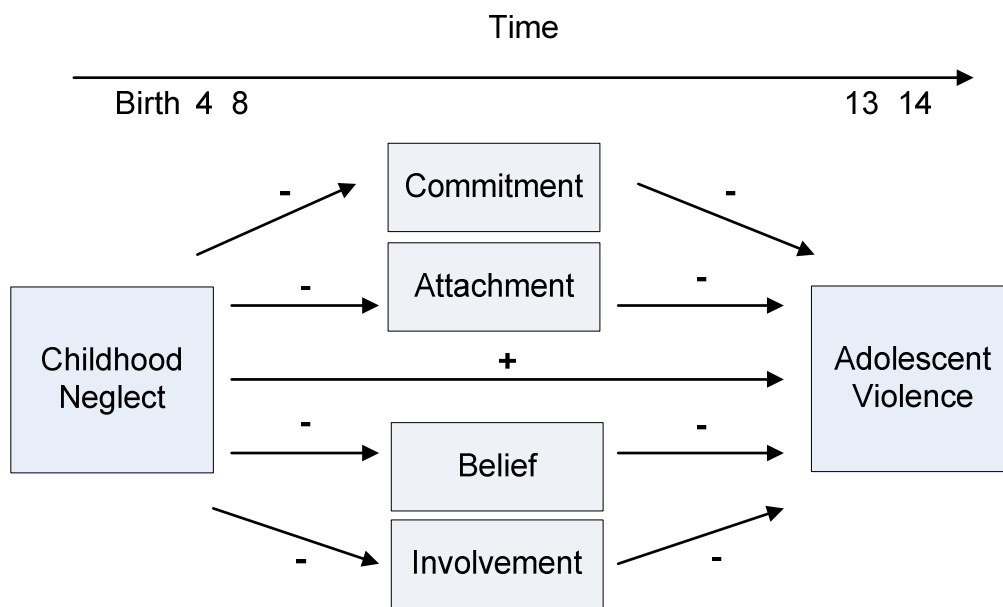
I developed a conceptual model (see **Figure 3.1**) to explain the causal pathway from childhood neglect to adolescent violence. In this model, I adapted the four original constructs of SCT by re-conceptualizing them as mediators of the relationship between childhood neglect and EAV perpetration. **Table 3.2** presents brief operational definitions of the components of the conceptual model. Please refer to sections 4.2.1, 4.4, and 4.5 of Chapter 4 for detailed description of how I measured the primary independent variable, the mediators, and the outcome variable, respectively.

**Table 3.2. Operational Definitions of Conceptual Model Constructs**

| <b>Variable</b>                        | <b>Definition</b>  | <b>References</b>  |
|--|--|--|
| <i>Childhood Neglect</i>               | Failure by caretakers to provide minimum levels of supervision, attention, stimulation, emotional availability, food, clothing, shelter, hygiene, nutrition, or medical care to the child from birth to age 8 to the degree that actual or potential harm may have resulted.                                       | Barnett et al., (1993); Drotar (2000); Dubowitz (2006); Zuravin (1999)                           |
| <i>Involvement</i>                     | Degree of engagement in conventional activities.   | Hirschi, 1969  |
| <i>Belief</i>                          | Acceptance of conventional morals, values, expectations, and norms.  | Hirschi, 1969  |
| <i>Commitment</i>                      | A person's perceived stake in society, such as current material resources or future employment.  | Hirschi, 1969  |
| <i>Attachment</i>                      | The interest in and value one places on maintaining important relationships with prosocial caregivers and peers, and schools. In order to avoid jeopardizing these relations, antisocial behavior is avoided.  | Hirschi, 1969  |
| <i>Early Adolescent Violence (EAV)</i> | Behavior by individuals at least 13 years old but younger than 15 that intentionally threatens, attempts to, or actually results in the physical harm of another person, excluding minor conflicts between siblings (assuming another underlying criminal act against the sibling was not concurrently committed). | Berk, 2003; Cole, 1999, Crosson-Tower, 2005; Krug et al., 2002; Reiss & Roth, 1993; USDHHS, 2001 |

In **Figure 3.1** below, an axis for time represents the temporal assumptions of this theoretical framework. A fundamental premise of the theoretical relationship is that the hypothesized effects happen over time. The temporal aspects depicted here are inherent to the longitudinal data used to test this conceptual model.

**Figure 3.1. The theoretical relationship between childhood neglect, social bonds, and early adolescent violence**



### 3.2 Research Questions and Hypotheses

**3.2.1 Specific Aim 2:** *Determine whether social bonds mediate the relationship between childhood neglect before age 8 and perpetration of early adolescent violence.*

I hypothesized weak social bonds would mediate a direct relationship between childhood neglect and EAV rates. This prediction was based on the findings from various areas of thought outlined in Chapter 2 that suggest childhood neglect weakens social bonds (Chapple, Tyler, & Bersani, 2005; Crittenden & Ainsworth,

1989; Dubowitz, Black, Starr, & Zuravin, 1993; Holden & Nabors, 1999; Gottfredson & Hirschi, 1990; Lee & Hoaken, 2007) and weakened social bonds are associated with adolescent violence and other forms of antisocial behavior (Brezina, 1998; Catalano, Haggerty, Oesterle, Fleming, & Hawkins, 2004; Chapple et al., 2005; Chapple, McQuillan, & Berdahl, 2005; Hildyard & Wolfe, 2002; Hirschi, 1969; Huebner & Betts, 2002).

**Table 3.3. Manuscript 2 Research Questions and Hypotheses**

| <b>Research Question</b>   | <b>Hypothesis</b>  |
|--|--|
| <b>RQ<sub>2a</sub></b> : Does <i>involvement</i> mediate the relationship between childhood neglect and early adolescent violence (EAV)? | <b>H<sub>2a</sub></b> : <i>Involvement</i> will mediate the relationship between childhood neglect and EAV such that more neglect allegations predict weaker <i>involvement</i> bonds, which presage increased EAV rates.  |
| <b>RQ<sub>2b</sub></b> : Does <i>belief</i> mediate the relationship between childhood neglect and early adolescent violence (EAV)?      | <b>H<sub>2b</sub></b> : <i>Belief</i> will mediate the relationship between childhood neglect and EAV such that increasing allegations of neglect predict weaker <i>belief</i> bonds, which forecast greater EAV rates.    |
| <b>RQ<sub>2c</sub></b> : Does <i>commitment</i> mediate the relationship between childhood neglect and early adolescent violence (EAV)?  | <b>H<sub>2c</sub></b> : <i>Commitment</i> will mediate the relationship between childhood neglect and EAV such that more allegations of neglect portend weaker <i>commitment</i> bonds, which predict higher EAV rates.    |
| <b>RQ<sub>2d</sub></b> : Does <i>attachment</i> mediate the relationship between childhood neglect and early adolescent violence (EAV)?  | <b>H<sub>2d</sub></b> : <i>Attachment</i> will mediate the relationship between childhood neglect and EAV such that more neglect allegations presage weaker <i>attachment</i> bonds, which predict increased rates of EAV. |

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## **Chapter 4: Research Design and Methods**

### **1. Overview**

I conducted a secondary analysis of existing data from two sites within the LONGSCAN consortium to address the research questions enumerated in Chapter 3. I first created a study sample by combining the samples from the two sites. Next, I created variables for use in analyses. This included the creation of indices used to produce the mediator variables representing the four social bonds characteristic of SCT. I then assessed the relationship between childhood neglect experienced before age 8 and the perpetration of early adolescent violence (EAV) measured at age 14 using negative binomial regressions. Next, I simultaneously assessed the multiple specific indirect effects of social bonds on the childhood neglect-EAV using the product of coefficients approach.

In this chapter, I define and describe the creation and measurement of variables and provide an overview of the analytic techniques I employed to address the specific aims and research questions of this dissertation.

### **2. Study Design and Population**

#### **2.1 Overview of LONGSCAN**

The study sample for this dissertation combined the Southern and Eastern LONGSCAN samples. Both of these prospective longitudinal samples were drawn from a five-site longitudinal study designed to explore the antecedents and consequences of childhood maltreatment. The measures and data collection

strategies, as well as the prospective longitudinal panel study design (Runyan et al., 1998), are identical across sites. Consistent collection of detailed data using validated, reliable instruments from an array of sources has yielded measures capable of identifying predictors of violent behavior.

## **2.2 Southern Sample**

The Southern sample is from one of five parallel studies, along with a coordinating center, which comprise the LONGSCAN consortium (Runyan et al., 1998). Unlike the other four studies (Eastern,  $n = 282$ ; Midwestern,  $n = 320$ ; Western,  $n = 320$ ; and Northwestern,  $n = 260$ ) primarily conducted in urban areas, the Southern study is not based in a particular urban area. Members of the Southern study sample include a majority of racial minorities living in varied settings across a southern state.

The Southern sample ( $n = 243$ ) was selected from an existing sample of 1,111 mother-infant dyads determined at birth to be at risk for maltreatment (based on biomedical and/or socio-demographic indicators of extreme poverty [in need of emergency income support], exceedingly young maternal age [ $\leq 17$  years old], single parenthood, and low birth weight [ $\leq 2,499$  grams]) in a two-state area. Of these mother-infant pairs, 842 were successfully interviewed an average of seven weeks after hospital discharge. The mother-infant pairs who completed post-hospital interviews came to compose the study population of a longitudinal study, known as the “Stress, Social Support, and Child Maltreatment” (SSS) study.

This earlier study was conducted to classify risk factors for child maltreatment and assess the roles of stress and social support in the etiology of child

maltreatment (Kotch et al., 1995). Data were collected from the mothers on average 7 weeks after the births (years 1986-87) of their children (Kotch et al., 1995, 1997; Kotch, Browne, Dufort, Winsor, & Catellier, 1999). In addition, maltreatment status of the children was determined through searches of the appropriate State's Central Registry (also known as the "Child Abuse and Neglect Reports System"). This repository of information is maintained by the states and is used to track child abuse and neglect investigations, with data from this system used to allocate Child Protective Services funds (United States Department of Health and Human Services [USDHHS], 2008).

Besides tracking children and perpetrators reported to local Divisions of Social Services (DSS) for child maltreatment, the Central Registry retains key facts such as type of maltreatment alleged, what, if any, maltreatment was found following an investigation, the name and age of the victim, and if the maltreatment was substantiated, the name and age of the perpetrator (USDHHS, 2008). Details of the investigations and corresponding resolutions, including mandated services, are also available on the Central Registry. For the purposes of the SSS study, the Central Registry was checked every 6 months until children (later LONGSCAN subjects) turned four to determine if maltreatment allegations related to the child participant had been reported to CPS. Eligible for inclusion in the initial exposure group of the Southern sample were 172 SSS participants who were either non-Hispanic white or African American<sup>1</sup> and had been reported to CPS by age 4.

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<sup>1</sup> Due to sample size consideration 37 children who were neither non-Hispanic white nor African American were ineligible for inclusion in the initial risk group.

Computer-generated randomized lists of all 172 maltreated participants and the remaining non-maltreated participants were then used to select the 74 cases for the exposure group and their matched controls. For each of the 74 reported subjects, two non-reported subjects in list order were matched to exposure group children on race, sex, and household income. Therefore, the initial comparison group consisted of 147 children who did not have a report to CPS by age four.

To compensate for withdrawals and for members of the comparison group who were reassigned to the exposure group because of a report to CPS between selection and initial interview between ages four and six, additional subjects were added for the age six interview using the roster of the original cohort study. Reviewing the randomized list of subjects from Stress, Social Support, and Child Maltreatment study, sorted according to whether or not the child had been reported for maltreatment, subjects were added in list order. As with the original Southern LONGSCAN sample, for every child reported maltreated, two children were matched on sex, age, and household income. Ultimately, 22 subjects added this way have subsequently been treated in an identical manner as the original 221 subjects. Interviewers and data managers were blinded to participants' status.

### **2.3 Eastern Sample**

The intent of the study for which the Eastern sample was assembled was to refine the knowledge base regarding child neglect through examining the differences between neglecting and non-neglecting families in terms of individual, familial, and environmental factors, particularly family functioning, substance abuse, and maternal

mental health. Children were not recruited into this study according to their maltreatment status.

The Eastern sample was recruited from three pediatric clinics in an urban area that primarily serve low-income African American families (see **Table 4.1**). Consequently participants from this sample are mostly African American and overwhelmingly low-income. Members of what became the Eastern LONGSCAN sample were originally recruited into the “Understanding Child Neglect” study in three phases.

The initial sample for the Eastern study consisted of 129 children diagnosed as having non-organic failure to thrive and their caretakers. All children were less than 25 months when recruited and below the 5<sup>th</sup> percentile of weight-for-age using contemporary National Center for Health Statistics standards. Children born underweight, preterm, with a history of perinatal complications, or with congenital or chronic illnesses were excluded.

The next group recruited into the study was children of women who were HIV infected or reported high-risk behaviors for HIV (generally intravenous drug use). This group initially consisted of 83 mother-child dyads. Like the initial group, this sample was urban and of low socioeconomic status, though poor growth was not a selection criterion. Participants were also recruited without regard to gestational age or perinatal problems, though all children were less than 3 years old at recruitment.

The last group enrolled was the comparison group, recruited from the same inner-city pediatric primary care clinic as the children in the first (non-organic failure to thrive) group. All together, 121 mothers and their children were initially recruited

into this group. This comparison group and the second group were matched on age (all 36 months or younger), sex, and race. Together, the full sample of this study was 333. Following attrition, determined through lack of participation in the age 4 or 6 interviews, the sample was reduced to 282 participants.

**Table 4.1. Characteristics of the Study Sample**

| <i>Variable</i>  | <i>Eastern site<br/>(n = 282)</i> |     | <i>Southern site<br/>(n = 243)</i> |    | <i>Total<br/>(n = 525)</i> |    |
|------------------|-----------------------------------|-----|------------------------------------|----|----------------------------|----|
|                  | N                                 | %   | N                                  | %  | n                          | %  |
| <b>Race</b>      |                                   |     |                                    |    |                            |    |
| African American | 261                               | 93  | 153                                | 63 | 414                        | 79 |
| Caucasian        | 14                                | 5   | 87                                 | 36 | 101                        | 19 |
| Other            | 5                                 | 2   | 3                                  | 1  | 8                          | 2  |
| <b>Geography</b> |                                   |     |                                    |    |                            |    |
| Urban            | 282                               | 100 | 129                                | 53 | 411                        | 78 |
| Rural            | 0                                 | 0   | 58                                 | 24 | 58                         | 11 |
| Suburban         | 0                                 | 0   | 56                                 | 23 | 56                         | 11 |
| <b>Sex</b>       |                                   |     |                                    |    |                            |    |
| Male             | 147                               | 52  | 110                                | 45 | 257                        | 49 |
| Female           | 135                               | 48  | 133                                | 55 | 268                        | 51 |

Data on race are missing for 2 Eastern site participants.

## 2.4 Study Sample

When combined, the Southern (n = 243) and Eastern (n = 282) sites offered a study sample of 525 participants. I restricted the study sample to the 354 participants who completed the age 14 interview module on Conduct Disorder (CD), constituting 68% of the 522 living members of the combined Southern and Eastern sites. There were a number of considerations, however, which influenced why I selected the Southern and Eastern samples for this dissertation.

The first consideration was that there were demographic similarities across the two samples. Specifically, both samples were low-income and primarily African American. Both samples were recruited because of high risk for maltreatment rather than on the basis of a referral to social services for suspected maltreatment. In fact,



referral to social services was only considered after the individual samples were recruited; the implication being that the non-maltreated children became part of both samples independent of social services involvement.

A practical consideration also shaped my decision to use the Eastern and Southern sites. Simply, these were the two sites that had completed age 14 interviews at the time I initiated this study. Although the Southern study was initiated approximately two years before the Eastern study, the chronological periods during which the interviews were completed are closest between these two samples. This offers some degree of control for historical and macroeconomic factors that might have affected caregiver and child participants during the multiple waves of data collection.

### **3. Data Collection**

#### **3.1 Interview Data**

Primary data were collected from subjects and/or caretakers<sup>2</sup> at ages 4, 6, 8, 12, and 14. Supplementing age 14 subject interviews was the NIMH Diagnostic Interview Schedule for Children-Version IV ([DISC]; Shaffer & Fisher, 1997). **Table 4.2** provides a compendium of completed child and caregiver interviews by data collection wave.

Information on socially censured behaviors was collected from caregiver and child participants using an audio computer-assisted self-interview (A-CASI). This method of data collection increased the likelihood respondents were candid in their responses to questions involving behaviors they felt were socially sanctioned or

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<sup>2</sup> Starting at age 6 and continuing at ages 8, 12, and 14, data on behaviors and peer relations in the school setting were collected from participants' teachers using mailed surveys. Data from teachers were not used in this dissertation.

inappropriate while minimizing interviewer effects on participants' responses. Use of A-CASI leads to higher levels of disclosure of sensitive behaviors and provides higher quality data (Newman et al., 2002; O'Reilly, Hubbard, Lessler, Biemer, & Turner, 1994; Turner et al., 1998). Maximizing disclosure of antisocial behavior, particularly violent behavior, is important because court records only account for violent behaviors for which the participant is caught. Less severe violent acts are also unlikely to involve formal legal charges and therefore are accessible only through self-report. A-CASI data therefore enhances measurement of violent acts by enabling accurate measurement of activities either under- or over-reported to authorities.

**Table 4.2. Study Sample Participation in Data Collection by Data Collection Wave (Southern and Eastern samples)**

| <i>Sample</i>                      | <u>Wave 1</u><br>4 years<br>old | <u>Wave 2</u><br>6 years<br>old* | <u>Wave 3</u><br>8 years<br>old | <u>Wave 4</u><br>12 years<br>old† | <u>Wave 5</u><br>14 years<br>old |
|------------------------------------|---------------------------------|----------------------------------|---------------------------------|-----------------------------------|----------------------------------|
| Eastern (n = 282)                  |                                 |                                  |                                 |                                   |                                  |
| Child participants interviewed (%) | 70.6                            | 55.2                             | 82.9                            | 66.4                              | 68.2                             |
| Caregivers interviewed (%)         | 97.5                            | 89.8                             | 84.3                            | 62.1                              | 70.4                             |
| Southern (n = 243)                 |                                 |                                  |                                 |                                   |                                  |
| Child participants interviewed (%) | 99.1                            | 89.7                             | 75.7                            | 69.0                              | 68.2                             |
| Caregivers interviewed (%)         | 100                             | 90.5                             | 75.7                            | 71.5                              | 71.5                             |
| Total (n = 525)                    |                                 |                                  |                                 |                                   |                                  |
| Child participants interviewed (%) | 83.1                            | 71.2                             | 79.6                            | 67.6                              | 68.2                             |
| Caregivers interviewed (%)         | 91.1                            | 90.1                             | 80.3                            | 66.5                              | 70.9                             |

One Eastern site participant died before completing participation, therefore n = 524 for Waves 2 and 3.

† Two participants (one from the Southern site, one from the Eastern site) died before participating in this wave, therefore n = 522 for Waves 4 and 5.

### **3.2 Child Protective Services (CPS) Data**

#### **3.2.1 Maltreatment Status Assessment**

Trained case record reviewers collected data on the maltreatment status of LONGSCAN participants from subjects' CPS agencies in counties of previous and current residence. Reviewers, using a form common to all five LONGSCAN sites

(see Appendix A) abstracted CPS case and service utilization records. All case record reviewers underwent identical training.

Original CPS referrals include all maltreatment allegations made to CPS, such as dates, settings, and a narrative description of the investigation, along with case summaries. The initial step, once the records were acquired by case record reviewers, was to determine whether the referral represented a unique allegation or set of allegations. If two or more referrals were reported within 10 days of each other and shared at least one alleged maltreatment type, these referrals were combined in order to prevent inflation of allegation counts.

Without regard to substantiation status, abstracted referrals were coded on a variety of criteria, chief among them the type (e.g., neglect, physical abuse), subtype of specific maltreatment category (e.g., emotional neglect, failure to provide-supervision), perpetrator(s), severity, frequency, and chronicity. The Second National Incidence Study (NIS-2) and Modified Maltreatment Classification Scheme ([MMCS]; English et al., 1997) protocols (described below) provided the coding schemes used to code each allegation. Based on the labeling system proposed by Munoz and Bangdiwala (1997), LONGSCAN cross-site inter-rater reliability for allegation coding using the MMCS (mean  $k = 0.76$ ) and NIS-2 (mean  $k = 0.77$ ) protocols falls between “substantial” and “almost perfect.”

Case record reviews were conducted at both sites following the passage of the cohorts through their 8<sup>th</sup> and 12<sup>th</sup> birthdays. Age 12 case record reviews also included comprehensive reviews of each participant’s CPS record, such that previously overlooked complaints have been abstracted and subsequently recorded.

### **3.2.2 CPS Data Coding**

Two separate coding schemes were used to code the abstracted CPS records collected by each site's case record reviewer. One of the coding systems adopted by the LONGSCAN consortium employs the specific definitions for maltreatment type and subtype used in the Second National Incidence Study (USDHHS, 1988) and utilizes the NIS-2 standards for harm and endangerment (Runyan & English, 2006). Case record reviewers use their judgment to rate the severity of each discrete element of maltreatment in each referral on a 1-6 (1 is the most extreme [fatal], 5 the least [no harm or threat of harm], and 6 is unknown) scale (Runyan & English, 2006).

The other coding system used across all LONGSCAN sites is the Modified Maltreatment Classification Scheme (English et al., 1997). This system is based on the Maltreatment Classification Scheme (MCS) developed by Barnett and colleagues (1993). Although the MCS provides a standardized system for collecting maltreatment data according to subtype, severity, frequency, chronicity, developmental age of the victim, and perpetrator type, the MMCS allows for specification of physical abuse, emotional maltreatment, and neglect maltreatment subtypes with greater precision (see Appendix B). For example, the severity codes for each type of maltreatment are anchored to the original 1-6 system at the extremes but are tailored to specific outcomes associated with the particular act of maltreatment.

All together, the modifications made to the MMCS have allowed for enhanced specification of nine subtypes of physical abuse, two subtypes of neglect further

classified within subtype, and 27 subtypes of emotional abuse (English et al., 1997). Another difference between the MMCS and the original classification scheme is that for the MMCS, developmental period is derived from date of referral and child age (Runyan & English, 2006).

## **4. Measures**

### **4.1 Overview**

As delineated above, there were a number of sources for data. Although there are merits and limitations to each one of those sources, combining them enabled maximization of merits and minimization of limitations. CPS data coded by case record reviewers was used to create the maltreatment variables; the primary independent variable in this dissertation – childhood neglect from birth to age 8 – was extracted from these data. Remaining independent variables were derived from LONGSCAN interviews.

Basic participant demographics of sex and race were taken from the first wave of caregiver interviews administered when the participant was 4 years old. Information on caregiver characteristics was taken from caregiver interviews administered concurrent to age 14 participant interviews. The remaining variables were derived from each participant's age 14 interview. Whenever possible, I followed existing LONGSCAN practices in generating control variables. Mostly due to the limitations imposed by conducting a secondary analysis of a topic unanticipated when primary data collection was planned, it was necessary for me to create a number of other variables, particularly the dependent and mediator variables, using existing data.

## 4.2 Childhood Maltreatment Variables

Case record review data was the source of information on childhood neglect and other forms of maltreatment. Both substantiated (following an investigation by the State DSS, an incident of child maltreatment as defined by State law is believed to have occurred) and unsubstantiated (following an investigation by DSS, insufficient evidence was found to conclude a child was maltreated, or incident does not meet the legal definition of maltreatment) allegations were treated as affirmative evidence of maltreatment. This decision was made based on research showing a lack of significant differences in the behavioral and developmental outcomes of victims of substantiated maltreatment when compared to victims of unsubstantiated maltreatment allegations (Hussey et al., 2005; Kohl, Jonson-Reid, & Drake, 2009; Leiter, Myers, & Zingraff, 1994).

Classification of each referral as involving childhood neglect, physical abuse, emotional abuse, or sexual abuse was based on each unique MMCS maltreatment code extracted from each coded allegation. I exclusively relied on codes from the MMCS system due to the finding that this coding scheme offers superior precision in distinguishing between emotional neglect and emotional abuse (English et al., 1997, Runyan et al., 2005; Runyan & English, 2006).

Maltreatment allegations were organized by LONGSCAN from birth to age 4, from age 4 to age 6, and from age 6 to age 8. In order to create each maltreatment variable recording maltreatment history from birth to age 8, I summed the number of corresponding maltreatment subtype allegations for each unique LONGSCAN identification number according to the variable definitions described below. In many

cases, however, participants experienced multiple forms of maltreatment from birth to age 8; maltreatment categories were not mutually exclusive.

#### 4.2.1 Primary Independent Variable: Childhood Neglect

Consistent with the definition of childhood neglect provided in Chapter 2, I combined MMCS allegations of all the various “acts of omission” into the neglect variable (386 total allegations across 98 participants). See **Table 4.3** for the specific MMCS codes for each subtype of neglect included in the childhood neglect variable.

**Table 4.3. Components of the Childhood Neglect Variable Based on Modified Maltreatment Coding Scheme (MMCS) Codes**

| <i>Maltreatment Category</i> | <i>Included Subtypes</i> | <i>MMCS Codes</i>       |
|------------------------------|--------------------------|-------------------------|
| <i>Neglect</i>               | Failure to Provide       | 301, 302, 303, 304, 305 |
|                              | Lack of Supervision      | 401, 402, 403           |
|                              | Emotional Neglect        | 500-14, 500-24, 500-53  |
|                              | Moral/Legal Maltreatment | 600                     |
|                              | Educational Maltreatment | 700                     |

Most allegations (87%) included in the childhood neglect variable involved physical neglect. The majority of allegations (58%) incorporated under this rubric concerned failure to provide (n = 224), which includes medical neglect. The remainder pertained to lack of supervision (n = 113), which included instances where the participant was left in the care of an unsuitable caretaker or if a sexual offender was present in the home or allowed to have any contact with the participant.

Included in the childhood neglect variable were three emotional maltreatment codes consistent with emotional neglect. These codes pertain to allegations the caregiver ignored or refused to acknowledge the participant’s bids for attention, was inattentive or unaware of the participant’s needs for affection and positive regard, and instances in which the caregiver abandoned the participant for over 24 hours without any indication of when or if she or he would return.

Also incorporated into the childhood neglect variable were codes for allegations of moral-legal and educational maltreatment. Moral-legal maltreatment pertains to failure of the parent to exclude the child from witnessing or participating in illegal or other activities that could foster delinquency or antisocial behavior. For example, the caregiver knows that the child is involved in illegal activities such as vandalism, shoplifting, drug dealing or sexual offending but does not attempt to intervene. Educational maltreatment involves failure of the caregiver to ensure a participant is adequately educated and properly socialized by regularly attending school.

#### **4.2.2 Childhood Abuse Variables**

As the childhood neglect variable was composed of acts of omission, the variables measuring childhood maltreatment other than neglect consist of acts of commission. MMCS codes comprising the three childhood abuse variables are shown in **Table 4.4**.

By creating distinct abuse variables, I was able to examine the effect of each form of abuse on the dependent variable, which enabled comparison between each of the forms of maltreatment. A key element of the first manuscript (Chapter 5) is to compare groups with histories of different variations of co-occurring maltreatment to the neglect-only and no-maltreatment reference groups. In Chapter 6, I isolate the effects of childhood neglect by controlling for allegations of abuse from birth to age 8. The abuse variables thus served a number of purposes beyond delineating the full childhood maltreatment histories of the study sample.



**Table 4.4. Component MMCS Codes of Abuse Maltreatment Subtypes**

| <b><i>Maltreatment Category</i></b> | <b><i>Included Subtypes</i></b> | <b><i>MMCS Codes</i></b>                               |
|-------------------------------------|---------------------------------|--|
| <i>Physical Abuse</i>               | Hit/Kick                        | 101, 102, 103, 104                                     |
|                                     | Violent Handling                | 105  |
|                                     | Choking/Smothering              | 106  |
|                                     | Burns/Scalding                  | 107  |
|                                     | Shaking                         | 108  |
|                                     | Nondescript abuse               | 109  |
| <i>Sexual Abuse</i>                 | --                              | 200  |
| <i>Emotional Abuse</i>              | --                              | 500s (except 500-14, 500-24, 500-25, 500-42, & 500-53) |

#### **4.2.2.1 Physical Abuse**

Using MMCS, physical abuse is coded when a caregiver intentionally inflicts physical injury upon a child, excluding culturally sanctioned actions that result in permanent physical alteration such as circumcision (English et al., 1997). The physical abuse variable was unaltered from the MMCS, meaning it simply consisted of summed allegations of maltreatment coded as any of the six subtypes of physical abuse (see Table 4.4). The physical abuse variable used in this dissertation is consequently consistent with conventional definitions of physical abuse. This form of maltreatment was second-most common behind neglect (71 allegations across 35 participants).

#### **4.2.2.2 Sexual Abuse**

Sexual abuse was the least common form of childhood maltreatment in this study sample, with 18 allegations recorded for 16 members of the sample. Parallel to the physical abuse variable, the sexual abuse variable was composed of summed allegations coded as sexual abuse using the MMCS protocol. Again congruent to the physical abuse variable, the sexual abuse variable follows conventional

definitions of sexual abuse. There are, however, a number of considerations specific to sexual abuse.

Within the MMCS rubric, sexual abuse is only coded when a *caregiver* engages or attempts to engage in sexual contact with the participant; this contact or attempted contact is coded as sexual abuse whether it was for the caregiver's sexual gratification or financial benefit (English et al., 1997). Because of the restriction to the actions of a caretaker (primary or temporary, such as a babysitter) and by virtue of the fact that only CPS records were examined, sexual abuse committed outside the home by non-caretakers was not considered.

Another distinction is that sexual abuse commonly entails physical or physiological coercion to facilitate engagement in sexual activities with the child (English et al., 1997). In cases where coercion took place, the acts of coercion were coded using the appropriate MMCS codes. For example, if the caretaker physically injured the child in an effort to force the child to engage in sexual activities, those injuries were coded using the appropriate physical abuse subtype code. However, sexual abuse is the sole code used for physical injuries that occurred as a direct result of sexual relations (e.g., vaginal tears, prolapsed rectum).

#### **4.2.2.3 Emotional Abuse**

To create the emotional abuse variable, I reviewed the 27 MMCS emotional maltreatment codes. As noted earlier, three emotional maltreatment codes consistent with emotional neglect were assigned to the neglect variable. This left 25 emotional maltreatment codes, from which I extracted 22 codes involving acts of commission (e.g., "the caregiver often belittles or ridicules the child"). The

allegations that were coded for those acts of commission therefore comprise the emotional abuse variable used in this dissertation.

The two remaining emotional abuse codes encompass allowing exposure to intimate partner violence (IPV): 500-25 (“The caregiver allows the child to be exposed to the caregiver’s extreme but *nonviolent marital conflict*”) and 500-42 (“The caregiver allows the child to be exposed to *extreme marital violence* in which serious injuries occur to the caregiver”). Allowing exposure to IPV is considered by some to be an act of caregiver neglect (Barnett et al., 1993). Primarily because of disagreement among researchers whether exposure to IPV constitutes an act of caregiver neglect and evidence that witnessing IPV exerts independent effects on the development of violent behavior in youths (Edelson, 1999; Groves, 1999; Horner, 2005; Johnson et al., 2002), I excluded the two MMCS codes involving witnessed IPV from the maltreatment variables. Additional considerations in this decision were questions regarding whether one can reliably attribute intent to a caregiver in terms of “allowing” exposure to IPV and doubts as to whether CPS referrals could provide a full record of a participant’s exposure to IPV. Rather than use those codes, I instead relied on a broader witnessed violence variable based upon on participant self-report described below.

### **4.3 Control variables**

#### **4.3.1 Other Risk Factors for Early Adolescent Violence**

##### **4.3.1.1 Peer Criminality**

I created a variable to control for the influence of association with peers who engage in criminal behaviors (Agnew, 1991) using the LONGSCAN Risk Behaviors

of Family and Friends (RBFA) survey (Knight, Smith, Martin, Lewis, & the LONGSCAN Investigators, 2008a; see Appendix C). The survey was administered as part of age 14 participant interviews using the A-CASI delivery system.

To create this variable, I excluded the first half of the survey, which consists of inquiries regarding the substance use of family members with whom the respondent lives. , I then examined the remaining 18 items for conceptual relation to criminal behavior. On this basis, I excluded individual RBFA items encompassing the prosocial (e.g., “How many of your close friends get good grades in school?”), substance use (e.g., “How many of your friends smoke marijuana?”), and sexual behaviors (e.g., “How many of your friends have had sexual intercourse?”) of peers. Although substance use by minors is illegal under all but limited circumstances, the relationship of this behavior to criminal activity is ambiguous and at best indirect. An additional consideration was my desire to focus exclusively on serious criminal behavior and avoid moral judgments. Thus, I disregarded items asking about how many close friends have smoked cigarettes or marijuana but retained the item pertaining to involvement in the drug trade.

The final peer criminality variable consists of 6 modified items from the Youth Risk Behavior and Monitoring the Future surveys that discuss antisocial behavior among respondents’ “close friends,” scored on a 0-2 scale (0 = “None of my friends,” 1 = “Some of my friends,” 2 = “Most of my friends”), resulting in a possible range of 0-12 (see **Table 4.5**). Internal consistency of this variable was acceptable ( $\alpha = 0.72$ ) and, based on principal components analysis, unidimensional with only one factor with an Eigenvalue of greater than 1 (2.06).

**Table 4.5. Components of the Peer Criminality Variable (n = 345)**

| <i>Item [How many of your close friends...]</i>                             | <i>Variable Label</i> |
|---|-----------------------|
| Carry guns, knives, or other weapons?                                       | RBF18_14              |
| Sell or deliver drugs?  | RBF23_14              |
| Shoplift or steal?  | RBF24_14              |
| Set fires?  | RBF25_14              |
| Get into fights?  | RBF26_14              |
| Damage or destroy things, like cars, buildings, or other people's property? | RBF27_14              |

#### 4.3.1.2 Witnessed Violence

According to research (see Dahlberg, 1998 for an overview) and theory (see Bandura, 1978), witnessing violence increases risk for subsequent commission of violence. This effect is consistent with that of witnessed IPV on perpetration of violence in youth (Edelson, 1999; Groves, 1999; Hornor, 2005; Johnson et al., 2002).

To control for the proximal effects of participant-witnessed violence, I summed 7 items corresponding to all forms of violence witnessed in the previous 12 months from the LONGSCAN-created History of Witnessed Violence (HWVA) scale (see **Table 4.6**; Appendix D). All items were scored on an identical 4-point scale (“Never” = 0, “1 time” = 1, “2-3 times” = 2, “4 or more times” = 3), producing a possible range of 0-28). Internal consistency was adequate for this variable ( $\alpha = 0.72$ ).

**Table 4.6. Components of the Witnessed Violence Variable (n = 346)**

| <i>Item (How often have you seen this happen [to someone] in the last year?)</i> | <i>Variable Label</i> |
|--|-----------------------|
| Being slapped, kicked, hit with something, or beaten up?                         | HWVA2b                |
| Pull a gun on another person?  | HWVA3b                |
| Pull a knife (or something like a knife) or razor on anyone?                     | HWVA4b                |
| Get stabbed or cut with some type of weapon?                                     | HWVA5b                |
| Get shot?  | HWVA6b                |
| Killed by another person?  | HWVA7b                |
| Getting sexually assaulted, molested or raped?                                   | HWVA8b                |

### **4.3.2 Participant Demographic Characteristics**

I used the child sex/gender variable from the Child Demographics module (BKGA) administered during the age 4 caregiver interviews (Hunter et al., 2003; see Appendix E) without any modification. There were no significant differences between the two sites on the basis of participant biological sex ( $\chi^2(1) = 2.68$ ;  $p > 0.05$ ).

For the race variable, I created a binary variable (non-Hispanic white and non-Hispanic non-white) with data from the same module used for the sex variable. The non-Hispanic non-white group was almost entirely composed of African Americans but included 4 participants of more than one race and 2 designated as "Other." As expected, the fact that the Eastern site was almost entirely composed of African Americans resulted in a significant difference from the Southern site on the basis of race ( $\chi^2(1) = 45.4$ ;  $p < 0.001$ ).

I calculated age based on the day each age 14 interview was completed relative to the corresponding participant's date of birth. Participants from the Southern site were significantly older on average (14.6; SD = 0.51) than the Eastern site (14.3; SD = 0.44) at time of the age 14 participant interview.

### **4.3.3 Caregiver Characteristics**

#### **4.3.3.1 Caregiver Education**

I generated a three-category variable to control for caregiver educational achievement due to findings that higher educational attainment by the primary caretaker is associated with lower risk for maltreatment (Brown, Cohen, Johnson, & Salzinger, 1998), qualitatively better parenting (Berk, 1985; Lareau, 2003), improved

household dynamics (Lareau, 2003), and higher socioeconomic status (Hauser, 1994). One category was for any caregiver who reported not receiving a high school diploma, passing an equivalency test, or earning a general equivalency diploma (GED), with another category for caregivers who did report receiving their high school diploma or GED or passing an equivalency test. A separate category was for caregivers who reported any education beyond high school. The LONGSCAN-created caregiver demographics module (DEMB) was the source of data (see Appendix F).

#### **4.3.3.2 Caregiver Depression**

Prevailing LONGSCAN practices have included controlling for caregiver depression (see Black et al., 2002; Kotch et al., 2008; and Saluja, Kotch, & Lee, 2003 for examples) using scores on the Center for Epidemiological Studies-Depression (CES-D) scale (Radloff, 1977) administered as part of the caregiver interviews. I used CES-D data from age 14 caretaker interviews to create a continuous variable and a binary one derived from a dichotomization of scores based on the clinical threshold for depression of 16 (Radloff, 1977).

#### **4.3.3.3 Caregiver Marital Status**

Similar to caregiver depression, an established LONGSCAN practice is to control for caregiver marital status (see Kotch et al., 2008 and Yonas et al., 2010). To create this control variable, I used relevant responses to the interviewer-administered caregiver demographics module (DEMB) from the age 14 caregiver demographics interview. From these data, a binary variable was produced with one category including only responses indicating that the caregiver was currently married

with the other category conglomerating all responses indicating otherwise (i.e., single/never married, separated, divorced, and widowed).

### **4.3.4 Household Characteristics**

#### **4.3.4.1 Household Income**

Caregivers were originally presented with a scale presenting 11 categories separated by increments of \$5,000 for annual income (\$0-\$4,999 to  $\geq$ \$50,000), with the weekly and monthly equivalents (e.g., \$418-\$833 per month or \$97-\$192 per week for the \$5,000-\$9,999 category) alongside annual income during the demographics (DEMB) module of the caregiver interview. I retained this coding scheme and also created a dichotomous variable based on a threshold of \$20,000. The dichotomous variable therefore consisted of 4 income brackets in one category and 7 brackets in the other. The purpose of the dichotomous variable was to differentiate, for descriptive purposes, between those household units in poverty and those in the low-moderate and higher income brackets.

### **4.3.5 Neighborhood Characteristics**

#### **4.3.5.1 Neighborhood Collective Efficacy**

The variable for neighborhood collective efficacy was derived from the LONGSCAN-developed 45-item neighborhood and organization affiliation (NOAA) scale (Knight et al., 2008a; see Appendix G). There were 30 items measured on a 4-point scale (1 = “strongly disagree,” 2 = “disagree,” 3 = “agree,” 4 = “strongly agree”) that measured the degree to which each caregiver agreed with various positive and negative statements about the characteristics of her or his neighborhood.



Based on an existing measure for the assessment of collective efficacy (see Sampson, Raudenbush, & Earls, 1997) and previous published (see Yonas et al., 2010) and unpublished LONGSCAN analyses, 12 items representing active participation by neighbors to provide a close, responsible, and accountable neighborhood (e.g., “People around here are willing to help their neighbors;” “This is a close knit neighborhood”) were included in this variable (see **Table 4.7**).

Parallel with previous work (Yonas et al., 2010), the collective efficacy variable I used consisted of the mean of the 12 scores (range = 1-4), with higher scores indicating greater collective efficacy. Internal consistency for this variable was excellent ( $\alpha = 0.91$ ).

**Table 4.7. Components of the Neighborhood Collective Efficacy Variable**

| <i>Item</i>   | <i>Variable Label</i> |
|---|-----------------------|
| My neighbors could be counted on to intervene in various ways if children were skipping school.                                       | NOAA5                 |
| In this neighborhood, adults set good examples for children.  | NOAA6                 |
| People around here are willing to help their neighbors.   | NOAA8                 |
| Neighbors can be counted on to intervene in various ways if children were spray-painting graffiti on a local building.                | NOAA11                |
| This is a close-knit neighborhood.  | NOAA14                |
| Neighbors could intervene in various ways if children were showing disrespect to an adult.  | NOAA17                |
| In this neighborhood, adults act in responsible ways.   | NOAA18                |
| People in this neighborhood can be trusted.   | NOAA20                |
| Neighbors could be counted on to intervene in various ways if a fight broke out in front of their house.                              | NOAA23                |
| In this neighborhood, I always feel safe.   | NOAA25                |
| Neighbors could be counted on to intervene in various ways if the fire station closest to their home was threatened with budget cuts. | NOAA29                |
| In this neighborhood, men are good fathers to their children.   | NOAA30                |

#### 4.3.5.2 Site

I created a variable for LONGSCAN study site to control for differences in recruitment strategies, the independent effects of regional characteristics/geography (Weijters, Scheepers, & Gerris, 2007), and any unmeasured differences between the

two sites. Use of this variable also allowed me to conserve power by controlling for the relatively inconsequential differences between the sites on factors such as participant race and age. Site membership data were extracted from the Child Demographics module (BKGA) administered during the age 4 caregiver interviews.

#### **4.4 Mediator Variables**

In order to measure the mediator variables in this study, I created four indices to measure the mediator variables of *involvement*, *belief*, *attachment*, and *commitment*. Creation of these indices from preexisting items was necessary because scales directly measuring these variables were not administered as part of normal LONGSCAN interviews. The construction of these indices represents an original contribution to the field.

The initial step in creating these variables was a comprehensive examination of the queries across participant interviews. In order to maximize accuracy, I only examined items that relied on participant self-report. Potential component items for each index were initially selected based on face validity for conformity to the theoretical principles outlined in Chapter 2 and similarity to the original questionnaire used by Hirschi in the Richmond Youth Project (See Hirschi, 1969).

I found that many of the original questionnaire items were outdated or otherwise inappropriate due to changes in the cultural context, particularly in relation to the *belief* construct. When appropriate analogs to original questionnaire items could not be found, I relied exclusively on expert review for determination of face validity for potential items. This parallels the work of other investigators who have tested aspects of social control using original items based on Hirschi's constructs (Foshee

& Bauman, 1992; Foshee, Bauman, & Linder, 1999; Huebner & Betts, 2002; Shoemaker & Gardner, 1988; Wiatrowski et al., 1981).

This initial examination revealed that there were limited potential components for the *belief* and *commitment* indices. With few exceptions, the potential index items were not administered prior to the age 14 participant interviews. In order to maintain consistency I therefore restricted components of the mediator variables to data from age 14 participant interviews.

Since ensuring unidimensionality of each index was important to demonstrate the single designated construct was measured in that index, I subjected each index to principal factors analysis. This step was followed by orthogonal rotation because of my belief that due to the nature of SCT, the underlying latent variables would correlate with each other to some degree. I also examined scree plots and used the “elbow” of each plot as a means to limit the number of factors to only the most robust ones. Following that step, I repeated the principal factors analysis, with and without rotation, restricted to the number of factors suggested by the scree plot.

The criteria for achievement of unidimensionality were that items load highly ( $\geq 0.40$ ) on the selected factor and not load substantially on any other factor ( $< 0.20$ ) (Agnew, 1991). To help enhance parsimony and the internal consistency of each index, cross-loading items (meaning lower main factor loading and higher loading on an extraneous factor) to the SCT construct were dropped. I then calculated Cronbach  $\alpha$  coefficients to guide decisions concerning the paring of each index. I used  $\alpha$  coefficient of 0.80 as a benchmark due to concerns with the attenuation of parameter estimates resulting from reliabilities between 0.70 and 0.80 (Agnew,

1991). The minimum threshold was 0.70, meaning that an index with internal consistency below that was modified. Once this threshold was achieved, I balanced my evaluation of subsequent iterations of such indices on the basis of conceptual coherence and maximization of the internal consistency coefficient.

The final step in the creation of the mediator variables was to standardize each score. Doing so facilitated clearer interpretation and comparison across variables by providing a common metric.

#### **4.4.1 Attachment**

The *attachment* index was composed of selected responses from the A-CASI administered Quality of Relationship with Mother (MCCA) report developed by LONGSCAN (see Appendix H). Component items were adapted from related elements of the National Longitudinal Study of Adolescent Health (“Add Health;” see Resnick et al., 1997) survey.

In cases where the participant did not live with his or her mother, the participant was instructed to respond based on the relationship with whomever served that role in the household. When neither of those situations applied, the participant was instructed to consider the relationship with his or her birth mother or someone who served that role and whom he or she saw at least once a month and acted like a mother. Participants who indicated he or she did not live with a birth mother or someone who acted like one and who did not see his or her birth mother or someone who acted like a mother at least once a month were coded as missing. The rationale for this decision was Hirschi's (1969) statement that "the one-parent family is virtually as efficient a delinquency controlling institution as the two-parent

family" (p. 103). The rest of the scores coded as missing lacked one or more valid responses to component items.

To determine the interest and value a participant placed on maintaining a relationship with his or her primary caregiver, I selected items that best reflected the depth and quality of the mother-child relationship (see **Table 4.8**). I further pared the components by excluding queries focused exclusively on the events of the past 4 weeks. After the unidimensionality and internal consistency procedures outlined above were completed, only 6 items focused on general assessments of the mother-child relationship independent of recent events remained. All items were scored on a 1-5 scale.

A summary score was created, which resulted in a possible range of 6-30, with higher scores indicating stronger attachment. Internal consistency was good ( $\alpha = 0.83$ ) for this index.

**Table 4.8. Components of the Attachment Index (n = 346)**

| <i>Item</i> ["How often..." except #1 & #2]                                      | <i>Response Options</i>      |
|--|------------------------------|
| How close do you feel to your mother (or someone who acts like a mother to you)? | 1 = Not at all 5 = Very Much |
| How much do you think she cares about you?                                       | 1 = Not at all 5 = Very Much |
| Does she trust you?  | 1 = Never 5 = Always         |
| Does she understand you?   | 1 = Never 5 = Always         |
| Do you and she get along well?   | 1 = Never 5 = Always         |
| Do you make decisions together about things in your life?                        | 1 = Never 5 = Always         |

#### **4.4.2 Belief**

Many of the original questionnaire items were outdated or otherwise inappropriate due to changes in the cultural context. Therefore, as the *belief* construct is predicated on conventional morals and values – which is inherently subjective due to its dependence on current opinions shared by members of society – its corresponding index relied most heavily on investigator discretion.

Hirschi's (1969) discussion of conventional morals and values consisted of two related elements. On the one hand, he articulated what he considered to be "lower-class values, norms, and beliefs" (Hirschi, 1969; p. 212) and framed conventional values and beliefs as the rejection of the "lower-class" ones. Hirschi (1969) then defined "middle-class values" as those involving "high educational and occupational aspirations, high achievement orientation, and so on" (p. 223). Taken together, this means that conventional morals and values defined according to the precepts of SCT dictate belief in certain standards of personal conduct, life choices, and upward mobility while rejecting behaviors and outcomes associated with those of the lowest social standing. Using this definition, I extracted potential items to represent participants' assent to the conventional order and sought a unidimensional one-factor solution with the best possible internal consistency.

The *belief* index consisted of 7 items taken from the LONGSCAN-developed Future Events Questionnaire ([FEQA]; Knight et al., 2008a; see Appendix I). This is a computer-assisted interviewer administered questionnaire consisting of items informed by the Add Health (Resnick et al., 1997) and the Michigan Study of Adolescent and Adult Life Transitions (Eccles et al., 1983) studies. I summed items measured on a 5-point scale that assessed the shunning of middle class values by asking each participant to rate the likelihood that outcomes counter to conventional norms and expectations would occur later in his or her life (see **Table 4.9**). This resulted in scores ranging from 5 to 35, with higher scores reflecting weaker belief in conventional norms, values, and expectations.

To maintain consistency with the other mediator variables, I reverse scored the *belief* index, with higher scores for the *belief* variable used in analyses reflected stronger belief in conventional norms, values, and expectations. Internal consistency was adequate ( $\alpha = 0.72$ ).

**Table 4.9. Components of the Belief Index (n = 338)**

| <i>Item</i> ["How likely is it that these things will..."]   | <i>Response Options</i>           |
|--|-----------------------------------|
| Have a child without being married?                          | 1 = Very Unlikely 5 = Very Likely |
| Get married within two years after high school?              | 1 = Very Unlikely 5 = Very Likely |
| Get divorced?  | 1 = Very Unlikely 5 = Very Likely |
| Have to go on welfare at some point during your adult life?  | 1 = Very Unlikely 5 = Very Likely |
| Lose your job?   | 1 = Very Unlikely 5 = Very Likely |
| Be unemployed at some point during your adult life?          | 1 = Very Unlikely 5 = Very Likely |
| Have difficulty finding a good job when you become an adult? | 1 = Very Unlikely 5 = Very Likely |

#### **4.4.3 Commitment**

I created the *commitment* index using items that captured aspects of the concept of a perceived future stake in society. Items selected for inclusion in the index closely conformed to expectations of future academic achievement or successful employment (see **Table 4.10**). Consistent with the conceptual basis of this social bond in SCT (Hirschi, 1969), the index consisted of items that could not be reasonably achieved if the respondent became involved in serious antisocial behavior such as violence. Before finalizing the index, I completed the procedures to ensure unidimensionality and augment internal consistency outlined earlier.

All 5 of the component items were extracted from the FEQA (Knight et al., 2008a). The items were measured on a 1-5 scale, resulting in a possible range of 5-25. Higher scores on this index indicated greater commitment to conventional actions and expectations. Internal consistency was good ( $\alpha = 0.85$ ).

**Table 4.10. Components of the Commitment Index (n = 344)**

| <i>Item</i> ["How likely is it that these things will..."] | <i>Response Options</i>           |
|--|-----------------------------------|
| Go to college?   | 1 = Very Unlikely 5 = Very Likely |
| Be able to get the money necessary to go to college?       | 1 = Very Unlikely 5 = Very Likely |
| Have a successful career?                                  | 1 = Very Unlikely 5 = Very Likely |
| Get a scholarship for college?                             | 1 = Very Unlikely 5 = Very Likely |
| Get the job you want?                                      | 1 = Very Unlikely 5 = Very Likely |

#### **4.4.4 Involvement**

The *involvement* index was produced to quantify each participant's degree of involvement in conventional activities. I examined the age 14 participant interview for items related to involvement in sports, hobbies, community service, and religious activities. Items directly related to these activities were found in the A-CASI administered LONGSCAN-developed Resilience Factors (RSFA) scale (see Appendix J). This 18-item scale assessed the existence of supportive adult relationships, religiosity, and involvement in prosocial extracurricular activities (Knight et al., 2008a).

Items concerning supportive adults were excluded due to lack of conceptual relevance to the *involvement* construct. Based on this rationale, I also excluded an item asking the participant to subjectively evaluate the importance of religion to him or her ("How important is religion or spirituality to you?"). I also eliminated another item ("Have you ever been on the honor roll?") because of conceptual inconsistency; this item was too intertwined with academic achievement, which is conceptually related to the *commitment* construct, and did not necessarily indicate the participant engaged in prosocial activities outside of the school setting that would eliminate opportunities for involvement in antisocial behaviors. I retained a similar item that asked whether the participant received a school award or prize because such awards do not necessarily involve academic achievement and often recognize



citizenship, community service, or similar accomplishments. I then executed the aforementioned procedures to assess the unidimensionality and internal consistency of the remaining 12 items. Following this step, I eliminated an item probing attendance at religious services (“Over the past year, how many times did you attend religious or spiritual services or activities?”) to achieve adequate internal consistency. As a result, 11 items (see **Table 4.11**) remained, which comprise the *involvement* index.

Although I found only 1 factor with an Eigenvalue > 1.0 (2.38), there were items that did not load as clearly (<0.40 but >0.30) as the other ones. I chose to retain these items, which assessed Scout and church group membership, because of the clear conceptual relevance of these items. Both of these involve time occupied in activities that subtract from time available for antisocial activities and are also supervised by adults, which increases certainty that time spent involved in these activities would be restricted to prosocial endeavors.

To assess internal consistency of the final iteration of the index, I used the Kuder-Richardson coefficient of reliability because all items in this index were dichotomous (0 = “No,” 1 = “Yes”). Internal consistency for the involvement index was adequate ( $\rho = 0.74$ ). The possible range was 0-11, with higher scores indicating greater involvement in conventional activities.

**Table 4.11. Components of the Involvement Index (n = 341)**

| <i>Item ["Have you ever..."]</i>                                    | <i>Response Options</i> |
|---|-------------------------|
| <i>Been part of a sports team?</i>                                  | 0 = No 1 = Yes          |
| Been a captain or co-captain of a team?                             | 0 = No 1 = Yes          |
| Won a sports medal, ribbon, trophy or other sports award?           | 0 = No 1 = Yes          |
| Been a member of a club at school?                                  | 0 = No 1 = Yes          |
| Been an officer or leader in a club or organization?                | 0 = No 1 = Yes          |
| Received a school award or prize?                                   | 0 = No 1 = Yes          |
| Been part of a drama, music, dance or other performing arts group?  | 0 = No 1 = Yes          |
| Been part of a scout group?   | 0 = No 1 = Yes          |
| Been in a volunteer group, or participated in volunteer activities? | 0 = No 1 = Yes          |
| Been part of a church group?  | 0 = No 1 = Yes          |
| Received a volunteer or community service award?                    | 0 = No 1 = Yes          |

#### **4.5 Dependent Variable**

Examination of legal records was not a viable source of information due to the age of the participants; legal records were also unlikely to reveal the full scope of violent behavior. Consequently, I relied on the conduct disorder (CD) module of the National Institute of Mental Health (NIMH) Diagnostic Interview Schedule for Children-Version IV ([DISC]; Shaffer & Fisher, 1997) administered using A-CASI methods at the age 14 participant interview (Knight, Smith, Martin, Lewis, & the LONGSCAN Investigators, 2008b) to capture uncensored estimates of violent behavior. This particular instrument was chosen because of the high validity and reliability of the interview and the relevance of CD to aggressive behavior in early teens. According to the most current edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR), the characteristic feature of CD in children and adolescents is a repetitive and persistent pattern of behavior that includes aggressive conduct, causing physical harm to others, causing property loss or damage, deceitfulness, and theft (American Psychiatric Association [APA], 2000). This disorder is also a precursor to Antisocial Personality Disorder (APA, 2000).

The CD module has many questions directly addressing violent behavior (e.g., “Have you ever hurt or threatened someone to make them do something sexual with you that they didn’t want to do?”). Participants were asked questions on a wide range of violent acts such as assault with a deadly weapon (“Attacked someone with a weapon”) to “Thrown objects such as rocks or bottles at people.” Items assessing chronological proximity (“...in the last year,” “...in the last six months,” “...in the last four weeks”), age of initiation, and frequency (once, 2-5 times, 6-10 times, more than 10 times) followed affirmative responses.

The first step in the creation of this dissertation’s dependent variable was to limit the variable to actions committed within the early adolescent period. I therefore eliminated all “have you ever” items from consideration. Because the CD module probed a variety of delinquent but non-violent behaviors, it was necessary to exclude items pertaining to non-violent delinquency (e.g., “Have you run away from home overnight in the past year<sup>3</sup>?”). Then, because the nature and degree of violence involved in the CD module items varied, I assessed the remaining items for consistency with the definition of violence developed based on the literature presented in Chapter 2. For the purposes of this dissertation, violence is defined as the following: Actions meeting the legal definition of a felony, acts involving the use of a weapon or resulting in observable bodily harm or psychological trauma to another person, and specific actions intentionally and explicitly directed at another person that plausibly present a reasonable threat to inflict or cause serious harm.

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<sup>3</sup> The “in the past year” phrase was initially defined to the participant as pertaining to the 12 months previous to the date of the interview.

I first extracted items involving the use of weapons (“threatened with a weapon”) and actions intended to cause harm to another person (“physically cruel when not fighting;” “arson with intent to cause harm”). Guided by the age-neutral FBI violent crime index (FBI, 2008), I selected non-redundant items pertaining to rape (“forced someone to do something sexual”), robbery (“held someone up or attacked somebody to steal from them”), and aggravated assault (“started a fight”); the Diagnostic Interview Schedule for Children-Version IV did not contain an item directly inquiring about homicide, which is one of the components of the FBI violent crime index.

As criminal acts such as robbery and sexual assault are relatively rare in the early teen years, I included items more relevant to the developmental stage of early adolescents that also presage later escalation in aggressive acts (Moffitt, 1993). Based on this rationale, I included an item on the physical bullying of non-siblings (“have you bullied someone [non-sibling] like this in the last year?”) and one involving theft of personal property facilitated by the use of physical force or confrontation (“snatched someone’s purse or jewelry?”).

Ultimately, 10 unique items on distinct types of violent acts were summed to create the final early adolescent violence (EAV) variable. I examined the frequency counts of the different iterations (previous 12 months, past 6 months, last 4 weeks) for viability relative to anticipated power and effect size, which resulted in the elimination of the variables for periods other than the previous 12 months. The primary dependent variable used in this dissertation is therefore a categorical variable composed of types of violent acts participants self-reported perpetrating in

the 12 months previous to his or her age 14 interview (see **Table 4.12**); this variable was created for use in regression analyses. I also created a binary version (0 = “None,” 1 = “1 or more acts of violence”) of the categorical variable for use in the univariate and bivariate analyses.

**Table 4.12. Component Items of the Early Adolescent Violence (EAV) Variable**

| <i>Item</i>   |
|---|
| In the last year, have you forced someone to do something sexual with you?              |
| Have you started a fight like this* in the last year?                                   |
| Have you been physically cruel to someone when you weren't in a fight in the last year? |
| In the last year, have you hurt someone with a weapon?                                  |
| Have you bullied someone like this† in the last year?                                   |
| In the last year, have you threatened someone with a weapon?                            |
| In the last year, have you snatched someone's purse or jewelry?                         |
| In the last year, have you ever held someone up or attacked someone to steal from them? |
| In the last year, have you threatened someone in order to steal from them?              |
| Have you started a fire to cause damage or hurt someone in the last year?               |

\*Refers to starting “a physical fight in which someone was hurt or could have been hurt.”

†Refers to “hitting or threatening or scaring someone who is younger or smaller than you or somebody who won't fight back.”

A valid outcome variable was the criterion for inclusion in the final study sample. Of the 522 living members (3 died prior to the age 14 interview) originally recruited into the Southern and Eastern samples, 68% (n = 354) completed the DISC module. I excluded two participants with invalid responses to outcome variable queries, resulting in a final sample size of 352 early adolescents. As was the case with the other scales dependent on participant self-report, there were no significant differences for completion of the DISC CD module by gender during the age 14 participant interviews.

## **5. Data Management**

Participant recruitment occurred between 1986 and 1987. At that time, all current guidelines for the recruitment and protection of human subjects were followed. As the study progressed over time, methods were modified to comply with

both the spirit and letter of human protection guidelines of both the federal and state governments and the relevant institutions (the University of North Carolina at Chapel Hill and the University of Maryland School of Medicine). The University of North Carolina at Chapel Hill Institutional Review Board (IRB #99-0449) approved data collection.

Data from participant and caregiver interviews were collected from 1990 to 1996, and standards for the protection of human subjects current to those periods were followed. Besides gaining informed consent from all parties, mandatory reporting laws were adhered to, and caregivers were informed of clinically significant DISC results. Interviews were voluntary, meaning that interviewees were able to terminate the interview at any time. Participants were allowed to withdraw at any time. Confidentiality has been maintained throughout the duration of the study. Linkages between data and participant identities are strictly guarded at the local sites.

Following data collection in the field, data were entered into a secure database maintained by each site. These data were subsequently conveyed to the Collaborative Studies Coordinating Center (CSCC), which is a division of the Department of Biostatistics of the Gillings School of Global Public Health at the University of North Carolina at Chapel Hill. The CSCC removed the identification codes and other unique information, performed preliminary data cleaning, and resolved discrepancies and inconsistencies, and transmitted the data to the LONGSCAN Coordinating Center.

I received the component datasets based on an initial Statistical Computing Request and subsequent amendments identifying all variables to be analyzed

following an internal review process governed by established LONGSCAN bylaws. I then performed data quality checks to detect missing responses and out-of-range values; decisions concerning outliers were conducted on a case-by-case basis.

Since no data were collected, there are no data collection procedures in this dissertation that posed a threat to the health and wellbeing of the participants meaning this research fell under National Institutes of Health (NIH) exemption 4<sup>4</sup>. (See Appendix K for the IRB approval document covering this study.)

## **6. Power Estimation**

According to Fritz and MacKinnon (2007), the estimated minimum threshold for an appropriate sample size to achieve adequate power (0.80) for the tests for mediated effects in this study is  $n = 118$ . This is based on conservative predictions regarding expected results, informed by the literature on Social Control Theory and mediation in the maltreatment-delinquency and maltreatment-violence literatures. Specifically, this assumes the predicted relationship between childhood neglect and EAV to be partially but substantially mediated ( $\tau' = 0.14$ ). It was expected that the size of the  $\alpha$  paths (childhood neglect  $\rightarrow$  mediator) would be moderate, according to Cohen's (1988) criteria ( $\alpha = 0.39$ ), thus accounting for 13% of the variance.

The  $\beta$  paths (mediator  $\rightarrow$  early adolescent violence) were expected to be moderate ( $\beta = 0.39$ ) as well. An important qualification is that the estimated sample sizes provided by Fritz and MacKinnon (2007) are modeled without measurement

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<sup>4</sup> From the NIH website: "Research that meets the criteria for Exemption 4 is Human Subjects Research, but it is not considered clinical research. Exemption 4 includes research projects involving the collection or study of *existing* data, documents, records, pathological specimens, or diagnostic specimens if these sources are *publicly available* or if the information is recorded by the investigator in such a manner that subjects cannot be identified, directly or through *identifiers* linked to the subjects." (Available at: [http://grants.nih.gov/grants/funding/phs398/instructions2/p2\\_exemption4\\_guidance.htm](http://grants.nih.gov/grants/funding/phs398/instructions2/p2_exemption4_guidance.htm)). This study involves the study of existing data and records from participants that cannot be identified directly or indirectly through linked identifiers.

error. Therefore, a larger sample size was needed, which is why the sample size of  $n = 118$  was identified as the minimum threshold. Since 352 child-caregiver dyads completed valid interviews during the age 14 interview wave, I expected there would be more than sufficient power to detect mediated effects.

## **7. Data Analysis Overview**

### **7.1 Initial Procedures**

Initially, I generated univariate statistics to describe the sample in depth. Simple bivariate comparisons followed; these were conducted within each site sample (Southern and Eastern) to determine whether there were differences between these two samples. Bivariate comparisons were also conducted to determine whether there were significant differences between participants included in subsequent analyses and those who were excluded due to missing data (there were no missing data for sex, race, and maltreatment variables). I did not find any significant differences between participants with missing and non-missing data for each control variable (range of percent missing: 1.42%-6.25%).

I used the complete-subject analysis approach for dealing with missing data, meaning that only subjects with complete variables would be included in multivariate analyses. Therefore, I restricted regression analyses to cases for which there were valid responses for all independent variables ( $n = 312$ ). I found no compelling evidence that the cases with missing responses were significantly different from those retained for analysis as there were no significant differences on the basis of the outcome variable (EAV) between the 11% of participants with at least one



missing independent variable (other than sex, race, or maltreatment) response (n = 40) and the participants retained for analysis.

Since the dependent variable is a count variable with relatively small values (<100), Poisson regression was by default the best analytic option to determine the relationship between exposure to childhood neglect and EAV. Poisson regression is a special case of the Generalized Linear Model that involves strict assumptions about model mean equaling its variance. Consistent with expectations based on the literature (Grunbaum et al., 2004; Ellickson et al., 1997; Saner & Ellickson, 1996), most participants did not report performing any violent behaviors. This resulted in the variance of the outcome variable (0.432) considerably exceeding its mean (0.188). This suggested the outcome data were not Poisson distributed – specifically over-dispersed – because of excessive null values (Long & Freese, 2006). Results of the Cameron and Trivedi (1990) diagnostic test confirmed that assumptions of Poisson regression were violated. Therefore, although I performed diagnostic tests comparing the suitability of Poisson to negative binomial regression (e.g., estimating the natural log of the over-dispersion coefficient), I primarily relied on negative binomial regression (Long & Freese, 2006) for multivariate analyses involving the EAV variable.

I used Intercooled Stata 10.1 (StataCorp, College Station, TX) to conduct all data analyses.

## 7.2 Data Analysis Overview for Manuscript 1 (*The effects of childhood neglect on rates of violence in a sample of high-risk early adolescents*)

The purpose of this study was to describe the relationship between childhood neglect and early adolescent violence while controlling for the effects of other influential variables (Specific Aim 1). I first conducted basic univariate analyses of the independent variables to assess characteristics of the study sample. **Table 4.13** presents the variables used in Manuscript 1.

**Table 4.13. Manuscript 1 Variables**

| <b>Type</b>                             | <b>Measure</b>            | <b>Source</b> |
|---|---------------------------|---------------|
| <b>Independent Variable of Interest</b> | Childhood Neglect         | MMCS          |
| <b>Dependent Variable</b>               | Early adolescent violence | DISC          |
| <b>Covariates</b>                       | Physical Abuse            | MMCS          |
|   | Emotional Abuse           | MMCS          |
|   | Sexual Abuse              | MMCS          |
|   | Sex                       | BKGA          |
|   | Race                      | BKGA          |
|   | Peer criminality          | RBFA          |
|   | Witnessed violence        | HWVA          |
|   | Caregiver education       | DEMB          |
|   | Caregiver depression      | CES-D         |
|   | Caregiver marital status  | DEMB          |
|   | Income                    | DEMB          |
| Collective efficacy                     | NOAA                      |               |
| Site                                    | BKGA                      |               |
| <b>Dummy Variable</b>                   | Maltreatment group        | MMCS          |

I then examined the bivariate relationships between EAV as a binary outcome (0 = no violence reported, 1 =  $\geq 1$  act of violence) and the various independent variables using  $t$ - or  $\chi^2$  tests as appropriate. I also conducted a Pearson product-moment correlation test to assess the co-occurrence of childhood neglect, physical abuse, emotional abuse, and sexual abuse in the study sample.

To address the first research question, I regressed childhood neglect allegations as a continuous variable, simultaneously controlling for allegations of the abuse

subtypes and other covariates (see Table 4.13) on the rate of EAV in a negative binomial regression model. In order to assess the rate of separate types of EAV participants self-reported perpetrating over the 12 months prior to the age 14 interviews, I generated incidence rate ratios (IRR) by exponentiating the beta coefficients generated by the negative binomial regression. Thus, the IRRs produced by this regression express the relationship between childhood neglect and EAV and allow comparison to the relationships between physical, emotional, and sexual abuse and EAV.

Following the regression, I examined the likelihood ratio (LR)  $\chi^2$  and the estimate of the natural log of the over-dispersion coefficient, alpha, which if equal to zero, would indicate that the model would be better estimated using Poisson regression. The results of the LR  $\chi^2$  test ( $\chi^2 (15) = 40.16, p < 0.001$ ) indicated this model was a good fit for the data and the alpha coefficient was significantly different than zero ( $p < 0.0001$ ), reaffirming that negative binomial regression was the appropriate method to test this model.

For the second research question, I created groups based on maltreatment histories. The intent of this analytic step was to provide greater understanding of the effects of neglect, alone and in combination with different forms of abuse. One group (“no-maltreatment”) consisted of all participants with no allegations of any form of maltreatment from birth to age 8. Another group (“neglect-only”) was composed of participants who had allegations of no other form of maltreatment other than neglect from birth to age 8. I created the third group (“neglect + abuse”) to address the second research question, which focused on participants with at least

one allegation of neglect from birth to age 8 and at least one allegation of any form of abuse (i.e., physical, emotional, and sexual) over that same period. The final group (“abuse-only”) was composed of participants who had at least one allegation of any form of abuse from birth to age 8.

By using dummy variables, these groups allowed me to compare the effects of neglect alone, neglect in combination in with abuse, and abuse alone on rates of EAV. I compared the IRR of the maltreated groups to the no-maltreatment group as the reference group to predict the relative effects of each general maltreatment history on EAV; of particular interest was the effect of any exposure to neglect alone on EAV. The prediction of rates for the other types of maltreatment histories provided context by providing a relative comparison to a common reference.

Consistent with the procedures following the first regression, I examined the likelihood ratio (LR)  $\chi^2$  and the estimate of the natural log of alpha of the second regression using dummy variables. The LR  $\chi^2$  test ( $\chi^2 (14) = 38.31, p < 0.001$ ) indicated this model was a good fit for the data and the alpha coefficient was again significantly different than zero ( $p < 0.0001$ ). These results reaffirmed that negative binomial regression was the appropriate method to test this model as well.

I repeated the dummy variable analysis using the neglect-only group as the reference group, which allowed me to examine the effects of a co-occurring history of neglect and abuse and abuse-only to neglect-only. The results of this analysis offered perspective on the effects of neglect on EAV rates relative to the other common maltreatment exposure histories.

### **7.3 Data Analysis Overview for Manuscript 2 (*Exploring social bonds as mediators of the relationship between neglect and early adolescent violence: Findings from a longitudinal study*)**

The second manuscript determined whether social bonds mediated the relationship between childhood neglect and early adolescent violence (specific aim 2). The exploration of whether social bonds mediated the relationship between childhood neglect and EAV was in effect an assessment of Social Control Theory, with the central elements of that theory conceptualized as mediators (see Foshee et al., 1999).

As before, the dependent variable (Early Adolescent Violence, or EAV) was types of violence perpetrated in the previous 12 months, as reported in the CD module of the DISC administered to LONGSCAN participants at the age 14 wave of interviews. Rates of EAV were examined to determine the individual effects of variables of interest while controlling for other potentially influential variables. **Table 4.14** below presents the variables used in Manuscript 2.

**Table 4.14. Manuscript 2 Variables**

| <b>Type</b>                             | <b>Measure</b>            | <b>Source</b> |
|---|---------------------------|---------------|
| <b>Independent Variable of Interest</b> | Childhood Neglect         | MMCS          |
| <b>Dependent Variable</b>               | Early adolescent violence | DISC          |
| <b>Covariates</b>                       | Physical Abuse            | MMCS          |
|   | Emotional Abuse           | MMCS          |
|   | Sexual Abuse              | MMCS          |
|   | Sex                       | BKGA          |
|   | Race                      | BKGA          |
|   | Peer criminality          | RBFA          |
|   | Witnessed violence        | HWVA          |
|   | Caregiver education       | DEMB          |
|   | Caregiver depression      | CES-D         |
|   | Caregiver marital status  | DEMB          |
|   | Income                    | DEMB          |
|   | Collective efficacy       | NOAA          |
| <b>Mediator Variables</b>               | Site                      | BKGA          |
|   | <i>Involvement</i>        | RSFA          |
|   | <i>Belief</i>             | FEQA          |
|   | <i>Commitment</i>         | FEQA          |
|   | <i>Attachment</i>         | MCCA          |

In order to establish that the SCT constructs mediated the relationship between childhood neglect and adolescent violence, it was necessary to first discard moderation as an alternative explanation (Kleinbaum, Kupper, & Morgenstern, 1982). To do so, the independent variable of interest (childhood neglect), each SCT construct, and an interaction term consisting of neglect\*each SCT construct/mediator variable were entered into a regression model with the dependent variable. Significance of each interaction term was evaluated. I found non-significant interaction terms, which ruled out moderation, therefore supporting the further exploration of SCT constructs as mediators of the relationship between childhood neglect and adolescent violence.

Though the Causal Steps approach advocated by Baron and Kenny (1986) results in the lowest level of Type I error (rejecting a null hypothesis when the null

hypothesis is true) among other approaches for evaluating mediation (Holbert & Stephenson, 2003; MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002), Causal Steps is considerably limited. This approach does not provide any sense of magnitude of the relationship and there is no test of significance for the mediation. Therefore, one cannot tell exactly how much of the relationship is mediated, and particularly in the case of smaller samples, whether the finding of mediation did not occur by chance. Most importantly, this approach was developed for the assessment of one mediator in the relationship between one independent variable and one dependent variable.

In the case of my conceptual model, it was necessary to assess multiple mediation pathways simultaneously. When equations are calculated one by one, the residual variance is conditional on the independent variable and, if applicable, the mediator variable. This results in a different metric for the parameter estimates of the different equations. A parallel interest was the maintenance of statistical power and minimization of Type I error. Therefore, I used a product of coefficients test for intervening variable effect approach, which offered the best balance of Type I error rates and statistical power (D. P. MacKinnon, personal communication, March 2, 2009). Specifically, this approach typically has Type I error rates  $< 0.05$  and adequate power to detect medium effects in a sample of at least 100 (MacKinnon et al., 2002). The specific methods I used were adapted for use with a model involving multiple continuous mediators and a categorical outcome variable (MacKinnon, 2008).

I first determined the total effect of childhood neglect on EAV using negative binomial regression with the following equation (MacKinnon, 2008; p. 319):

**Equation 1:**  $Y^* = i_1 + cX + e_1$

Where:

$Y^*$  = dependent variable (early adolescent violence [EAV]), which is the continuous latent variable underlying the categorical variable used in the procedures (MacKinnon, 2008; p. 304).

$X$  = independent variable (childhood neglect [CN]).

$c$  = coefficient of the relationship between the independent (CN) and dependent (EAV) variables; “total effect.”

$i_x$  = intercepts, which are not involved in the estimation of mediated effects.

$e_x$  = unexplained or error variance.

To determine the indirect effects of childhood neglect on EAV, I first constructed five regression models to produce the following equations (MacKinnon, 2008; p. 319):

**Equation 2:**  $Y^* = i_2 + c'X + b_1M_1 + b_2M_2 + b_3M_3 + b_4M_4 + e_2$

**Equation 3:**  $M_1 = i_3 + a_1X + e_3$

**Equation 4:**  $M_2 = i_4 + a_2X + e_4$

**Equation 5:**  $M_3 = i_5 + a_3X + e_5$

**Equation 6:**  $M_4 = i_6 + a_4X + e_6$

Where:

$M_x$  = Mediating variable/mediator  $x$  (i.e., *attachment, involvement, commitment, belief*).



$c'$  = the partial effect of the independent variable (CN) on the dependent (EAV) variable adjusted for the effects of the mediators.

$a_x$  = coefficient of the relationship between the independent variable and the mediator.

$b_x$  = parameter relating the mediator to the dependent variable controlling for the effects of the independent variable.

Equation 2 was estimated using negative binomial regression because of over-dispersion of the study's dependent variable (EAV). Equations 3 through 6 were estimated using OLS regression because the dependent variables in those particular equations were the continuous mediator variables.

I used the seemingly unrelated estimation Stata command to estimate all equations at once. This produced  $a$  and  $b$  estimates along with corresponding confidence intervals (CI). This function was also able to generate estimates based on equations with unequal numbers of cases due to differences in the number of missing cases created by the use of the complete subjects approach. After performing regression diagnostics to ensure conformity to model assumptions<sup>5</sup>, I determined the indirect effects of each mediator by calculating the products of coefficients using  $a*b$  for each mediator variable. Although different forms of regression were used to produce the coefficients, this was not expected to interfere with valid evaluation of the mediators individually or the mediation model overall (D. P. MacKinnon, personal communication, March 2, 2009).

Next, I used the distribution of the product method to perform significance testing of each mediator. I entered each  $a$ , standard error of  $a$ ,  $b$ , and standard error of  $b$

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<sup>5</sup> I did not find violations of regression assumptions (e.g., multicollinearity).

value into the distribution of the product program PRODCLIN2 (MacKinnon, Fritz, Williams, & Lockwood, 2006, 2007) to produce the upper and lower confidence interval for each mediator. Confidence intervals that do not overlap zero are deemed statistically significant (Rothman & Greenland, 1998).

Recent research has suggested that standardization of the *a* and *b* paths is unnecessary for significance testing (D. P. MacKinnon, personal communication, March 3, 2009; MacKinnon, Lockwood, Brown, Wang, & Hoffman, 2007). Moreover, the distribution of the product method is considered to generally be slightly better than bootstrap methods for significance testing (D. P. MacKinnon, personal communication, March 2, 2009; MacKinnon et al., 2007).

## **8. Summary**

In this chapter, I described the methodological components of this dissertation. In addition to recounting the recruitment and characteristics of the two LONGSCAN sites that compose my study sample, all variables that would be used in the analyses for Chapters 5 and 6 were described alongside the sources and construction of those variables. The two chapters which follow, Chapter 5 and 6, execute the data analysis plans for those chapters, as described above. Both of those chapters are self-contained manuscripts suitable for submission to peer-reviewed publications. Chapter 5 implements analyses outlined in section 7.2 of this chapter that are intended to examine the effects of childhood neglect on early adolescent violence. The analyses described in section 7.3 of this chapter are conducted in Chapter 6 in order to assess the theoretical proposition that the relationship between childhood neglect and early adolescent violence is mediated by

social bonds defined according to Social Control Theory. The last chapter, Chapter 7 synthesizes the findings of Chapters 5 and 6 and discusses the implications of these findings for theory, practice, research methods, and future research.

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## **Chapter 5: The Effects of Childhood Neglect on Rates of Violence in a Sample of High-Risk Early Adolescents**

### **Abstract**

*Objectives.* To assess the relationship between the perpetration of early adolescent violence (EAV) measured at age 14 and childhood neglect before age 8 by examining how neglect and other forms of maltreatment affect rates of violence among youth at high-risk for the perpetration of violence.

*Methods.* I performed a secondary analysis of 2 samples of children (N = 352) from the LONGSCAN consortium who were maltreated or at risk of maltreatment. Using negative binomial regressions, I explored relationships among neglect, other forms of maltreatment, ecological factors including peer criminality and witnessing violence, and other covariates to subsequent violent behavior.

*Results.* Almost 11% (n = 38) of 14 year olds in the sample reported perpetrating violence over the previous 12 months. Violent early adolescents engaged in an average of 1.7 different types of violence in that period. The effect of neglect on violence when adjusting for other maltreatment subtypes and covariates was positive but non-significant. Maltreatment history did not appear to significantly affect the rate of violence although in comparison to groups with different

maltreatment profiles, the neglect-only group had the highest rate of violence ( $p > 0.05$ ).

*Conclusions.* Theory would suggest that a potentially productive avenue to prevent adolescent violence is through enhanced prevention of childhood neglect. These preliminary results suggest further exploration of the role childhood neglect plays in the development of violent behavior is warranted.

## Introduction

Young people perpetrate a disproportionate share of violent acts against others (Federal Bureau of Investigation [FBI], 2008). Youth violence erodes the social wellbeing of communities and leads to increased mortality, health care costs, decreased property values, and disruptions in social services for all residents (Mercy, Butchart, Farrington, & Cerda, 2002). Although violent crime rates have declined since 1994 (Butts & Snyder, 2006; FBI, 2008; Rand, 2009) violence committed by younger offenders has increased in recent years (Butts & Snyder, 2006; Rand, 2009). Over \$37 billion in direct medical costs and lost productivity is estimated to result from all interpersonal assaults annually, regardless of perpetrator age (Corso, Mercy, Simon, Finkelstein, & Miller, 2007), with the total costs of youth violence (e.g., incarceration, social services) estimated to exceed \$158 billion (Children's Safety Network Economics & Data Analysis Resource Center, 2000).

A variety of risk and protective factors affect a youth's propensity towards violence (Dahlberg, 1998; Hart & Marmorstein, 2009). Assessment of ecologic context (Andreas & Watson, 2009; Banyard, Cross, & Modecki, 2006; Hart & Marmorstein, 2009; Lauritsen & White, 2001; Liberman, 2007; Zielinski & Bradshaw, 2006) reveals influential factors at the family, household, peer group, and community level. For example, both cohesive family functioning (Andreas & Watson, 2009; Gorman-Smith, Henry, & Tolan, 2004) and living in a community characterized by high collective efficacy (Browning, 2002; Simons, Simons, Burt, Brody, & Cutrona, 2005) are associated with lower risks for involvement in violence. Individual characteristics, such as female gender, are associated with lower risk for violence

(Centers for Disease Control and Prevention, 2008; FBI, 2008; Goodkind, Wallace, Shook, Bachman, & O'Malley, 2009; Steffensmeier, Schwartz, Zhong, & Ackerman, 2005). Conversely, poverty (Bellair & McNulty, 2005; Catalano & Hawkins, 1996; Hart & Marmorstein, 2009; Krivo, Peterson, & Kuhl, 2009), witnessing violence such as community and intimate partner violence ([IPV]; Malik, 2008; Margolin & Gordis, 2000; Moretti, Obsuth, Odgers, & Reebye, 2006; Osofsky, 1995), and peer criminality (Kendler, Jacobson, Myers, & Eaves, 2008; Maschi, Bradley, & Morgen, 2008; Zielinski & Bradshaw, 2006) increase risk for youth violence. Other childhood experiences can also be influential upon later violence (Berkowitz, 1993; Broidy et al., 2003; Dodge, Greenberg, & Malone, 2008).

Child maltreatment is widely regarded as a key risk factor for future violent behavior (Fagan, 2005; Farrington, 1989; Hawkins et al., 2000; Herrenkohl & Herrenkohl 2007; Lemmon, 1999; Logan, Leeb, & Barker, 2009; Maas, Herrenkohl, & Sousa, 2008; Wekerle et al., 2009; Widom, 1989a; Widom & Maxfield, 2001), although the research completed to date makes this association less than definitive as varying approaches have been used to define and measure maltreatment. Operationalizing violence has been equally complex. Differing definitions of maltreatment make comparison across studies difficult (Barnett, Manly, & Cicchetti, 1993), just as frequent reliance on cross-sectional data (Maas et al., 2008) has handicapped efforts to firmly establish causality. Certain predictors of child maltreatment, such as caregiver depression (Kotch, Browne, Dufort, Winsor, & Catellier, 1999; Kotch et al., 1995), family functioning (Brown, Cohen, Johnson, & Salzinger, 1998) and structure (Brown et al., 1998; Heck & Walsh, 2000; Matherne &

Thomas, 2001), and neighborhood characteristics (Coulton, Crampton, Irwin, Spilsbury, & Korbin, 2007; Merritt, 2009) are known risk factors for later aggression and violence (Hawkins et al., 2000; Ohannessian et al., 2005; Stouthamer-Loeber, Wei, Homish, & Loeber, 2002).

Child maltreatment consists of acts of commission (e.g., physical abuse), and acts of omission (i.e., neglect), by caretakers against dependent children. Research investigating the differences between the effects of subtypes of maltreatment has been sparse (Lemmon, 1999, 2006; Widom, 1989b, 1989c; Zingraff, Leiter, Myers, & Johnsen, 1993). An early systematic examination of maltreatment did attempt to compare the relationships of maltreatment subtypes to violent behavior (Widom, 1989a), but most subsequent researchers have only explored the link between violence and physical abuse (Dodge, Bates, & Pettit, 1990; Fagan, 2005; Lansford et al., 2007; Logan et al., 2009; Rebellon & van Gundy, 2005) or closely related constructs such as harsh physical discipline (Farrington, 1989; Magdol, Moffitt, Caspi, & Silva, 1998; Miller & Knutson, 1997). Others have investigated the relationship between violence and maltreatment without differentiating between abuse and neglect (Brezina, 1998; Ireland, Smith, & Thornberry, 2002; Piquero & Sealock, 2000; Smith, Ireland, Thornberry, & Elwyn, 2008).

Although neglect is the most common form of reported maltreatment (Sedlack & Broadhurst, 1996; United States Department of Health and Human Services [USDHHS], 2009), research involving efforts to isolate or disentangle the influence of neglect from other subtypes of later violent behavior has been limited. One of the few studies on this topic initially found neglect to be a robust predictor of subsequent

juvenile court complaints for violent offenses (Zingraff et al., 1993). After controlling for ecological context and other factors, this relationship dissipated, leading the researchers to doubt whether particular maltreatment subtypes or even maltreatment itself actually influenced delinquency or violence. A more recent study (Kotch et al., 2008) suggested further exploration of the connection between neglect and aggression is needed. In an examination of the effects of neglect on aggression in the broader sample from which this study's sample was derived, early neglect (birth to age 2) predicted later aggression (Kotch et al., 2008) at ages 4, 6, and 8. These findings are consistent with contemporary neurobiological research theorizing that the deleterious effects of neglect are most potent in the earlier developmental stages (De Bellis, 2005; Teicher et al., 2004; Toth, Halasz, Mikics, Barsity, & Haller, 2008). Despite this evidence linking early neglect to youth aggression at age 8, it is unclear whether this effect persists into adolescence.

The goal of the current study was to assess the relationship between childhood neglect before age 8 and the perpetration of violence in the last 12 months, measured at age 14 (labeled as Early Adolescent Violence [EAV]), and compare the rate of EAV among neglected youth to rates of those youth with different maltreatment histories or no history of maltreatment. To accomplish this, I assessed the effect of childhood neglect on the rate of EAV controlling for key contextual influences identified above.

## Methods

### Study Sample

This study uses data from two of five sites within the LONGSCAN consortium, a geographically diverse (South, East, Midwest, West, and Northwest) longitudinal study designed to explore the antecedents and consequences of childhood maltreatment. All sites share common measures and data collection strategies. A complete description of the LONGSCAN study design appears elsewhere (Runyan et al., 1998).

I selected the Southern ( $n = 243$ ) and Eastern ( $n = 282$ ) samples for this study because of demographic similarities in these populations. Both were high-risk for maltreatment but no members of either sample had been reported to social services at the time of recruitment. I restricted the study sample to those who completed the age 14 interview module on Conduct Disorder. Sixty-eight percent ( $N = 354$ ) of the 522 living members of the originally recruited study sample were eligible. Three subjects had died, and I excluded two participants with invalid responses to outcome variable queries, resulting in a final sample size of 352 early adolescents ( $M_{\text{age}} = 14.5$  [ $SD = 0.51$ ]).

### Variables<sup>1</sup>

Study participants and their caretakers had been interviewed in English in five waves (child ages 4, 6, 8, 12, and 14). Caretaker reports from the first wave provided participant demographics, with all remaining variables except maltreatment taken from the fifth wave (age 14). (See Appendices for the sources of variables.)

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<sup>1</sup> Please refer to the LONGSCAN website (<http://www.iprc.unc.edu/longscan/>) for more information on the measurement of variables, including scales and coding of maltreatment data.



### ***Outcome variable: Early Adolescent Violence (EAV)***

I summed items from the Conduct Disorder module of the NIMH Diagnostic Interview Schedule for Children-Version IV ([DISC]; Shaffer & Fisher, 1997) to create the outcome variable. The DISC was administered using audio computer assisted self-interview (A-CASI) methods (Knight, Smith, Martin, Lewis, & the LONGSCAN Investigators, 2008).

I extracted items involving use of weapons (“threatened with a weapon”) and actions intended to cause harm to another person (“physically cruel when not fighting;” “arson with intent to cause harm”). I then reviewed the remaining items guided by the age-neutral FBI violent crime index (FBI, 2008) and selected non-redundant items pertaining to rape (“forced someone to do something sexual”), robbery (“held someone up or attacked somebody to steal from them”), and aggravated assault (“started a fight”), including physical bullying of non-siblings.

Ultimately, I selected 10 unique items on separate types of violent acts committed in the previous 12 months (see **Table 5.1**). For the regression analyses, I summed those items to create a count variable representing the different types of violence perpetrated by participants in the 12 months prior to the age 14 interview. I also created a binary version (0 = “none”; 1 = “1 or more acts of violence”) of the categorical variable.

### ***Maltreatment***

The primary independent variable was child maltreatment allegations from birth to age 8. I used all allegations without regard to substantiation; behavioral and developmental outcomes of children with histories of unsubstantiated maltreatment

allegations do not differ significantly from those with substantiated allegations (Hussey et al., 2005; Kohl, Jonson-Reid, & Drake, 2009; Leiter, Myers, & Zingraff, 1994).

Data on maltreatment histories of the sample were gathered through regular reviews of social services records. Trained case record reviewers visited Child Protective Services agencies in counties of residence to abstract and code non-redundant maltreatment allegations pertaining to the subject using the Modified Maltreatment Classification Scheme (MMCS) protocol (English & the LONGSCAN Investigators, 1997). LONGSCAN cross-site inter-rater reliability for allegation coding using the MMCS (mean  $k = 0.76$ ) protocol is between (Munoz & Bangdiwala, 1997) “substantial” and “almost perfect.”

I reviewed the 27 MMCS emotional maltreatment codes, using the 22 involving acts of commission (e.g., “The caregiver often belittles or ridicules the child”) to create the Emotional Abuse variable, excluding five codes corresponding exclusively to emotional neglect or witnessed IPV.

The three MMCS emotional maltreatment codes involving acts of omission were combined with the codes involving physical neglect to construct the Neglect variable. It was not possible, using the MMCS, to reliably establish whether witnessed IPV was an act of emotional abuse or neglect. Moreover, witnessed IPV is similar in effect to general measures of witnessed violence on the manifestation of later violent behavior (Margolin & Gordis, 2000; Osofsky, 1995). I therefore did not use the two MMCS codes but rather accounted for witnessed IPV in a combined witnessed violence variable described below.

The Physical and Sexual Abuse variables were unaltered from the MMCS meaning specific acts within the rubric of each of these maltreatment subtypes follow conventional definitions. **Table 5.2** provides the prevalence of maltreatment, overall and delineated by the 4 different types of maltreatment examined in this study.

### ***Other Risk Factors for Early Adolescent Violence (EAV)***

I sought to control for 2 additional independent variables based on evidence suggesting exposure to delinquent peer influences (Kendler et al., 2008; Zielinski & Bradshaw, 2006) and witnessed violence including IPV (Edleson, 1999; Herrenkohl, Sousa, Tajima, Herrenkohl, & Moylan, 2008; Hornor, 2005; Johnson et al., 2002) can confound the relationship between child maltreatment and EAV (Table 5.2).

The Risk Behaviors of Family and Friends survey (see Appendix C) from child interviews ( $\alpha = 0.83$ ) was used to assess the influence of peer criminality. I created this variable by selecting and summing 6 items that directly addressed criminal behaviors of peers. All items were scored on a 3-point scale (“none of my friends” = 0, “some of my friends” = 1, “most of my friends” = 2). The resulting continuous variable had acceptable internal consistency ( $\alpha = 0.72$ ).

To control for the effects of all forms of witnessed violence, I created a corresponding variable by summing selected items from the previously developed measure within the LONGSCAN consortium’s History of Witnessed Violence Survey administered at age 14 (see Appendix D). I used 7 self-reported items scored on a 4-point scale (“Never” = 0, “1 time” = 1, “2-3 times” = 2, “4 or more times” = 3). The variable summed scores on items involving the participant’s direct observation of violent actions in the last year without regard to victim or victim’s relationship to the

participant. This variable therefore encompasses both household and community violence.

### **Covariates**

I selected variables corresponding to subject, caregiver, household, and neighborhood characteristics guided by relevant published literature and ongoing LONGSCAN consortium research (Kotch et al., 2008; Saluja, Kotch, & Lee, 2003). In keeping with previous studies (Duncan, Brooks-Gunn, & Klebanov, 1994; Kotch et al., 2008), I included a dummy variable for site to account for variations in recruitment strategies and other unmeasured differences between the two sites.

Caregiver interviews conducted concurrent to age 14 participant interviews were the source of the caregiver, household, and neighborhood demographic covariates listed in Table 5.2.

### **Statistical Analysis**

Basic descriptive analyses of the variables were conducted to assess the characteristics of the study sample. I also examined the bivariate relationships between EAV as a binary outcome and the other variables using either  $t$  or  $\chi^2$  tests (Table 5.2). Pearson's correlation coefficients tested co-occurrence of Physical Abuse, Emotional Abuse, Sexual Abuse, and Neglect.

I used negative binomial regression models to predict EAV rates in the regression models because of over-dispersion relative to the Poisson distribution (Long & Freese, 2006). To assess EAV rates, I generated incidence rate ratios (IRR) by exponentiating the beta coefficients returned by the negative binomial regressions. In this study, the IRR expresses the relationship between exposure to

maltreatment and diversity of types of violent behavior perpetrated in the 12 months preceding the age 14 interviews.

The first regression analysis simultaneously tested 4 maltreatment type allegations as separate continuous variables in my model, controlling for demographic and other explanatory variables enumerated earlier (**Table 5.3**). This model assessed the effect of any childhood neglect along with other maltreatment subtypes on violence in the sample.

I then used dummy coding to create 4 groups reflecting the most common histories of maltreatment from ages 0-8 to isolate the effects of neglect (No maltreatment; Neglect-only; Neglect and any combination of Physical, Emotional or Sexual Abuse; Any combination of Physical, Emotional, or Sexual Abuse without Neglect). I used the “No maltreatment” group as the reference category and the same covariates used in the prior model to conduct a multivariate regression comparing the rates of violence in the maltreated groups to the reference group (**Table 5.4**).

To maintain data integrity, case-wise deletion for cases with incomplete data on any of the variables included in the regression models was used. The 11% (n = 40) of excluded cases did not differ significantly from those retained for analysis.

## **Results**

### ***Descriptive findings***

Table 5.2 presents the descriptive statistics of the study sample. The overwhelming majority of subjects (83%) identified as minority (non-Hispanic) race, mirroring the composition of the study sample at recruitment. Fifty-two percent of

the sample was female ( $n = 183$ ). The typical annual household income was evenly split between those with caregivers who reported annual income between 2000 and 2005 under \$20,000 and those reporting \$20,000 or more in income; the modal category was \$15,000 - \$19,999 per year ( $n = 55$ ; 16.7%).

Nearly a third of the sample (32%) had a history of at least one allegation of maltreatment before age 8. Neglect was the most common allegation, with 28% of the study sample found to have at least 1 allegation of neglect from birth to age 8. All subtypes were positively correlated with each other ( $p < 0.001$ ). Neglect and physical abuse were the most strongly correlated maltreatment subtypes ( $r = 0.43$ ). More females than males experienced sexual abuse ( $p = 0.041$ , Fisher's exact), but gender was not significantly associated with any other maltreatment subtype.

Table 5.2 also compares the statistics of subjects who did not engage in EAV (89%) to those who did (11%). Subjects who engaged in EAV reported involvement in an average of 1.7 violent behaviors over the 12 months preceding the interview. There were no racial differences in engagement in violence.

Almost twice as many females ( $n = 24$ ) than males ( $n = 14$ ) reported engaging in EAV in the past 12 months. Although this sex difference was not statistically significant, participants who engaged in EAV in the previous 12 months scored more than 150% higher on the Peer Criminality index (2.84 vs. 1.12,  $p < 0.001$ ) and nearly twice as high on the Witnessed Violence index (4.50 vs. 2.44,  $p < 0.001$ ) than those who did not engage in violence.

### ***Effects of Maltreatment Subtypes and Key Covariates on EAV***

Both sex and the risk behaviors of participants' peers were significantly associated with increased rates of violence. The female EAV rate was more than double that of males ( $p = 0.042$ ) when adjusting for all other covariates. There was also a significant positive relationship ( $p < 0.001$ ) between scores on the Peer Criminality index and EAV when controlling for maltreatment and other variables. Although not statistically significant, increased neglect allegations predicted a higher rate of EAV when adjusting for the other subtypes of maltreatment and covariates (Table 5.3). Interestingly, though also not achieving statistical significance, both physical and emotional abuse were inversely related to EAV rate.

### ***Maltreatment History and Prediction of Violence***

Table 5.4 shows the results of the regression analysis that used dummy coding to compare the effects of the different histories of maltreatment on EAV. Though none of these comparisons are statistically significant, the neglect-only group experienced a rate of violence (IRR = 1.32; CI = 0.49, 3.53) that was higher than that of the other three groups (no maltreatment, neglect and any abuse, abuse only). In contrast, the rate of EAV among participants with a history of neglect and abuse was approximately 74% lower than the reference rate (no maltreatment). Relative to the group that had experienced both abuse and neglect, the EAV rate in the neglect-only group was over 5 times greater.

Peer criminality continued to be an important covariate in this regression model ( $p < 0.001$ ). Also, the rate of EAV reported by females remained approximately double the rate of males ( $p = 0.054$ ).

## Discussion

Results of the multivariate analyses are inconclusive. However, they are suggestive that neglect may play a role in the development of early adolescent violence, indicating a need for further investigation. When controlling for various individual, family, and community factors, the rate of EAV among teens exposed to neglect from birth to age 8 tended to be higher than for other teens without a history of maltreatment. This pattern was consistent within the study sample as neglected teens also reported a higher rate of violence than teens with other maltreatment profiles. A higher rate of violence in early adolescence often prefaces subsequent escalation of these behaviors in both severity and frequency (Nagin & Land, 1993; Nagin & Tremblay, 1999). Although the low incidence of EAV in this study limited drawing definitive conclusions, the results appear to be consistent with a growing body of evidence that suggests neglect may be as influential as physical abuse on the development of aggressive behavior in youth (Chapple, Tyler, & Barsani, 2005; Gilbert et al., 2009; Kotch et al., 2008).

Many previous studies (Hawkins et al., 2000; Herrenkohl & Herrenkohl, 2007; Lansford et al., 2007; Lemmon, 1999; Logan et al., 2009; Maas et al., 2008; Rebellon & van Gundy, 2005) on the relationship between child maltreatment and violence suggest prior physical abuse leads to higher rates of violence than other forms of maltreatment. My results do not support this. I could not, however, effectively isolate the effects of physical abuse alone in the second regression because of the extremely small number of participants with that maltreatment history ( $n = 8$ ). One conclusion, supported by examination of the correlations between



subtypes of maltreatment, is that a childhood history involving physical abuse rarely occurs in isolation from other types of maltreatment.

It is puzzling that a maltreatment history that included allegations of neglect and at least one form of abuse appeared protective against involvement in violence. This finding diverges from most prior research on the effects of neglect and abuse. However, multiple forms of co-occurring maltreatment might be more likely to garner the attention of child welfare authorities, resulting in access to treatment and services. If participants who experienced multiple forms of co-occurring maltreatment were in fact more likely to become involved with child welfare services, my findings are consistent with studies that examined the positive effects on behavioral health of early identification by, and involvement in, the child welfare system (Jonson-Reid, 2002; Jonson-Reid & Barth, 2000; Lemmon, 1999). These findings could therefore reflect the potential for involvement with child welfare services in childhood to disrupt the development of violent behaviors in early adolescence (Hawkins, Catalano, Kosterman, Abbott, & Hill, 1999).

Even though females with a history of abuse and neglect engage in violence in higher proportions than matched non-maltreated females (English, Widom, & Branford, 2002; Maxfield & Widom, 1996; Widom & Maxfield, 2001), most studies consistently find males more likely to engage in violence, and when violent, commit more violent acts than females (FBI, 2008; Pollock, Mullings, & Crouch, 2006). It was therefore unexpected that female participants would report higher rates of EAV than males. This finding contributes to growing evidence of distinct, complex gender differences in the development, diagnosis, and potential prevention of youth violence

(Brown, Chesney-Lind, & Stein, 2007; Lansford et al., 2007; Thurnherr, Berchtold, Michaud, Akre, & Suris, 2008). These results suggest further research is needed to explore whether the effect of maltreatment on patterns of violent behavior differs according to sex.

When considered in conjunction with my findings on neglect, the association between increased peer criminality and higher EAV rates might suggest that the effects of deficient caretaking, often characteristic of neglect, may continue into adolescence via inadequate supervision and monitoring of peer relations. This is consistent with research that established the capacity of parents to disrupt the associations between deviant peers and antisocial behavior (Galambos, Barker, & Almeida, 2003) and the relative stability of parenting attitudes and behaviors over time (Dallaire & Weinraub, 2005; Holden & Miller, 1999). Based on this study, however, it is unclear whether peer criminality mediates the relationship between neglect and EAV. Due to concerns that controlling for peer criminality when it was in fact a mediating variable would artificially attenuate the relationship between neglect and EAV, I conducted regression analyses omitting the peer criminality variable. The regression results were unchanged, which indicated no significant impact on the effect of neglect (*results not shown*).

Viewing childhood neglect as an exposure that disrupts socialization and formation of social bonds provides a paradigm within which to understand the particular findings of this study. The fundamental nature of neglect, defined by caretaker failure to provide adequate attention and nurturance, impedes socialization

and thus the internalization of conventional norms and values (Lemmon, 1999; Shoemaker, 1984) such as resolving conflict without aggression.

### **Study Limitations**

There are a number of limitations to this study. The relative rarity of violent behavior in this age group combined with the size of the sample resulted in few participants with measured EAV. This limited power and analytic options, particularly since case-wise deletion was used.

The full impact that excluded cases and those lost to follow-up had on this study is unknown. Although efforts were made to interview those known to be in detention, I could not definitively determine how many cases lost to follow up were incarcerated. It is also unclear whether those in detention or possibly under investigation for delinquent acts did, in fact, report their violent activities accurately.

It also cannot be determined whether some participants who did not participate in age 14 interviews avoided them due to involvement in or unwillingness to disclose violent behavior; violence is a socially censured behavior, and full disclosure carries potential legal hazards. It is therefore conceivable – and likely – that the occurrence of violence was underreported in this sample. Accordingly, it is unknown whether the failure to find significant relationships where ones were anticipated truly reflected the experiences of the participants or factors that promoted avoidance or suppression of accurate self-report. Nevertheless, self-report is arguably the most reliable option to collect these types of data (Thornberry & Krohn, 2000). Also, data on violence were collected via self-report using A-CASI methods, which are proven

to lead to higher levels of disclosure of sensitive behaviors and quality of data (Newman et al., 2002; Turner et al., 1998) than comparable approaches.

Many incidents of maltreatment – possibly the majority (Sedlak & Broadhurst, 1996) – were not accounted for in the data, as most studies estimate that only a fraction of actual incidents are reported to the authorities (Shaffer, Huston, & Egeland, 2008; Swahn et al., 2006). Nonetheless, certain socioeconomic factors, such as poverty and minority race or ethnicity are known to elevate the likelihood that maltreatment allegations will be lodged against a caretaker (Ards, Myers, Chung, Malkis, & Hagerty, 2003; Barnett et al., 1993; Lane, Rubin, Monteith, & Christian, 2002; Swahn et al., 2006), producing a systematic bias. The composition of the study sample – although limiting generalizability – likely diffused this bias, as caregivers were primarily minority and low-income (Runyan et al., 1998).

### **Implications for the Future**

Recent data show rates of violence committed by young people are rising (Butts & Snyder, 2006; Rand, 2008). By itself, this indicates the need for better initiatives to prevent violence committed by this population. Even before this rise in violence became clear, there were calls to apply the public health approach to the prevention of violence in general (Pridemore, 2003), and to juvenile criminal violence in particular (USDHHS, 2001; Welsh, 2005).

Current estimates approximate the cost of adjudicating, incarcerating, and attempting to rehabilitate offenders who were maltreated as children at over \$35 billion in 2007 dollars (Wang & Holton, 2007). Effective prevention of violent behaviors in teens should begin early in development, as my results reaffirm the

importance of childhood experiences on later behaviors. The finding that early teens neglected as children consistently reported the highest rate of involvement in different violent acts suggests a potentially fruitful avenue to prevent violence through enhanced prevention of childhood neglect. Proactive interventions designed to prevent development of deficient caretaking, such as home visitation and mentorship by nurses or trained community members, have shown promise in reducing the incidence of neglect and other forms of maltreatment and may thus eventually influence the occurrence of violence among early adolescents (DuMont et al., 2008; Gonzalez & MacMillan, 2008; Olds et al., 1998). A related implication is that the prevalent belief that exposure to only physical abuse predisposes one to violence may lead to inefficient allocation of resources.

Further research disentangling the developmental effects of neglect is needed. Child development and criminology investigators have suggested that compromised social bonds predispose children to delinquency and violence (Catalano & Hawkins, 1996; Chapple, McQuillan, & Berdahl, 2005; Hirschi, 1969; Shoemaker, 1984). The fundamental nature of neglect suggests disrupted bonding to caretakers. Greater understanding of the pathways through which early neglect may increase the odds of adolescent violence could be useful in developing more effective efforts to disrupt this link, potentially leading to appreciable reductions in victimization, incarceration, and other costs to society.

**Table 5.1—Component items of the Early Adolescent Violence (EAV) outcome variable<sup>a</sup>**

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| <b>Item</b>   |
|---|
| In the last year, have you forced someone to do something sexual with you?        |
| Have you started a fight like this <sup>b</sup> in the last year?                 |
| Have you been physically cruel to someone when you weren't in a fight in the last |
| In the last year, have you hurt someone with a weapon?                            |
| Have you bullied someone like this in the last year?                              |
| In the last year, have you threatened someone with a weapon?                      |
| In the last year, have you snatched someone's purse or jewelry?                   |
| In the last year, have you ever held someone up or attacked someone to steal from |
| In the last year, have you threatened someone in order to steal from them?        |
| Have you started a fire to cause damage or hurt someone in the last year?         |

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<sup>a</sup>All items appear in the Diagnostic Interview Schedule for Children-Version IV Conduct Disorder module.

<sup>b</sup>Refers to starting "a physical fight in which someone was hurt or could have been hurt."

**Table 5.2—Univariate and Bivariate Statistics of Demographic Characteristics, Child Maltreatment, and Ecological Factors, by Early Adolescent Violence (EAV), Age 14 LONGSCAN Interview**

|  | Total<br>(N = 352) | No EAV<br>(n = 314) | EAV<br>(n = 38) |
|--|--------------------|---------------------|-----------------|
| <b>Child Characteristics</b>             |                    |                     |                 |
| Sex                                      |                    |                     |                 |
| Female                                   | 183 (52%)          | 159 (51%)           | 24 (63%)        |
| Male                                     | 169 (48%)          | 155 (49%)           | 14 (37%)        |
| Race                                     |                    |                     |                 |
| White, non-Hispanic                      | 61 (17%)           | 54 (17%)            | 7 (18%)         |
| Non-white, non-Hispanic                  | 291 (83%)          | 260 (83%)           | 31 (82%)        |
| Peer Criminality*** (mean, SD) n = 344   | 1.31 (1.6)         | 1.12                | 2.84 (2.16)     |
| Witnessed Violence** (mean, SD) n =      | 2.66               | 2.44                | 4.50 (3.43)     |
| <b>Caregiver Characteristics</b>         |                    |                     |                 |
| Caregiver Education* (n = 347)           |                    |                     |                 |
| Less than HS diploma/GED                 | 92 (27%)           | 85 (28%)            | 7 (18%)         |
| High school Diploma/GED                  | 167 (48%)          | 151 (49%)           | 16 (42%)        |
| More than High school/GED                | 88 (25%)           | 73 (24%)            | 15 (39%)        |
| Caregiver Depression (mean, SD) n =      | 11.5               | 11.4                | 12.7 (12.2)     |
| CES-D >=16                               | 94 (27%)           | 82 (27%)            | 12 (33%)        |
| Marital Status (n = 347)                 |                    |                     |                 |
| Married                                  | 117 (34%)          | 108 (35%)           | 9 (24%)         |
| Not Married                              | 230 (66%)          | 201 (65%)           | 29 (76%)        |
| <b>Household Characteristics</b>         |                    |                     |                 |
| Income (n = 330)                         |                    |                     |                 |
| Less than \$20,000/year                  | 166 (50%)          | 147 (50%)           | 19 (50%)        |
| \$20,000/year or more                    | 164 (50%)          | 145 (50%)           | 19 (50%)        |
| <b>Neighborhood Characteristics</b>      |                    |                     |                 |
| Collective Efficacy (mean, SD) (n = 340) | 2.88               | 2.89                | 2.82 (0.33)     |
| <b>Childhood Maltreatment</b>            |                    |                     |                 |
| Maltreatment allegations, age 0-8*       |                    |                     |                 |
| None                                     | 240 (68%)          | 212 (68%)           | 28 (74%)        |
| Neglect                                  | 98 (28%)           | 89 (28%)            | 9 (24%)         |
| Physical Abuse                           | 35 (9.9%)          | 34 (11%)            | 1 (2.6%)        |
| Emotional Abuse                          | 26 (7.4%)          | 24 (7.6%)           | 2 (5.3%)        |
| Sexual Abuse                             | 16 (4.6%)          | 16 (5.1%)           | 0               |

*Note.* SD = standard deviation; GED = General Equivalency Diploma; CES-D = Center for Epidemiologic Studies Depression Scale. Percentages may not add to 100% due to rounding.  
\* $P < .10$ ; \*\* $P < .001$ ; \*\*\* $P < .00001$

**Table 5.3—Incidence Rate Ratios (IRRs) From Negative Binomial Regression Predicting Early Adolescent Violence (EAV) in the Past 12 Months, n =312**

|  | Model 1<br>IRR (95% CI) |
|--|-------------------------|
| <b>Child Characteristics</b>                   |                         |
| Sex**  | 0.45 (0.21, 0.97)       |
| Race   | 0.91 (0.30, 2.6)        |
| Peer Criminality***                            | 1.53 (1.22, 1.91)       |
| Witnessed Violence                             | 1.08 (0.96, 1.22)       |
| <b>Caregiver Characteristics</b>               |                         |
| Caregiver Education                            |                         |
| Less than HS diploma/GED                       | 1.00                    |
| High School Diploma/GED                        | 1.25 (0.46, 3.45)       |
| More than High School/GED                      | 1.74 (0.56, 5.38)       |
| Caregiver Depression                           | 1.03 (0.99, 1.06)       |
| Marital Status                                 | 1.69 (0.68, 4.20)       |
| <b>Household Characteristics</b>               |                         |
| Income   | 1.07 (0.92, 1.24)       |
| <b>Neighborhood Characteristics</b>            |                         |
| Collective Efficacy                            | 1.01 (0.41, 2.49)       |
| Site <sup>a*</sup>                             | 2.15 (0.91, 5.08)       |
| <b>Childhood Maltreatment</b>                  |                         |
| Maltreatment allegations, age 0-8 <sup>b</sup> |                         |
| Neglect  | 1.04 (0.88, 1.22)       |
| Physical Abuse                                 | 0.90 (0.44, 1.83)       |
| Emotional Abuse                                | 0.43 (0.07, 2.55)       |

*Note.* CI = confidence interval; GED = General Equivalency Diploma. Caregiver depression measured using the Center for Epidemiologic Studies Depression (CES-D) scale. Total sample size N = 352.

<sup>a</sup>Southern site is the reference category.

<sup>b</sup>Sexual abuse not shown; no measurable effect detected due to insufficient allegations.

\* $P < 0.10$ ; \*\* $P < 0.05$ ; \*\*\* $P < 0.0001$



**Table 5.4—Incidence Rate Ratios (IRRs) From Negative Binomial Regression Prediction of Early Adolescent Violence (EAV) in the Past 12 Months Using Dummy Coded Maltreatment (Age 0-8) Categories, n = 312**

|   | Model 2<br>IRR (95% CI) |
|---|-------------------------|
| <b>Child Characteristics</b>                        |                         |
| Sex*  | 0.47 (0.22, 1.01)       |
| Race  | 1.00 (0.33, 3.04)       |
| Peer Criminality**                                  | 1.53 (1.21, 1.92)       |
| Witnessed Violence                                  | 1.08 (0.96, 1.23)       |
| <b>Caregiver Characteristics</b>                    |                         |
| Caregiver Education                                 |                         |
| Less than HS diploma/GED (Ref)                      | 1.00                    |
| High School Diploma/GED                             | 1.38 (0.48, 3.92)       |
| More than High School/GED                           | 1.89 (0.58, 6.11)       |
| Caregiver Depression                                | 1.03 (0.99, 1.06)       |
| Marital Status                                      | 1.75 (0.71, 4.32)       |
| <b>Household Characteristics</b>                    |                         |
| Income  | 1.08 (0.93, 1.26)       |
| <b>Neighborhood Characteristics</b>                 |                         |
| Collective Efficacy                                 | 0.96 (0.39, 2.35)       |
| Site <sup>a*</sup>                                  | 2.41 (0.99, 5.85)       |
| <b>Childhood Maltreatment</b>                       |                         |
| Maltreatment Categories <sup>b</sup>                |                         |
| No maltreatment (Ref)                               | 1.00                    |
| Neglect-only relative to no maltreatment            | 1.32 (0.49, 3.53)       |
| Abuse <sup>c</sup> only relative to no maltreatment | 1.20 (0.20, 7.16)       |
| Neglect + Abuse relative to no                      | 0.26 (0.05, 1.40)       |

*Note.* CI = confidence interval; GED = General Equivalency Diploma. Caregiver depression measured using the Center for Epidemiologic Studies Depression (CES-D) scale. Total sample size N = 352.

<sup>a</sup>Southern site is the reference category.

<sup>b</sup>Based on allegations of maltreatment.

<sup>c</sup>Includes any allegation involving physical abuse, emotional abuse, or sexual abuse.

\* $P < 0.10$ ; \*\* $P < 0.0001$

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## ***Chapter 6: Exploring Social Bonds as Mediators of the Relationship between Neglect and Early Adolescent Violence: Findings from a Longitudinal Study***

### **Abstract**

*Objectives.* I assessed whether social bonds (attachment, commitment, involvement, belief), defined according to Social Control Theory (SCT), mediated the relationship between neglect before age 8 on the perpetration of early adolescent violence (EAV) measured at age 14.

*Methods.* I performed a secondary analysis of 2 samples of children (N = 352) from the LONGSCAN consortium and used the product of coefficients approach to simultaneously assess the multiple specific indirect effects of social bonds on the neglect-EAV relationship.

*Results.* Almost 11% (n = 38) of the sample reported perpetrating violence over the previous 12 months. Bivariate analysis revealed nonviolent teens had stronger attachment ( $p < 0.001$ ), belief ( $p < 0.001$ ), and commitment ( $p = 0.004$ ) bonds than violent teens. Based on multivariate analyses, attachment ( $p = 0.04$ ) and commitment ( $p = 0.05$ ) bonds had significant negative effects on violence but social bonds did not mediate the neglect-EAV relationship and no significant relationships between neglect and social bonds were detected.

*Conclusions.* One avenue to understand and reduce EAV is through examining the potential mediating role of social bonds in preventing the initiation of violence among adolescents who have experienced neglect as children.

## Introduction

Following nearly a decade of decline, violence perpetrated by young people has increased since 2004 (Butts & Snyder, 2006; Rand, 2009). An estimated one-third to one-half of high school-aged youth commit at least one act of violence annually (Centers for Disease Control and Prevention [CDC], 2004; Ellickson & McGuigan, 2000; Grunbaum et al., 2004), affecting victims and resulting in tremendous social and economic costs to communities and society at large (Children's Safety Network Economics & Data Analysis Resource Center, 2000; Mercy, Butchart, Farrington, & Cerda, 2002). Thus, it is important to identify precursors to youth violence as well as the mechanisms through which youth become violent.

Childhood maltreatment has been consistently associated with youth violence (Hawkins et al., 1998; Hawkins et al., 2000; Hollist, Hughes, & Schaible, 2009; Hosser, Raddatz, & Windzio, 2007; Loeber & Farrington, 2000; Maas, Herrenkohl, & Sousa, 2008; Miller, Cohen, & Wiersema, 1996; Smith, Ireland, Thornberry, & Elwyn, 2008; Widom, 1989; Widom & Maxfield, 2001; Wolfe, Crooks, Chiodo, & Jaffe, 2009). Specifically, individuals exposed to neglect, a type of childhood maltreatment, are more likely to become involved in violent delinquency when compared with others who were physically or sexually abused or demographically similar peers (Chapple, Tyler, & Bersani, 2005; McCord, 1983; Widom, 1989; Zingraff, Leiter, Myers, & Johnsen, 1993).

Most recently, Kotch et al. (2008) found neglect before age 2 predicted aggression at ages 4, 6, and 8, Margolis (unpublished data, 2010; see Chapter 5) ascertained that a cohort of mostly 14-year olds with a history of neglect in early

childhood (birth to age 8) reported involvement in more types of serious violence than peers with different maltreatment histories (e.g., abuse only) or with no history of maltreatment.

The fundamental nature of neglect, defined by caregiver failure to provide adequate attention and nurturance, impedes attachment to caregivers (Crittenden & Ainsworth, 1989; Dubowitz, Black, Starr, & Zuravin, 1993; Holden & Nabors, 1999) and may reduce involvement in socially acceptable activities (Chapple et al., 2005; Dubowitz et al., 1993; Gottfredson & Hirschi, 1990). Impaired attachments and lack of exposure to appropriate socialization opportunities can affect social and behavioral development in a number of ways (Lee & Hoaken, 2007). For example, internalization of conventional norms and values, such as resolving conflict without aggression, is compromised (Garbarino & Collins, 1999; Lemmon, 2006; Shoemaker, 1984).

Social Control Theory (SCT) offers a theoretical framework within which to examine why neglected children appear to be at increased risk of becoming violent adolescents. In this conceptualization, four types of social bonds (attachment, belief, involvement, and commitment) suppress impulses and inclinations towards violent and other prohibited behaviors (Hirschi, 1969). Within the SCT framework, the fundamental social bond is *attachment* to valued adults, usually parents and other key caregivers, who provide youth with approval and attention. Youth with strong attachments conform to conventional codes of conduct to avoid jeopardizing their relationships with caregivers (Hirschi, 1969). Conformity is rewarded by the approval and attention of these valued adults, leading to acceptance of social norms



(Hirschi, 1969). Acceptance of conventional codes of conduct, according to SCT, leads to *belief* in prevailing morals (Hirschi, 1969). *Involvement* in socially accepted activities restricts engagement in violent and antisocial behavior by preoccupying youth and reducing the amount of time available to associate with antisocial peers. The fourth social bond is one's perceived stake in society, such as prospects for future success. When youth have high levels of *commitment* to prosocial endeavors, they are concerned with success and devote more time to conventional behaviors, such as schooling, which increase prospects for achievement (Hirschi, 1969).

Impaired social bonds have been consistently associated with increased adolescent violence and other forms of antisocial behavior (Banyard, Cross, & Modecki, 2006; Brezina, 1998; Catalano, Haggerty, Oesterle, Fleming, & Hawkins, 2004; Catalano & Hawkins, 1996; Chapple, McQuillan, & Berdahl, 2005; Chapple et al., 2005; Costello & Vowell, 1999; Egeland, Yates, Appleyard, & van Dulmen, 2002; Foshee, Baumen, & Linder, 1999; Gardner & Shoemaker, 1989; Gover, 2002; Hart & Marmorstein, 2009; Herrenkohl, Huang, Tajima, & Whitney, 2003; Hildyard & Wolfe, 2002; Hirschi, 1969; Huebner & Betts, 2002; Junger & Marshall, 1997; Kierkus & Baer, 2002; Ozbay & Ozcan, 2006; Ozbay & Ozcan, 2008; Payne & Salotti, 2007; Rodriguez & Weisburd, 1991; Salts, Lindholm, Goddard, & Duncan, 1995; Teague, Mazerolle, Legosz, & Sanderson, 2008; Thaxton & Agnew, 2004; Weinfield, Sroufe, & Egeland, 2000; Wiatrowski, Griswold, & Roberts, 1981; Wright, Caspi, Moffitt, & Silva, 1999). Explorations of the developmental impacts of childhood maltreatment have found that maltreatment appears to impair later development of social bonds

with caregivers, peers, and important institutions such as schools (Egeland et al., 2002; Weinfield et al., 2000). Taken together, this suggests social bonds may mediate the relationship between childhood maltreatment and violence. Research using this paradigm to disentangle the relationship between maltreatment and violent delinquency is sparse (Benda & Corwyn, 2002; Brezina, 1998; Herrenkohl et al., 2003; Rebellon & van Gundy, 2005; Zingraff, Leiter, Johnsen, & Myers, 1994). No published study has investigated whether social bonds affect the relationship between neglect and violence.

The principal aim of this study was to assess whether impaired social bonds mediated the effects of neglect before age 8 on the perpetration of adolescent violence measured at age 14 (labeled Early Adolescent Violence [EAV]). I hypothesized that neglect would predict weaker social bonds, and in turn, that weaker social bonds would predict involvement in more types of violent behavior by 14 year-olds.

## **Methods**

### **Study Sample**

This study used data from two of five sites within the Longitudinal Studies of Child Abuse and Neglect (LONGSCAN) consortium, a geographically diverse longitudinal study designed to explore the antecedents and consequences of childhood maltreatment. All sites share common measures and data collection strategies. Parent-child dyads participated in comprehensive interviews at the child's induction into the study at age 4 and ages 6, 8, 12, and 14. These interviews tracked the health, development, life events, service utilization, and ecological

context of child and caregiver. A complete description of the LONGSCAN study design is reported elsewhere (Runyan et al., 1998).

I selected the Southern (n = 243) and Eastern (n = 282) sites because of similarities in demographics and recruitment strategy. They were each recruited based on high-risk for maltreatment rather than referral to social services for suspected maltreatment. No members of either sample had been reported to social services at time of recruitment. The study sample was restricted to the 354 participants who completed the age 14 interview module on Conduct Disorder, constituting 68% of the 522 living members of the original sample. I excluded 2 participants with invalid responses to outcome variable queries, resulting in a final sample size of 352 adolescents ( $M_{\text{age}} = 14.5$  years [SD = 0.51]).

### **Measures<sup>1</sup>**

This study used self-report measures and case record data. Caregivers reported participant demographics in the first wave of interviews (age 4), with all remaining variables except maltreatment taken from the fifth wave (age 14). (See Appendices for the sources of variables.) Data on the main independent variable of interest, neglect from birth to age 8, and other aspects of participant maltreatment history, were collected through biannual reviews of case records maintained by local Children's Protective Services (CPS) agencies. Trained case record reviewers visited CPS agencies in participants' counties of residence to abstract and code non-redundant maltreatment allegations using the Modified Maltreatment Classification

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<sup>1</sup> Please refer to the LONGSCAN website (<http://www.iprc.unc.edu/longscan/>) for more information on the measurement of variables, including scales and coding of maltreatment data.

Scheme (MMCS) protocol; cross-site inter-rater reliability (Munoz & Bangdiwala, 1997) mean  $k = 0.76$ .

### ***Early Adolescent Violence (EAV)***

Data comprising the EAV variable, derived from the Conduct Disorder module of the Diagnostic Interview Schedule for Children-Version IV (DISC), had been obtained using audio computer assisted self-interview (A-CASI) methods (Knight, Smith, Martin, Lewis, & the LONGSCAN Investigators, 2008). The DISC includes 10 items (see **Table 6.1**) that capture different types of violent acts participants self-reported as having committed in the previous 12 months, including use of weapons, sexual assault, robbery, and aggravated assault. Because criminal acts such as robbery and sexual assault are relatively rare in the early teen years, items more relevant to the developmental stage of early adolescents that also presage later escalation in aggressive acts were included (Scott, 1999). The selected items were summed to create a count variable. I also dichotomized (0 = “none”; 1 = “one or more acts of violence”) within the EAV variable.

### ***Neglect***

The principal independent variable was neglect allegations from birth to age 8. I considered all neglect allegations without regard to substantiation because behavioral and developmental outcomes of children with histories of unsubstantiated allegations have not been found to differ significantly from those with substantiated allegations (Hussey et al., 2005; Kohl, Jonson-Reid, & Drake, 2009; Leiter, Myers, & Zingraff, 1994).

Most allegations included in the neglect variable involved physical neglect. Allegations incorporated under this rubric pertain either to failure to provide, which includes medical neglect, or to lack of supervision, including instances where the child was left alone or in the care of an unsuitable caretaker. I also incorporated 3 emotional maltreatment codes into the Neglect variable, including allegations the caregiver ignored or refused to acknowledge the child's bids for attention, was inattentive to or unaware of the child's needs for affection and positive regard, and instances in which the caregiver abandoned the child for over 24 hours without any indication of when or if he or she would return.

### ***Social Bonds***

To assess social bonds, I used the original conceptualizations of SCT constructs (Hirschi, 1969) to guide creation of an index for each social bond, as measured in the age14 participant interviews.

#### ***Attachment***

Attachment is defined as the interest and value one places on maintaining important relationships with prosocial caregivers, peers, and schools. I summed 6 items from the Mother-Child Relationship scale (adapted from ADD Health (Resnick et al., 1997)) to capture this construct ( $\alpha = 0.83$ ). All items were measured on a 1-5 scale, with response options for 2 of the items ranging from "Not at all" = 1 to "Very much" = 5, with the remaining items measured 1 = "Never" to 5 = "Always." The resulting summary score ranged from 6-30, with higher scores indicating stronger attachment.

### ***Commitment***

This construct is conceptualized as one's investment or stake in current or future achievement and success (e.g., current material resources, apparent prospects for future employment). I summed selected items from the LONGSCAN-developed Future Events Questionnaire (e.g., "How likely is it that you will have a successful career?") to measure this social bond. The 5 items composing this variable were measured on a 1-5 scale (1 = "Very unlikely" to 5 = "Very likely"), resulting in a possible range of 5-25 ( $\alpha = 0.85$ ). Higher scores indicated greater commitment.

### ***Involvement***

Involvement quantifies one's degree of engagement in conventional activities, such as sports and hobbies. To quantify this social bond, I used 11 items from the LONGSCAN-developed Resilience Factors scale (e.g., "Have you ever been part of a sports team?"). Because all items were dichotomous (0 = "No," 1 = "Yes"), I calculated the Kuder-Richardson coefficient of reliability ( $\rho = 0.74$ ). Higher scores indicated greater involvement.

### ***Belief***

This construct reflects belief in conventional expectations, morals, values, and norms, traditionally evaluated through assessing acceptance or rejection of "middle-class values" (Hirschi, 1969). I created the belief index ( $\alpha = 0.72$ ) by summing responses to 7 items selected from the LONGSCAN-developed Future Events Questionnaire. Items assessed the shunning of middle-class values by asking respondents to rate the likelihood (5 = "Very likely" to 1 = "Very unlikely") of outcomes counter to conventional norms and expectations, such as going on welfare or having

a child out of wedlock, occurring later in their lives. To maintain consistency with the other mediators, I reverse scored this index. Therefore, higher summary scores (range: 5-35) reflected stronger beliefs in conventional norms and expectations.

### ***Covariates***

To isolate the effects of neglect from birth to age 8 on EAV, I controlled for all other allegations of maltreatment, including emotional, physical, and sexual abuse; these varied “acts of commission” were also captured through case record reviews. I used MMCS emotional maltreatment codes involving acts of commission (e.g., “The caregiver often belittles or ridicules the child”) to create the Emotional Abuse variable. Both the Physical and Sexual Abuse variables were unaltered from the MMCS; specific acts within the rubric of these maltreatment subtypes follow conventional definitions.

In addition to the abuse variables, I selected additional control variables corresponding to participant, caregiver, household, and neighborhood characteristics. Caregiver interviews conducted concurrently with age 14 participant interviews were the source of the demographic covariates listed in **Table 6.2**. In keeping with previous studies (Duncan, Brooks-Gunn, & Klebanov, 1994; Kotch et al., 2008), I included a dummy variable for site to account for variations in recruitment strategies and other unmeasured differences between the Eastern and Southern samples.

I also controlled for 2 possible confounders (Hawkins et al., 2000; Loeber & Farrington, 2000; Maschi, Bradley, & Morgen, 2008; Zielinski & Bradshaw, 2006) (peer criminality and witnessed violence) of the relationship between child

maltreatment and EAV using additional variables derived from age 14 participant interviews. I used the Risk Behaviors of Family and Friends survey to create a summary score of 6 items scored on a 3-point scale (“none of my friends” = 0, “some of my friends” = 1, “most of my friends” = 2) that asked about criminal behaviors of peers ( $\alpha = 0.72$ ). To control for the effects of all forms of violence witnessed by the participant in the previous 12 months, including both intimate partner violence and community-based violence, I created a corresponding variable by summing 7 items scored on a 4-point scale (“Never” = 0, “1 time” = 1, “2-3 times” = 2, “4 or more times” = 3) from an existing measure within the LONGSCAN consortium’s History of Witnessed Violence Survey administered at age 14 ( $\alpha = 0.72$ ).

### **Statistical Analysis**

Using Intercooled Stata 10.1 (StataCorp, College Station, TX), I conducted basic descriptive analyses to assess the characteristics of the study sample. I also examined the bivariate relationships between EAV as a binary outcome and the other variables performing tetrachoric correlations and  $t$  or  $\chi^2$  tests as appropriate (Table 6.2).

Due to the skewed distribution and overdispersion of the EAV variable relative to the Poisson distribution, I used a negative binomial regression equation (Long & Freese, 2006) to assess the direct effects of neglect and each social bond on acts of violence. Also, I used centered social bond variables to enable comparison of coefficients. I conducted a mediation analysis (MacKinnon, 2008) to determine whether social bonds mediated the effect of neglect on violence. This analysis produced coefficients of the direct effect of neglect on violence ( $c'$ ) and of each



social bond on violence (e.g.,  $b_1$ ; see **Figure 6.1**). I simultaneously regressed each mediating variable on neglect using ordinary least squares (OLS) models to determine the effects of neglect on each social bond. Each of these regressions generated a coefficient reflecting the effect of neglect on that social bond (e.g.,  $a_1$ ). To maintain data integrity, I used case-wise deletion for cases with incomplete data on any of the variables included in the regression models.

To generate the specific indirect effect of each mediator, I calculated the products of the coefficients of the effect of neglect on each social bond with that of the corresponding social bond on violence (e.g.,  $a_1 * b_1$ ). I used PRODCLIN2 (MacKinnon, Fritz, Williams, & Lockwood, 2006) to generate confidence intervals for each product of coefficients.

## **Results**

### ***Study sample***

The final sample included 352 children, 168 from the Southern site and 184 from the Eastern site. The majority of subjects (83%) identified as minority non-Hispanic (Table 6.2), mirroring composition of the study sample at recruitment. Fifty-two percent of the sample was female ( $n = 183$ ). The typical annual household income was evenly split between those with caregivers who reported annual income under \$20,000 and those reporting \$20,000 or more. Nearly a third of the sample (32%) had at least 1 allegation of maltreatment before age 8. Neglect was the most common form of maltreatment, with 28% ( $n = 98$ ) of the study sample having at least 1 neglect allegation from birth to age 8.

As shown in Table 6.2, 11% of the children ( $n = 38$ ) reported having engaged in at least one type of EAV by the age 14 interview. Participants who engaged in EAV reported involvement in an average of 1.7 violent behaviors over the 12 months preceding the age 14 interview. Though race did not differentiate those who did or did not engage in EAV, a higher proportion of females (63%) than males (37%) reported that they had engaged in EAV in the past 12 months.

### ***Correlates of violence***

Strength of social bonds differed substantially between violent and nonviolent adolescents. As expected, nonviolent teens had stronger attachment, belief, and commitment bonds than violent teens. The greatest difference was for the attachment bond, with the average score of nonviolent teens 0.47 points higher ( $t(344) = 4.11, p < 0.001$ ) than violent teens. Participants who did not report engagement in violence over the previous 12 months reported a significantly higher ( $t(336) = 3.58, p < 0.001$ ) average score on the belief index than peers who reported engagement in EAV. The mean score of nonviolent teens on the commitment index was also significantly higher ( $t(342) = 2.69, p = 0.004$ ) than the mean score of teens. The involvement bond did not differ significantly on the basis of self-reported EAV.

Participants who engaged in EAV in the previous 12 months scored more than 150% higher on the Peer Criminality index ( $M: 2.84$  vs.  $1.12, p < 0.001$ ) and nearly twice as high on the Witnessed Violence index ( $M: 4.50$  vs.  $2.44, p < 0.001$ ) than those who did not engage in EAV.

### ***Relationship of neglect with violence***

The direct effect of childhood neglect on EAV ( $c'$ ) was positive but not statistically significant ( $\beta = 0.085, p = 0.399$ ; see Figure 6.1).

### ***Relationship of neglect with social bonds***

I did not find significant relationships between neglect and any social bonds. There was an inverse relationship between neglect and belief ( $\beta = -0.036, p = 0.17$ ) as well as commitment ( $\beta = -0.013, p = 0.61$ ). Neglect and the attachment ( $\beta = 0.024, p = 0.27$ ) and involvement ( $\beta = 0.018, p = 0.46$ ) constructs, however, were positively related.

### ***Relationship of social bonds with violence***

I found an inverse relationship between social bonds and EAV perpetration. The attachment ( $\beta = -0.39, p = 0.04$ ) and commitment ( $\beta = -0.41, p = 0.05$ ) bonds had the strongest negative effects on violence. The effects of the belief ( $\beta = -0.24, p = 0.22$ ) and involvement ( $\beta = -0.14, p = 0.47$ ) variables on EAV were not significant.

### ***Mediation Analysis***

Social bonds did not mediate the relationship between childhood neglect and EAV in this sample. None of the specific indirect effects of attachment (95% CI = -0.032, 0.006), belief (95% CI = -0.005, 0.032), commitment (95% CI = -0.014, 0.029), and involvement (95% CI = -0.015, 0.006) were significant (see **Table 6.3**). Although point estimates of attachment (-0.009) and involvement (-0.003) bonds were negative as hypothesized, the belief (0.009) and commitment (0.005) bonds were positive, counter to my hypotheses.

## Discussion

Though inconclusive, these results suggest social bonds may influence the perpetration of violence by early adolescents. Nonviolent teens had stronger attachment, belief, and commitment bonds than teens reporting violent behaviors. Although involvement was not statistically different for violent and nonviolent teens, this result is consistent with related research on peer influence suggesting the potent influence of peers on each other's behavior (Sullivan, 2006) overwhelms the putative effects of involvement bonds on suppressing antisocial behavior (Hawdon, 1999; Lauderdale, 1984).

For the belief and commitment constructs, my hypothesis that neglect weakens social bonds received some support. This was not the case for the attachment and involvement bonds. It is unclear whether the absence of evidence of a deleterious effect of neglect on these bonds was due to methodological limitations or to the impact of participant involvement with child welfare services that might have strengthened attachments or provided opportunities for youth to become involved in supervised prosocial activities (Jonson-Reid & Barth, 2000; Lemmon, 2006; Mallett, Dare, & Seck, 2009; Muller & Mihalic, 1999).

Despite the lack of statistical significance, mediated effects may have been present (MacKinnon, Fairchild, & Fritz, 2007; Preacher & Hayes, 2008a; Preacher & Hayes, 2008b). Measurement error, collinearity between mediators, insufficient statistical power, and mediators of opposing signs that counteracted other effects are possible reasons why the mediated effects are not statistically significant (MacKinnon, Fairchild, & Fritz, 2007; Preacher & Hayes, 2008a; Preacher & Hayes,

2008b). Nonetheless, SCT may help explain perpetration of violence among a sample of maltreated youth. More work remains to be done to determine the possible mediating role of social bonds in the relationship between neglect and EAV, as well as possible synergistic effects of neglect with other types of maltreatment.

It was surprising that twice as many females engaged in violence as males, although this finding is consistent with emerging evidence of increasing rates of violence among adolescent females (Brown, Chesney-Lind, & Stein, 2007; Lansford et al., 2007; McGloin & Widom, 2001; Thurnherr, Berchtold, Michaud, Akre, & Suris, 2008; Vincent, Odgers, McCormick, & Corrado, 2008). This pattern differs considerably from a substantial literature (Archer, 2004; CDC, 2008; Kellermann & Mercy, 1992; Kosterman, Graham, Hawkins, Catalano, & Herrenkohl, 2001; Marcus, 2009; Moffitt, 1993; Pollock & Davis, 2005; Stewart, Livingston, & Dennison, 2008; Warner, Weist, & Krulak, 1999) identifying male gender as one of the strongest predictors for perpetrating violence.

### **Study Limitations**

Because the independent and dependent variables involve socially censured behaviors, both were likely undercounted. Most studies estimate only a fraction of maltreatment is ever reported (Briere, 1992; Sedlak & Broadhurst, 1996; Shaffer, Huston, & Egeland, 2008; Swahn et al., 2006). Only 11% of this sample reported violence, limiting my ability to detect significant mediation. The low percentage of participants reporting violence – although not uncommon – was unexpected. I suspect some participants failed to reveal violent behaviors. It is also possible there was differential loss to follow-up on the basis of sex, with males manifesting violence

at an earlier age or of greater severity resulting in placement with alternative caregivers or involvement with the juvenile justice system, making them unavailable for age 14 interviews.

Because this was a secondary analysis, I had to create measures for key variables such as social bonds, peer criminality, and witnessed violence using proxies based on preexisting items. Although internal consistency was acceptable for all social bond measures and factor analyses revealed one-factor solutions for each index, I cannot be certain my measures of the constructs were valid.

### **Implications for research**

To the extent that weak social bonds predict increased self-reported violence in early adolescents, there may be important implications. For one, efforts to strengthen social bonds in children with a history of childhood neglect appear to hold promise in reducing the risk of these individuals subsequently engaging in violence. The gender difference in my sample suggests intriguing directions for subsequent studies, such as explorations of whether the developmental effects of neglect vary by sex, particularly in relation to manifestation of violent behavior. Further exploration of this topic can help guide development of more effective prevention and intervention programs tailored to the different needs of males and females.

Greater understanding of the pathways through which childhood neglect influences adolescent violence can lead to more effective efforts to curtail violent behavior, leading to potential reductions in victimization and incarceration. Further research is needed to disentangle the etiology of violence in neglected and other maltreated youth. Determining whether social bonds mediate the relationship

between neglect and EAV with more precise measures of social bonds and larger samples will help establish the validity of this preliminary explanatory paradigm. Parallel studies testing the suitability of this framework for other forms of maltreatment could provide better understanding of the influences on development of adolescent violence in maltreated youth and highlight avenues through which to disrupt the maltreatment-violence link.

### **Implications for practice**

This research demonstrates the power of peer influence. In the school setting, teens with minor behavioral difficulties, or at high-risk for failure, are commonly isolated. Separating youth with behavioral problems from their peers, however, overlooks the potential influence of prosocial peers and the importance of positive environments for adolescents. Often, positive peers are themselves segregated, leaving classrooms to be dominated by antisocial peers. Development of strategies to expose high-risk adolescents to positive peers and environments require further consideration, implementation, and evaluation.

Building on existing knowledge about reducing future delinquency in maltreated youth (Jonson-Reid, 2002; Jonson-Reid & Barth, 2000; Lemmon, 2006; Mallett et al., 2009), tailored interventions aimed at strengthening bonds potentially should be examined further as a means of boosting the effectiveness of the services provided to those children already displaying violent behaviors or tendencies. Assessing the social bonds of all children who come into contact with child welfare services may aid in identifying those at increased risk for later perpetration of violence. Given that teachers and school staff have extended periods of exposure to children and

potential to form lasting bonds and relationships with students, improved training of teachers and school staff to recognize signs of neglect and coordination with social services may be a strategy to explore for reducing violence among those with weak social bonds.

Efforts to help youth strengthen attachments to caregivers, prosocial peers, and institutions might also be fruitful avenues for preventing future violent behaviors. Similarly, services and initiatives oriented towards increasing achievement in school and the development of other skills may function not only to increase bonds to prosocial adults, peers, and institutions but also to strengthen the commitment bond as participating youth concurrently develop positive perceptions of their prospects for future success in conventional society. For policymakers who rely on economic evaluations to guide allocation of scarce resources, the potential benefits to public health and savings in future incarceration, adjudication, and other costs could provide a persuasive economic advantage to this approach.



**Table 6.1—Component items of the Early Adolescent Violence (EAV) outcome variable<sup>a</sup>**

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| <b>Item</b>   |
|---|
| In the last year, have you forced someone to do something sexual with you?              |
| Have you started a fight like this <sup>b</sup> in the last year?                       |
| Have you been physically cruel to someone when you weren't in a fight in the last year? |
| In the last year, have you hurt someone with a weapon?                                  |
| Have you bullied someone like this in the last year?                                    |
| In the last year, have you threatened someone with a weapon?                            |
| In the last year, have you snatched someone's purse or jewelry?                         |
| In the last year, have you ever held someone up or attacked someone to steal from them? |
| In the last year, have you threatened someone in order to steal from them?              |
| Have you started a fire to cause damage or hurt someone in the last year?               |

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<sup>a</sup>All items appear in the Diagnostic Interview Schedule for Children-Version IV Conduct Disorder module.

<sup>b</sup>Refers to starting "a physical fight in which someone was hurt or could have been hurt."

**Table 6.2—Univariate and Bivariate Statistics of Demographic Characteristics, Ecological Factors, Social Bonds, and Child Maltreatment, by Early Adolescent Violence (EAV), Age 14 LONGSCAN Interview**

|   | Total<br>(N = 352) | No EAV<br>(n = 314) | EAV<br>(n = 38) |
|---|--------------------|---------------------|-----------------|
| <b>Child Characteristics</b>              |                    |                     |                 |
| Sex                                       |                    |                     |                 |
| Female                                    | 183 (52%)          | 159 (51%)           | 24 (63%)        |
| Male                                      | 169 (48%)          | 155 (49%)           | 14 (37%)        |
| Race                                      |                    |                     |                 |
| White, non-Hispanic                       | 61 (17%)           | 54 (17%)            | 7 (18%)         |
| Non-white, non-Hispanic                   | 291 (83%)          | 260 (83%)           | 31 (82%)        |
| Peer Criminality**** (mean, SD) n = 344   | 1.31 (1.6)         | 1.12 (1.47)         | 2.84 (2.16)     |
| Witnessed Violence**** (mean, SD) n = 346 | 2.66 (3.09)        | 2.44 (2.97)         | 4.50 (3.43)     |
| <b>Caregiver Characteristics</b>          |                    |                     |                 |
| Caregiver Education (n = 347)             |                    |                     |                 |
| Less than HS diploma/GED                  | 92 (27%)           | 85 (28%)            | 7 (18%)         |
| High school Diploma/GED                   | 167 (48%)          | 151 (49%)           | 16 (42%)        |
| More than High school/GED*                | 88 (25%)           | 73 (24%)            | 15 (39%)        |
| Caregiver Depression (mean, SD) n = 343   | 11.5 (9.88)        | 11.4 (9.59)         | 12.7 (12.2)     |
| CES-D $\geq 16^a$                         | 94 (27%)           | 82 (27%)            | 12 (33%)        |
| Marital Status (n = 347)                  |                    |                     |                 |
| Married                                   | 117 (34%)          | 108 (35%)           | 9 (24%)         |
| Not Married                               | 230 (66%)          | 201 (65%)           | 29 (76%)        |
| <b>Household Characteristics</b>          |                    |                     |                 |
| Income (n = 330)                          |                    |                     |                 |
| Less than \$20,000/year                   | 166 (50%)          | 147 (50%)           | 19 (50%)        |
| \$20,000/year or more                     | 164 (50%)          | 145 (50%)           | 19 (50%)        |
| <b>Neighborhood Characteristics</b>       |                    |                     |                 |
| Collective Efficacy (mean, SD) (n = 340)  | 2.88 (0.49)        | 2.89 (0.50)         | 2.82 (0.33)     |
| <b>Social Bonds</b>                       |                    |                     |                 |
| Attachment**** (mean, SD) n = 346         | 25.7 (4.07)        | 26.0 (3.87)         | 23.1 (4.79)     |
| Commitment** (mean, SD) n = 344           | 20.1 (4.01)        | 20.3 (3.94)         | 18.4 (4.20)     |
| Involvement (mean, SD) n = 341            | 5.14 (2.68)        | 5.09 (2.64)         | 5.55 (2.98)     |
| Belief*** (mean, SD) n = 338              | 26.8 (4.53)        | 27.1 (4.42)         | 24.4 (4.73)     |
| <b>Childhood Maltreatment</b>             |                    |                     |                 |
| Maltreatment allegations, age 0-8         |                    |                     |                 |
| None                                      | 240 (68%)          | 212 (68%)           | 28 (74%)        |
| Neglect                                   | 98 (28%)           | 89 (28%)            | 9 (24%)         |
| Physical Abuse                            | 35 (9.9%)          | 34 (11%)            | 1 (2.6%)        |
| Emotional Abuse                           | 26 (7.4%)          | 24 (7.6%)           | 2 (5.3%)        |
| Sexual Abuse                              | 16 (4.6%)          | 16 (5.1%)           | 0               |

Note. Percentages may not add to 100% due to rounding

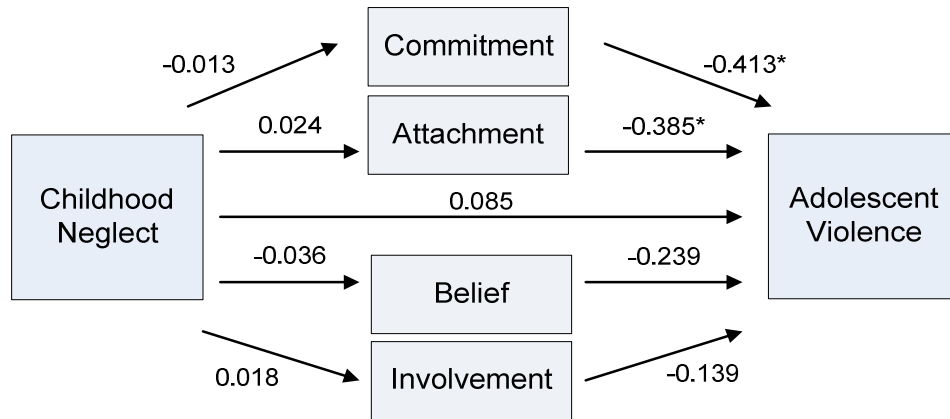
<sup>a</sup>CES score of 16 is the threshold for clinical depression (Radloff, 1977).

\*:  $P < 0.05$ ; \*\*:  $P < 0.01$ ; \*\*\*:  $P < 0.001$ ; \*\*\*\*:  $P < 0.0001$

**Table 6.3—Estimates of Specific Indirect Effects from the Multiple Mediator Model, n = 312**

| <b>Mediators</b>   | <b><i>Specific Indirect Effects</i></b> | <b>95% CI of Mediated Effect</b> |       |
|--------------------|---|----------------------------------|-------|
|                    |   | Lower                            | Upper |
| Belief             | 0.0086                                  | -0.005                           | 0.032 |
| <i>Attachment</i>  | -0.0094                                 | -0.032                           | 0.006 |
| <i>Commitment</i>  | 0.0052                                  | -0.014                           | 0.029 |
| <i>Involvement</i> | -0.0025                                 | -0.015                           | 0.006 |

*Note.* CI = Confidence Interval.



*Note.* Controlling for physical, emotional, and sexual abuse; gender; race; peer criminality; witnessed violence; caregiver education, depression, and marital status; collective efficacy; and site. The sample size was  $N = 352$ . Total effect( $c$ ) = 0.035.

\* $p < 0.05$

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Figure 6.1—Indirect and direct effects of childhood neglect on early adolescent violence when mediated by social bonds

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## **Chapter 7: Discussion and Synthesis**

### **1. Overview**

The primary purpose of this dissertation was to explore the effect of childhood neglect on the perpetration of early adolescent violence (EAV). Secondly, I investigated whether social bonds mediated the effects of childhood neglect on EAV. Overall, there appeared to be some support for my predictions. I found numerous relationships in the direction of my hypotheses but these relationships were rarely statistically significant. This chapter synthesizes the findings of Chapters 5 and 6 and discusses implications of the findings for public health theory, practice, research methods, and future investigations.

### **2. Summary and Synthesis of Findings**

Similar to recent population-based assessments (United States Department of Health and Human Services [USDHHS], 2009, 2010) and consistent with other studies (Jones & McCurdy, 1992; Sabol, Coulton, & Polousky, 2004), childhood neglect was the most common form of maltreatment exposure in the study sample, with nearly one-third (28%) having at least one neglect allegation before age 8. In contrast, the prevalence of violent acts committed in the previous 12 months was substantially lower than what was expected based on previous research (Centers for Disease Prevention and Control, 2004a, 2004b, 2006, 2008; Ellickson & McGuigan, 2000; Grunbaum et al., 2004). Only 11% (n = 38) of the final sample self-reported engaging in at least one act of violence in the previous 12 months, which was

significantly less ( $p < 0.001$ ) than the conservative estimate of 20% in 13 and 14 year-olds assumed for power calculations (Fritz & MacKinnon, 2007).

Even though the relationship between childhood neglect and EAV was not significant, childhood neglect nonetheless appeared to influence the perpetration of EAV. Support for my hypotheses was mixed (see **Table 7.1**).

Chapter 5 explored my first two research questions. The hypothesis for the first research question (RQ) was partially supported; when all maltreatment subtypes were simultaneously tested, any neglect from ages 0-8 predicted a higher incidence rate ratio (IRR) of self-reported EAV (1.04) than physical (0.90) or emotional (0.43) abuse<sup>1</sup>. This finding differed from others who have suggested that physical abuse is the most influential on the development of violent behavior (Dodge, Bates, & Pettit, 1990; Fagan, 2005; Farrington, 1989; Lansford et al., 2007; Logan, Leeb, & Barker, 2009; Magdol, Moffitt, Caspi, & Silva, 1998; Miller & Knutson, 1997; Rebellon & van Gundy, 2005). Although this result was not statistically significant, it suggested that each allegation of neglect predicted a 4% increase in EAV rate relative to those without any maltreatment.

The hypothesis for the second RQ was only partially supported. I found that the highest IRR for EAV of the four groups (no maltreatment [reference group], neglect-

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<sup>1</sup> Due to insufficient allegations of sexual abuse, I could not detect a measurable effect attributable to sexual abuse. Interestingly, at least one allegation of sexual abuse was attributed to 16 of 314 (5.1%) participants who did not report engagement in EAV in the previous 12 months in comparison to none in the group of 38 participants who did report EAV. This difference was not statistically significant ( $X^2(1) = 2.03$ ;  $p > 0.05$ ) but consistent with previous research suggesting that a history of sexual abuse does not affect future involvement in most types of violent behavior, such as those comprising this dissertation's outcome variable (Widom, 1995, 1996; Widom & Ames, 1994). Others have found that a history of sexual abuse significantly increases the odds for committing sexual assault *after* age 14 (Loh & Gidycz, 2006). At least three-quarters of juvenile sex offenders were sexually abused prior to becoming offenders (Hunter, Figueredo, Malamuth, & Becker, 2003), but it would be unlikely that any of their offending behaviors would be self-assessed or categorized as violent behavior using the DISC.

only, abuse-only, neglect and abuse) was that of the neglect-only group (IRR = 1.32). Moreover, the IRR of the neglect-only group was 9.58% higher than that of the abuse-only group. These findings, although consistent with previous work suggesting neglect is potentially the most influential maltreatment subtype on the development of aggressive and violent behavior (Chapple, Tyler, & Bersani, 2005; Gilbert et al., 2009; Kotch et al., 2008; McCord, 1983; Widom, 1989; Widom & Maxfield, 2001; Wolfe, Crooks, Chiodo, & Jaffe, 2009; Zingraff, Leiter, Myers, & Johnsen, 1993), were not statistically significant, although the IRR of the neglect-only group was five times (IRR = 5.04) the IRR of the neglect and abuse group.

In Chapter 6, I investigated the final four research questions. Social bonds, conceptualized in line with the core constructs of Social Control Theory, did not mediate any of the relationships between childhood neglect and EAV. I did find, however, that nonviolent teens had stronger attachment, belief, and commitment bonds than those who exhibited violent behaviors. Weakened social bonds predicted greater self-reported EAV, as three of the four social bonds were significantly weaker among participants who reported perpetration of EAV in the previous 12 months. However, multivariate testing revealed that exposure to neglect, alone or in combination with other types of maltreatment before age 8, did not uniformly presage weakened social bonds as I had expected. Rather, the effect of childhood neglect on the social bond constructs was inconsistent and lacking in statistical significance.

There was scant support for the third RQ hypothesis. Not only did *involvement* bonds not mediate the relationship between childhood neglect and EAV, the



relationship between neglect and involvement did not achieve statistical significance and trended in the opposite direction of what was hypothesized ( $\beta = 0.018$ ;  $p = 0.463$ ).

Consistent with my hypothesis for the fourth RQ, increased childhood neglect predicted weaker *belief* bonds, which presaged higher EAV rates. Those relationships, however, were not statistically significant. Similarly, I did not find that belief significantly mediated the relationship between childhood neglect and EAV.

Among the four RQs addressed in the second manuscript, the fifth hypothesis had the most – albeit limited – support. *Commitment* did not mediate the childhood neglect-EAV relationship, but the relationships between neglect and commitment as well as between commitment and EAV were as expected. Moreover, the hypothesized relationship between commitment and EAV, where weaker commitment bonds predicted higher self-reported EAV, was statistically significant.

The hypothesis for the sixth and last RQ was not supported in that *attachment* was not found to significantly mediate the relationship between childhood neglect and EAV. Also counter to my hypothesis, childhood neglect did not appear to weaken the attachment bond. Although the positive relationship between childhood neglect and attachment was fairly weak and not significant, this was unanticipated with neglectful treatment by a caregiver expected to result in weaker attachment of the child to that caregiver (Crittenden & Ainsworth, 1989; Hildyard & Wolfe, 2002). Countering this finding was the significant effect of *attachment* on EAV; as predicted, weaker *attachment* bonds resulted in a higher EAV rate.

**Table 7.1. Summary of Research Questions, Hypotheses, and Findings**

| <b>Research Question</b>  | <b>Hypothesis</b>  | <b>Support for Hypothesis</b>  |
|---|--|--|
| <b>Specific Aim 1:</b> Describe the relationship between childhood neglect before age 8 and the perpetration of adolescent violence in the last 12 months, measured at age 14.        |  |  |
| <b>RQ<sub>1a</sub>:</b> What is the effect of childhood neglect on the rate of early adolescent violence?   | <b>H<sub>1a</sub>:</b> Neglected youths will commit violence against others at a higher rate than non-maltreated participants will.  | <b>Limited:</b> Neglected youth reported a higher rate of violence than non-maltreated participants but this finding was not significant.  |
| <b>RQ<sub>1b</sub>:</b> Does rate of early adolescent violence among youth with a history of neglect-only differ from that of other-maltreated (abuse-only, abuse and neglect) youth? | <b>H<sub>1b</sub>:</b> Youths with a history of only neglect will commit violence against others at a higher rate than other-maltreated youths.  | <b>Limited:</b> Participants in the neglect-only group reported the highest rate of EAV relative to youth with different maltreatment histories but this finding was not significant.                              |
| <b>Specific Aim 2:</b> Determine whether social bonds mediate the relationship between childhood neglect before age 8 and perpetration of early adolescent violence.                  |  |  |
| <b>RQ<sub>2a</sub>:</b> Does <i>involvement</i> mediate the relationship between childhood neglect and early adolescent violence (EAV)?   | <b>H<sub>2a</sub>:</b> <i>Involvement</i> will mediate the relationship between childhood neglect and EAV such that more neglect allegations predict weaker <i>involvement</i> bonds, which presage increased EAV rates. | <b>Not supported</b>   |
| <b>RQ<sub>2b</sub>:</b> Does <i>belief</i> mediate the relationship between childhood neglect and early adolescent violence (EAV)?  | <b>H<sub>2b</sub>:</b> <i>Belief</i> will mediate the relationship between childhood neglect and EAV such that increasing allegations of neglect predict weaker <i>belief</i> bonds, which forecast greater EAV rates.   | <b>Limited:</b> <i>Belief</i> was not a significant mediator of the childhood neglect-EAV relationship. More neglect was associated with weaker <i>belief</i> and weaker <i>belief</i> predicted higher EAV rates. |
| <b>RQ<sub>2c</sub>:</b> Does <i>commitment</i> mediate the relationship between childhood neglect and early adolescent violence (EAV)?  | <b>H<sub>2c</sub>:</b> <i>Commitment</i> will mediate the relationship between childhood neglect and EAV such that more allegations of neglect portend weaker  | <b>Partial:</b> <i>Commitment</i> did not mediate the childhood neglect-EAV relationship but increased neglect predicted weaker <i>commitment</i> bonds,   |

|   |  |  |
|---|--|--|
|   | <i>commitment</i> bonds, which predict higher EAV rates.   | which significantly predicted higher EAV rates.  |
| <b>RQ<sub>2d</sub></b> : Does <i>attachment</i> mediate the relationship between childhood neglect and early adolescent violence (EAV)? | <b>H<sub>2d</sub></b> : <i>Attachment</i> will mediate the relationship between childhood neglect and EAV such that more neglect allegations presage weaker <i>attachment</i> bonds, which predict increased rates of EAV. | <b>Limited</b> : <i>Attachment</i> did not mediate the childhood neglect-EAV relationship, and more allegations of neglect did not presage weaker <i>attachment</i> . Weaker <i>attachment</i> predicted significantly higher EAV. |

### **3. Implications for Theory**

#### **3.1. Social Control Theory (SCT)**

Social Control Theory's place in the realm of theoretical models developed to help explain and predict deviant behavior is complicated. Despite its roots in examining causes of general delinquency, SCT has been used to examine a wide variety of antisocial behaviors in a broad range of populations (Alston, Harley, & Lenhoff, 1995; Cherry, 1987; Durkin, Wolfe, & Clark, 1999; Durkin, Wolfe, & Lewis, 2006; Durkin, Wolfe, & May, 2007; Junger-Tas, 1992; Junger & Marshall, 1997; Knight & Tripodi, 1996; Krohn & Massey, 1980; Massey & Krohn, 1986; Nagin & Paternoster, 1994). Nonetheless, the use of SCT is less common than in decades past. One reason might be the studies that have focused on perceived flaws in the theory and limited predictive power. Likely as influential was that the creator of SCT supplanted his own theory with the General Theory of Crime with Michael Gottfredson (Gottfredson & Hirschi, 1990); I did not use this newer theory due to my analysis, confirmed by others (Akers, 1991; Arneklev, Elis, & Medlicott, 2006; Barlow, 1991; Geis, 2000; Marcus, 2004; Tittle, 1991) that it is tautological and thus fails to improve upon SCT.

Studies using SCT continue to conceptualize the social bond constructs as multivariate factors regressed with demographic and other factors, as was done with the original study involving students from a Northern California secondary school (Hirschi, 1969). In my assessment of the previous research conducted with SCT, this theory was tested without sufficient consideration of the temporal place of the constructs in the sequence leading to deviant behavior and antecedent influences on the constructs. The fundamental premise of my adaptation of SCT is that the constructs – four specific social bonds hypothesized by Travis Hirschi as constraining adolescent antisocial behavior – are best conceptualized as mediators of the relationship between childhood neglect and EAV. In contrast to the adaptation of social bonds as mediators, operationalization of the mediating variables did not fundamentally depart from the original theory. The definitions I used were based on the original descriptions laid out in the original work, *Causes of Delinquency* (Hirschi, 1969).

Adherence to the original theory as closely as possible was intentional in that I wanted to gain perspective on whether the criticisms of SCT (e.g., limited predictive power, inability to explain serious delinquent behavior) might be attributable to the failure to conceptualize the social bonds as mediators of the relationship between an antecedent exposure that weakens social bonds and the antisocial outcome behavior. Unfortunately, this study did not provide useful data as to whether or not conceptualization of social bonds as mediators improves the predictive power of SCT; I attribute much of this to methodological limitations, which are discussed below.

In the original work on SCT and subsequent examinations, violent behavior was treated as a component of the broader realm of delinquent behaviors. In this dissertation, I used SCT to examine violent behavior only. It is unclear whether SCT is fully suitable as a framework to examine violence. Nonetheless, rather than dismiss SCT and attempt to generate alternative theories, further testing of my adaptation with more clearly valid, reliable measures and larger sample sizes is warranted. Future tests of the adapted SCT framework used in this dissertation that substituted different maltreatment subtypes and combinations for neglect as the exposure variable could further refine the understanding of how maltreatment in general affects violence.

It is also possible the modified SCT framework I proposed is better suited to examine non-violent antisocial behavior such as property crimes and substance abuse. This would be consistent with much of the literature attesting to the predictive utility of SCT. The implication, therefore, is that efforts to predict violent behavior might require further modification of the SCT framework.

### **3.1.1. *Involvement Bond and Peer Influence***

The finding that involvement was not statistically different for violent and nonviolent teens is consistent with previous criticism of this social bond construct. A parallel can be drawn to Hirschi's original work where many of the relationships pertaining to this factor were contrary to the original hypothesis (Hirschi, 1969). This in itself is interesting in that I applied two of the key remedies suggested by emphasizing school-oriented activities and excluding "working-class adult" (Hirschi, 1969; p. 191) activities. The relationship between involvement and EAV was in the

hypothesized direction ( $\beta = -0.139$ ;  $p = 0.473$ ), but was by far the weakest of all four and not statistically significant. This lack of predictive utility for the involvement bond mirrored previous criticisms (Greenberg, 1999; Hawdon, 1996, 1999; Krohn & Massey, 1980).

Some researchers have argued that the original conceptualization of involvement, to which I adhered, is inadequate and should be reconceptualized as adherence to daily routine patterns (Hawdon, 1999). It has also been proposed that involvement in conventional activities suppresses antisocial behavior only when peers informally monitor one another (Hawdon, 1999; Lauderdale, 1984). A related postulate is that involvement in sanctioned activities will fail to suppress involvement in antisocial behavior if key peers involved in those activities engage in antisocial behavior. The implication is that peers can be potent influences on each other's behavior (Sullivan, 2006), with prosocial peers serving as deterrents for antisocial behavior. This dissertation provides additional evidence of the potential for peers to negatively influence each other, as violent teens reported scoring more than two times higher on the peer criminality index than nonviolent teens.

Future conceptualizations of the involvement construct should integrate measures that take into account the antisocial tendencies of peers. The broader implication is that future studies examining the antisocial behaviors in youth should incorporate measurements of social networks and peer influence.

### **3.1.2. Social Bonds and Alternative Theoretical Models**

This dissertation research produced some support for the premise that social bonds can influence perpetration of violent behavior. The most basic conclusion that

can be drawn from these findings is that theoretical frameworks seeking to explain and predict violent behavior, particularly in youth, should account for social bonds.

Currently, there is no cohesive conceptual model that fully explains the relationship between childhood neglect and EAV. As discussed above, it remains to be seen whether the adaptation of SCT used in this dissertation research can sufficiently explain that relationship. Simply, without better measures<sup>2</sup> and a larger sample, few definitive conclusions can be drawn about my adaptation.

The earlier proposition to explore further modifications to SCT is strengthened by consideration of a key influence on Hirschi's development of this theory. Specifically, the development of SCT was intended to replace Sutherland's theory of differential association (Sutherland, 1947); the key postulate is that criminal behavior is learned through social interactions in intimate social groups. My findings involving the significant association of peer criminality with EAV are consistent with this principle, later refined and labeled Differential Association Theory ([DAT]; Sutherland & Cressey, 1974). Nonetheless, the effects of the attachment, commitment, and belief social bonds in my sample were also significant. This suggests that rather than compare DAT and SCT as competing explanations for delinquency (see Matsueda, 1982; Matsueda & Heimer, 1987), it could be fruitful to explore a framework that synthesizes these theories while differentiating between violent and non-violent delinquency. A key element in such future endeavors would be consideration of factors for which there is evidence – such as childhood neglect – of effects on social bonds and peer relations.

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<sup>2</sup> Ideally a test of theoretical model would be a primary study where measures were developed in accordance with the theory and pre-tested or use existing, validated measures. In this secondary study, it was necessary to create variables though adapting preexisting measures.

#### **4. Implications for Practice**

My analyses demonstrated that weakened social bonds were associated with increased involvement in early adolescent violence. However, social bonds are malleable and thus may represent an effective avenue for interventions to prevent the development of violent behavior.

##### **4.1. Strengthening Social Bonds**

The major practice implications from this dissertation involve nurturing and strengthening social bonds in youth with a history of, or at high risk for, maltreatment. There are two possible perspectives from which to approach the development of interventions. The first approach involves working with early teens; the evidence that strong, intimate bonds with a caring adult can be established later in development (Bolen, 2000) supports this perspective.

The social ecology of early teens is richer than that of young children and therefore offers a broader variety of settings and avenues through which to nurture social bonds. For example, not only could teachers and school staff be recruited to serve as mentors to targeted youth but those youth could also be paired with youth mentors. The school environment is also subject to a degree of social engineering in that, for example, contact with antisocial peers could be reduced and contact with prosocial peers increased based on class assignments.

As discussed in Chapter 6, by virtue of the extended periods of interaction with youth that teachers and school staff have, these professionals are eminently suited to greater roles in identifying youth with exposure to maltreatment. Training teachers and school staff to recognize indicators of possible maltreatment,



particularly neglect, would promote delivery of interventions to nurture social bonds with youth not yet identified by child welfare social services as maltreated. A corollary of this proposal, that teachers and staff be trained in ways to identify youth with weak social bonds, would enable the identification of youth more apt to become involved in violence. Interventions to nurture social bonds (discussed below) would then be delivered, reducing risk for future or further involvement in violent behavior. Targeted interventions combined with universal efforts to strengthen social bonds in the school setting hold promise in reducing risk for perpetration of violence by early adolescents.

The child welfare system represents another key element for coordinating and delivering interventions to form and strengthen social bonds in maltreated youth. Caseworkers determine whether different caregivers or environments – often involving out-of-home placements – are needed for a youth to thrive. Involvement in the foster care system, however, is associated with a variety of poor youth outcomes, such as an increased risk for perpetration of violence (Jonson-Reid & Barth, 2000; McDonald, Allen, Westerfelt, & Piliavin, 1996; Wiig, Widom, & Tuell, 2003).

In light of my findings, it appears that a possible explanation for the increased risk for perpetration of violence by foster youth is that the home environments from which they were extracted are often characterized by weak social bonding with caregivers, among other deficiencies. Moreover, out-of-home placement often entails considerable weakening of social bonds universally as youth are often relocated to different schools and communities; the foster care experience for youth

is often characterized by instability. Therefore, working with caregivers or other adults with whom the youth has an existing relationship, such as a kinship bond, to foster a stable environment in which bonds are strengthened or formed is essential. Similarly vital are initiatives to impart the skills or treatment these caregivers might need to allow them to form or strengthen bonds with their charges.

Ultimately, forming lasting attachments is a reciprocal process, and without suitable caregivers and other adults who are capable of nurturing healthy bonds with youth, efforts primarily aimed at promoting social bond formation by youth likely will be ineffective. To a lesser degree, greater depth, stability, and consistency relative to a youth's relationship with an adult would, at the very least, enhance the potential for formation of a meaningful social bond. Initiatives aimed at reducing caseworker turnover and the size of caseloads are likely to better enable caseworkers to nurture social bonds with the youth for whom they are responsible.

Multiple considerations limit the viability of delivering intensive interventions suggested above to youth determined only to be at risk for maltreatment. A reasonable alternative would be universal interventions for all youth in the school or community setting. For example, school-wide community service requirements and other opportunities to form bonds with suitable role models in a controlled environment (e.g., clubs, extracurricular activities, community centers) present viable routes. Such programs exist in many schools yet are not as common in less affluent schools and communities. Investing necessary resources in those schools and communities could result in considerable future savings relative to the costs involved

in future incarceration, adjudication, and lost productivity of victims<sup>3</sup> and perpetrators of violence. At the very least, these potential cost savings should be considered when decisions are made regarding the continuation or termination of existing programs that have potential to strengthen social bonds in high-risk youth.

Building on the discussion of home visitation and mentorship by nurses or trained community members presented in Chapter 5, interventions such as those that facilitate the formation and nurturance of bonds between parent and child represent a prevention-oriented approach. Specifically, interventions oriented towards monitoring and facilitating bonding of a mother (or alternative caregiver) to her (or his) child are likely to result in lessened risk for maltreatment, in addition to strengthened social bonds. The value of promoting bonding and attachment is multiplied if extended over the early stages of a child's development, particularly the first two years. Factored into this proposal is the expectation that children with solid attachments to caregivers would be more likely to achieve in academic settings, based on the rationale that caregivers with stronger bonds with their children would be more likely to avail themselves of all available opportunities to enhance their child's future chances for success. Achievement within academic and similar settings directly or indirectly leads to stronger commitment and belief bonds, which were both shown in Chapter 6, along with attachment, to be social bonds that reduced involvement in self-reported EAV.

Distinctly related to the issue of facilitating bonding with a child is that of removing barriers to bonding. Substance abuse is a widely recognized factor

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<sup>3</sup> Former victims of violence have been shown to be at increased risk for perpetration of violence (Cuevas, Finkelhor, Turner, & Ormrod, 2007; Resnick, Ireland, & Borowsky, 2004; USDHHS, 2001).

affecting poor bonding with one's child (Brook, Brook, & Whiteman, 2003; Brook, Richter, & Whiteman, 2000; Brook, Tseng, & Cohen, 1996; Brook, Whiteman, Balka, & Cohen, 1995; Fleming, Brewer, Gainey, Haggerty, & Catalano, 1997; Hoppe et al., 1998; Perry, 2002). Providing substance abuse treatment to prospective or recent parents – custodial or non-custodial, resident or non-resident – would be a worthwhile investment, even if solely intended to help maximize chances for bonding with the child. Initiatives to test everyone in a household with a newborn for substance use could be seen as a measure towards increasing the opportunities for healthy bonding with the child. Balanced against arguments regarding invasion of privacy and cost, such actions, if combined with non-punitive treatment, education, and skill development programs, would represent a valuable social investment as another possible means through which to prevent adverse outcomes for the child, and in the future society by virtue of lower risk for maltreatment as well as perpetration of violence and other forms of antisocial behavior.

In cases where mothers (or an alternate primary caregiver) resides in a household characterized by substance abuse, a reasonable alternative to removing the child from the household would be to take the mother *and* child out of the home. If paired with substance abuse treatment and instruction on bonding with the child provided in a non-institutional setting, it would follow that the framework for lasting social bonds with the child could be established. Again, the potential long-term value of this investment is robust, particularly in contrast with the tangible and intangible costs to putting the child in the foster care system or attempting to monitor

and treat an entire household (Assistant Secretary for Performance and Evaluation, 2005; Hochman, Hochman, & Miller, 2004).

Lastly, it would appear my findings regarding the important role of social bonds further illustrate the value of high-quality childcare. (See Vandell et al., 2010, for an overview of the known benefits of high-quality childcare.) Children surrounded by loving and caring caregivers are positioned to form social bonds with these prosocial adults. The primary implication is that resources must be allocated to providing such opportunities, particularly for children from backgrounds that lack such individuals. Moreover, in households from strained economic circumstances, meaning that affording high-quality childcare is unlikely or that the caregivers must spend inordinate amounts of time outside the house working, childcare subsidies are an essential tool to maximize the likelihood that those children would be able to form multiple, strong social bonds with caring, prosocial adults.

#### **4.2 Sex Differences**

A key finding inconsistent with the original predictions of this dissertation was that female participants were significantly more likely to engage in EAV than males. Combined with the growing findings that females are increasingly likely to become involved in violence (Brown, Chesney-Lind, & Stein, 2007; Lansford et al., 2007; McGloin & Widom, 2001; Thurnherr, Berchtold, Michaud, Akre, & Suris, 2008; Vincent, Odgers, McCormick, & Corrado, 2008), reconsideration of the general wisdom that violence is a “male” issue is warranted. School-based curricula and similar prevention initiatives should be constructed or modified in a manner that connects with females as well as males. Community-based programs and other

efforts similarly warrant reevaluation and revision. More importantly, as the results of this study showed that females actively engage in more types of violence than males, initiatives designed to divert and modify the behaviors of those already involved in violence should also be tailored to the particular needs of females or constructed in a gender-neutral manner.

### **4.3 Peer Effects**

There are a number of implications related to the finding that the criminal behaviors of participants' peers are an influence on their adoption of violent behaviors. For those caregivers who possess the parenting skills to effectively alter a child's peer interactions, this finding serves to alert those caregivers to both the importance of observing and inquiring about the social networks of their children and taking action to alter the peer and greater social environment of the child if needed.

The implications of this finding are more complex for those caregivers who experience barriers to effective parenting or possess deficient parenting skills. Further adding to the complexity of this issue is that absent some sort of event or action by a child that would suggest inadequate monitoring, it would be extremely difficult to identify caregivers in need of interventions that establish adequate or augment deficient parenting skills. One possible approach would be to universally deliver community-based programs intended to develop or augment parenting skills to all caregivers. This approach would likely benefit the community as a whole as parenting skills would likely improve incrementally across most segments of the populace. More targeted interventions, however, may present a useful supplement to a universal program.

An example of a targeted intervention would be to mandate caregiver participation in programs designed to improve parenting skills when children first become involved in the legal system due to delinquent<sup>4</sup> behavior. A necessary element of these programs would be to educate caregivers on how to alter the social environment of the child. Because those children would already be involved in delinquent behavior, caregiver monitoring of a child's peers becomes secondary to teaching caregivers how to take action to sever or at least limit interactions with peers who are engaged in criminal or delinquent behavior. A distinct advantage to initiating caregiver participation in such a program as early as possible is that the younger the child is, the more dependent mobility is upon caregivers compared to later years. Therefore, the potential for impact on the child's social environment is greatest in early adolescence.

An alternative to the above mentioned reactive approach is to proactively impart necessary skills to caregivers previously referred to CPS for allegations of neglect. These caregivers would be targeted for one or more "boosters," depending on the age of the child at last referral. The intention would be to ensure that as the child ages and becomes more autonomous, the caregiver would receive age-appropriate instruction on how to monitor and alter, if necessary, the child's social environment. Possible strategies could primarily target caregivers who had been referred for neglect involving lack of supervision, all caregivers with referrals at child ages 10

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<sup>4</sup> Delinquent behavior is used here to reference actions committed by minors that violate the law and are adjudicated within the juvenile justice system. The interventions I propose could be applied to young offenders within the criminal justice system as well. The intent is to intervene early, before behavioral patterns and peer affiliations are more established and harder to alter. Individuals whose first exposure to the legal system is in the criminal justice system are less likely to benefit from the approaches I propose due to the likelihood they were referred to the criminal justice system because of serious offenses that would warrant incarceration rather than return to their caregivers.

and older, or even all caregivers with referrals of any sort and at any age. Because this would be a resource-intensive and somewhat intrusive program, more work is required to refine the means for implementation, to fully examine the legal implications of compulsory participation, to consider strategies that could promote voluntary participation by caregivers referred for neglect, and to evaluate the circumstances under which compulsory or voluntary participation would be preferable.

School-based efforts to counteract the influence of antisocial peer influence also hold vast potential to reduce early teen violence (Beets et al., 2009; Johnson, Johnson, Dudley, Ward, & Magnuson, 1995; Kamps, Tankersley, & Ellis, 2000; Pettit, 2004; Powell, Muir-McClain, & Halasyamani, 1995; Simon et al., 2008; Tobias & Myrick, 1999; USDHHS, 2001; Wilson & Lipsey, 2005, 2007). The common practice in school settings is to isolate youth with minor behavioral difficulties or at high risk for failure. This separation from normative or high-achieving peers actually would serve to deprive troubled youth from the potentially salubrious influences of those peers and positive environments.

Countering the argument for an inclusive classroom and school environment is the obvious potential for youth with a history of antisocial behavior to influence their peers (Gifford-Smith, Dodge, Dishion, & McCord, 2005). However, concentrating youth who display violent and other antisocial tendencies together in separate classrooms could serve to reinforce and expand their array of antisocial behaviors. Conversely, developing strategies to expose high-risk youth and those already involved in antisocial behavior to prosocial peers and environments offers the



potential to exploit the power of peer influence to promote the development of positive behavioral patterns.

An organic way to dilute the influence of antisocial peers or to diffuse the impact of prosocial youth would be to invest in smaller class sizes, periodic teacher trainings in effective classroom management techniques, mentor-based programs for school administrators, peer mentoring and dispute mediation by other students, and the expansion of in-school and extracurricular supervised activities.

Implementing such strategies is counter to prevailing trends of decreasing educational budgets and emphasis on testing. Communities at large also appear to be unwilling to invest in providing supervised activities for at-risk youth or if they do, devote resources to training or retaining adults skilled in managing the settings in ways that reinforce positive behaviors and promote prosocial development by all participants. It is likely that the failure to invest in approaches oriented towards preventing development of violent and other antisocial behaviors in youth will result in greater subsequent costs to society in terms of incarceration and adjudication of offenders, as well as lost productivity and treatment costs of both victims and offenders.

## **5. Implications for Research Methods**

### **5.1 Standardized Maltreatment Definitions**

More work on developing standard definitions of neglect, as well as other maltreatment subtypes, is needed. Some work has been done on developing standard definitions (Dubowitz, 2006; Dubowitz et al., 2005; Fallon et al., 2010; Goodvin, Johnson, Hardy, Graef, & Chambers, 2007; Harrington, Zuravin, DePafilis,

Ting, & Dubowitz, 2002; Herrenkohl, 2005; Leeb, Paulozzi, Melanson, Simon & Arias, 2008; Manly, 2005; Runyan et al., 2005) but these efforts are likely not to result in uniform adoption of the terminology without concurrent efforts to build consensus among disparate stakeholders and promote universal adoption of these definitions. This would help advance the research on neglect and other forms of maltreatment by allowing the combination of data from multiple studies to produce robust sample sizes needed to examine complex effects. Moreover, providing researchers certainty that the independent variable of interest was consistently defined across datasets would facilitate replication of this and other studies using diverse existing datasets.

An additional benefit of standardized maltreatment definitions would be to allow more sophisticated comparisons of the effects of the different maltreatment types. For example, in Chapter 5, I found widely disparate effects of different maltreatment histories. Further exploration or comparison of these effects in similar studies is limited by uncertainty regarding the definitions of maltreatment types across studies.

## **5.2 Accurate Measures of Children's Maltreatment Experiences**

Exclusive reliance on substantiated maltreatment reports often results in the underestimation of true maltreatment (see **Table 7.2**). Substantiation culls the most severe allegations of maltreatment from all allegations rather than use objective criteria to separate false allegations from those that actually comprised maltreatment. The practical implication is that in most studies that rely on substantiated allegations as the sole indicator of maltreatment status, the non-maltreatment group includes cases with allegations of unsubstantiated maltreatment.

Because whether or not a case is substantiated has little bearing on child outcomes – and hence whether or not the victim actually experienced maltreatment – this means that misclassification bias within these types of studies is exacerbated. Due to the evidence showing that maltreatment is underreported (Everson et al., 2008; MacMillan, Jamieson, & Walsh, 2003; Runyan & English, 2006; Sedlack & Broadhurst, 1996; Sedlack et al., 2010), it is highly likely that many individuals considered controls because of supposed lack of exposure to maltreatment should have been classified as cases because of maltreatment not reported to CPS.

**Table 7.2. Comparison of Allegations without Regard to Substantiation to Substantiated Allegations Only in the Study Sample (n = 98)**

| <i><b>Maltreatment</b></i> | <i><b>Referrals</b></i> |                        | <i><b>Difference (%)</b></i> |
|----------------------------|-------------------------|------------------------|------------------------------|
| <i>Subtype</i>             | <i>Allegations</i>      | <i>Substantiations</i> |                              |
| Neglect                    | 386                     | 149                    | 237 (61%)                    |
| Physical Abuse             | 71                      | 22                     | 49 (69%)                     |
| Sexual Abuse               | 18                      | 7                      | 11 (61%)                     |
| Emotional Abuse            | 28                      | 8                      | 20 (71%)                     |
| <b>Total</b>               | <b>503</b>              | <b>186</b>             | <b>317 (63%)</b>             |

An additional shortcoming of reliance on substantiation is that this practice fails to consider vast differences in practices across states and even counties involving the investigation of maltreatment allegations and substantiation decisions. Simply, there are no universally instituted standards and procedures for substantiation; many factors affect the substantiation decision (Drake & Pandey, 1996; English, Marshall, Coghlan, Brummel, & Orme, 2002).

The use of all allegations without regard to substantiation, however, is not without flaws. For example, false positives can result. Nevertheless, if only substantiated allegations were used in this dissertation to determine maltreatment status, it is unlikely that any effects – or even trends – would have been detected. I would also

argue that most research with smaller study samples on this topic would similarly fail to detect effects because of either insufficient numbers of subjects categorized as exposed to maltreatment, misclassification bias, or both.

Taking the limitations of both methods of determining maltreatment history into account, it is possible that the best approach would have been to rely on self-report of maltreatment history if those data had been collected at the age 14 interviews. This method has been shown to provide high levels of accuracy (Everson et al., 2008; Nooner et al., 2010) but is also not without shortcomings such as recall bias (Lewinsohn & Rosenbaum, 1987; Widom, Raphael, & DuMont, 2004), possible under-ascertainment due to habituation to maltreatment, and potential legal, ethical, and other complications associated with age of the reporter. Absent an alternative method of accurately measuring children's maltreatment experiences, use of maltreatment allegations without regard to substantiation presented the most practical and effective means available of measuring maltreatment history for this dissertation.

The differential between those classified as having been subjected to different forms of maltreatment according to whether allegations or substantiations were considered emphasizes the need for accurate measurement of maltreatment history. More precise assessment of maltreatment history would improve understating the particular effects of maltreatment subtypes and possible synergies between different exposures to guide development of tailored interventions to prevent violent behavior. The findings seem to suggest that different maltreatment subtypes have different

effects on behavior, meaning that a “one size fits all approach” is not well suited to researching the sequelae of maltreatment.

### **5.3 Use of Valid and Reliable Social Bond Measures**

One of the greatest challenges in conducting this research was effective measurement of the SCT constructs, which are highly dependent on contemporary social context. Secondary analyses, such as this one, are limited by the data originally collected. This limitation was most pronounced in the SCT construct measures, which had not been previously validated. An ideal remedy would be to develop and use valid and reliable measures of the four social bonds. (See DeVellis, 2003, for more information on developing valid and reliable measures.)

### **5.4 Improved Assessment of Early Adolescent Violence**

Clear assessment of the childhood neglect-EAV relationship in the future by enlarging the sample size of future investigations poses practical and logistical difficulties. Oversampling those expected to be at risk for violence on the basis of a risk factor other than maltreatment is another approach that does not address what I view as the fundamental cause of this problem. It appears that items intended to measure symptoms of conduct disorder (CD) in youth were inadequate to assess perpetration of violence in early adolescents accurately. Although this was the sole option for such data in my study, it is possible that with a better measure, there would have been more endorsements of violence. This in turn would have increased the power of the analyses and provided less ambiguous results.

Another consequence of insufficient endorsements of violence was that use of categorical variable representing types of violence perpetrated by participants was

the only viable outcome variable option available. It is unclear whether this variable was fully appropriate for assessment of the neglect-EAV relationship. Moreover, the categorical nature of this variable complicated the analytic process, while narrowing the array of analytic tools and approaches suitable for my analysis. The conduct disorder items pertaining to violence provided follow up queries concerning frequency but these items only provided ranges as possible options. More importantly, because of the limited numbers of affirmative responses and lack of variation in those responses, those data were not viable for further analysis.

Ideally, I would have been able to create a continuous variable based on discrete acts of violence perpetrated by each youth over a designated period. A continuous outcome variable would have provided greater analytic options.

It is likely that the limitations of the DISC-based measure I used influenced my results. A very likely explanation for the lack of endorsement of violence-related items is that participants were unwilling to disclose their behaviors fully. The remedy for this would be the use of an indirect measure suited for the prediction of later violent behavior rather than violence itself (e.g., CBCL aggression). Use of such a measure would also mostly eliminate potential difficulties with determining developmentally-appropriate measures of violence in the targeted age group. Comparing my findings to those of a related study using LONGSCAN data provides evidence for this conclusion. In the study using age 12 interview data from all 5 LONGSCAN sites conducted by Yonas et al. (2010), aggressive behavior measured through the CBCL administered in neglected youth appeared to be moderated by neighborhood collective efficacy. My study used the same neighborhood collective

efficacy measure on a subset of the LONGSCAN sites (Eastern and Southern sites only). I did not, however, find that neighborhood collective efficacy had an effect on violent behavior, which is a subset of aggressive behavior. It is likely that the lack of consistency in results between these two closely related studies was the result of differing outcome measures.

## **6. Implications for Future Research**

### **6.1 Increased Emphasis on Childhood Neglect**

This dissertation adds to the growing number of studies emphasizing the considerable harm childhood neglect poses to its victims. To some degree, my results serve to focus more attention on childhood neglect as an important precursor of EAV. The consistency of many of my findings with an expanding and varied body of work on the effects of childhood neglect on aggressive behavior (e.g., De Bellis, 2005; Kotch et al., 2008; Toth et al., 2008) is encouraging, although limited due to a lack of statistical significance. Longitudinal studies that have ample power and use valid and reliable measures are a logical next step for future research and may deliver the compelling evidence needed to assess decisively whether childhood neglect influences EAV.

Future studies should assess neglect at multiple time-points, including in adolescence. This approach is supported by Smith and Thornberry (1995), who found that adolescent maltreatment influenced perpetration of violence, meaning that one's most proximate experiences are those that affect behavior. This in turn implies that the lack of significance in my study may have resulted from examining an exposure too distal to the outcome.

## 6.2 Continued Testing of Proposed Theoretical Model

It has been noted that when evaluating mediation analyses, the lack of significant mediated effects does not necessarily mean an absence of mediated effects (Hayes, 2009; Preacher & Hayes, 2008; MacKinnon, Fairchild, & Fritz, 2007). Future research testing this dissertation's theoretical model with considerably larger samples will help determine whether my adaptation of SCT is useful for understanding the influence of childhood neglect on violence. Further testing of the proposed theoretical model using the other forms of maltreatment as predictors would also enable evaluation of the suitability of my adaptation for other maltreatment subtypes.

Research is unclear as to whether the effects of social bonds occur prior to or nearly contemporaneously with the commission of antisocial behavior (Agnew, 1991). I hypothesized the effects of social bonds on behavior are exerted in the critical moments when the individual is considering whether or not to engage in a specific act. This implies the perception of social bonds at that time is more important than previous assessments of those bonds. Future research should collect data on social bonds at different time points and then compare the predictive utility of the data from different time points in order to establish whether the effects of social control are contemporaneous or occur earlier in time. A related direction for future research would be to assess Child Behavior Checklist (CBCL) scores of maltreated children at an earlier time point (e.g., age 8) and then administer a more specific validated measure of violent behavior at a later time point to assess the predictive utility of the CBCL with maltreated youth. Future research could also



compare CBCL externalizing behavior scores to the selected DISC CD items I used to evaluate how well those scales are related. It would also be interesting to examine whether this dissertation's theoretical model could be applied to externalizing behavior outcomes other than serious violence conceptually related to poor socialization expected to result from exposure to childhood neglect (e.g., social problems, delinquent rule breaking).

There are several other variables that could be additional potential mediators of the childhood neglect-EAV relationship warranting examination in future studies. Parental monitoring and peer criminality represent two such mediators based on evidence that suggests choice of peers is a selective process possibly influenced by prior maltreatment (Maschi, Bradley, & Morgen, 2008). Future research should also examine whether these two factors might work together to produce a moderated mediation<sup>5</sup> relationship. A possible iteration of such a relationship would result from continuation of inadequate childhood supervision leading to later lack of caregiver screening and monitoring of peer relations, with less parental monitoring resulting in higher likelihood of exposure to the influence of antisocial peers, leading to greater rates of violence.

Consistent with the conceptual framework of SCT is the belief that having fewer caregivers would affect propensity towards violence because there are fewer relationships one might fear damaging through disappointment over misbehavior. However, Hirschi stated "the one-parent family is virtually as efficient a delinquency controlling institution as the two-parent family" (Hirschi, 1969; p. 103) but both

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<sup>5</sup> Preacher, Rucker, and Hayes (2007) state "moderated mediation occurs when the strength of an indirect effect depends on the level of some variable, or in other words, when mediation relations are contingent on the level of a moderator" (p. 193).

Rankin and Kern (1994) and Chilton and Markle (1972) found higher probabilities of delinquency among juveniles from one-parent homes than among those from two-parent homes. The number of caregivers in the home is therefore one potential moderator of the childhood neglect-EAV relationship to be examined in future research. Additional potential mediators for future study include contacts with social services (Jonson-Reid, 2002; Jonson-Reid & Barth, 2000; Lemmon, 1999; Wiebush, Freitag, & Baird, 2001) and social capital (Yonas et al., 2010).

### **6.3 Further Exploration of Sex Differences**

I found that twice as many females as males self-reported engagement in violence. Future research should examine an interaction between history of childhood neglect and sex to determine whether sex moderates the relationship between childhood neglect and violence. It would also be useful to explore whether other forms of maltreatment interact with sex and compare the effects of the different combinations of maltreatment and types of maltreatment alone on this relationship.

Specifically, studies could investigate gender bias, or the common belief that females internalize distress, resulting in self-directed violence, depression, and similar symptoms, while males externalize through aggression directed at others (Broidy & Agnew, 1997; Hicks et al., 2007; Kramer, Krueger, & Hicks, 2008; Maschi, Morgen, Bradley, & Hatcher, 2008; Mazerolle, 1998), leading to disparate rates of violence. Additionally, future research could explore whether males and females differentially externalize or internalize in reaction to neglect.

## **6.4 Synergistic Effects of Maltreatment Combinations**

Because of the small study population, this dissertation could not determine whether there are unique effects of the various combinations of maltreatment on EAV. Future research should examine and compare the effects of different combinations of types of maltreatment, such as neglect and emotional abuse, physical abuse and sexual abuse, etc. on EAV and other adverse outcomes. These data hold potential to guide development and prioritization of intervention delivery by social services, leading to more efficient use of limited resources.

## **7. Strengths and Limitations**

### **7.1 Strengths**

This dissertation possesses a number of strengths. Chief among them was the longitudinal nature of the data available for analysis. Most importantly, the exposure and outcome variables were chronologically distinct. This temporal ordering provided a measure of insight into causality. I also conducted procedures to rule out moderation in the relationship between childhood neglect and EAV. Although measurement and sample size issues make me uncertain as to whether the lack of moderation can be generalized, this step does suggest that assessment of mediating relationship was the proper approach for my data.

I was able to reduce imprecision due to an array of potential biases attributed to self-reporting sensitive data such as maltreatment by using data from an external source (Child Protective Services maltreatment referrals). A prime benefit of employing official (third-party) records for maltreatment was that social desirability and recall biases associated with informant interviews were minimized. Considering

the social opprobrium associated with the perpetration of child maltreatment and potential consequences of disclosing this behavior, robust deterrents to full disclosure exist. Moreover, the usefulness of self-report data provided by adolescent participants, especially at earlier ages, would be limited as they would be unlikely to identify their usual treatment as maltreatment if habituated to that behavior.

In contrast to the benefits imparted by using official sources rather than self-reported data to measure maltreatment, use of official sources of data to measure violence creates a reporting gap (McCord, Widom, & Crowell, 2001). Self-report data on the perpetration of violence, such as I used in this dissertation, is thus considered an invaluable remedy to the reporting gap (McCord et al., 2001).

An additional strength of this dissertation is that I used a fairly homogenous low-income cohort, which essentially controlled for the effects of socioeconomic factors, thus differentiating participants through maltreatment and the later effects of these experiences. This was consistent with the insights of McSherry (2004), who proposed that “the key to understanding child neglect may come from understanding what it is that differentiates neglecting and non-neglecting parents from the same or similar socioeconomic backgrounds” (p. 729).

A unique strength of this study is the potential for replication using an expanded cohort as the other LONGSCAN cohorts age. In addition, as multiple waves of data are collected from the participants as they pass through adolescence, longitudinal analyses of greater complexity and modeling of developmental trajectories of violence can be conducted. Moreover, as the included cohorts and the remainder of

the LONGSCAN participants age, a greater array of data on violence will become available. Specifically, records of contact with the criminal justice system and adjudication, if applicable, can be analyzed in the future. Patterns of violence are also likely to change as the participants age, providing opportunity to test my hypotheses with an expanded cohort with potentially different responses to neglect, other influential factors such as peer influence and witnessing violence, and even participants' sex. It is therefore expected that it will be possible to produce more definitive results on this topic using this dissertation as a guiding framework.

## **7.2 Limitations**

Countering the strengths of this dissertation are limitations beyond those discussed in Chapters 5 and 6, such as lack of sufficient power. A likely problem exacerbating the issue with power was that I was overly conservative in controlling for other forms of maltreatment in order to isolate the effects of neglect. Another limitation presented by the lack of power was that I was forced to use all cases with any history of childhood neglect in my mediation analysis. Thus, although I controlled for other forms of maltreatment in that analysis, neglect was not a pure category and could not fully account for the possible unique effects produced by exposure to neglect in combination with varied forms of abuse. It could be argued, that if neglect is the key factor that affects the development of violent behavior, whether or not other types of maltreatment are present could be irrelevant. This supposition, however, could not be assessed without an adequately robust neglect-only group that would have allowed comparison to a group composed of those with a history of neglect and abuse.

The prevalence of maltreatment in my sample was lower than expected. However, this was consistent with the general population trend of under-ascertainment of maltreatment (Sedlak & Broadhurst, 1996). The prevalence of reported maltreatment is such that extremely large samples or resource intensive sampling procedures are needed to create samples reasonably sized for research purposes. These avenues can be unrealistic for the conventional researcher.

An important qualification to the finding of sex differences in violence is that without further research, it is unclear whether this is a result of differences in how neglect affects the sexes. Although neglected males had significantly lower rates of EAV than neglected females when controlling for other forms of maltreatment and other potentially influential variables, this finding did not provide insight into whether there was a synergistic effect between female sex and childhood neglect. Due to limitations imposed by the sample size, I lacked sufficient power to examine this particular relationship. Nonetheless, the varied deleterious effects of childhood neglect are amply documented (see Chapter 2). My finding on sex differences, considered in light of what is already known about the effects of childhood neglect, emphasize the potential for destructive impacts of neglect on victims and society, further strengthening the case for dedicating more resources to the elimination of neglect.

Unrelated to those issues, the study's external validity was limited due to the manner in which the study sample was originally recruited. The composition of my study sample was skewed towards urban, minority, and low-income participants. Maltreatment, however, affects children from all demographic groups (USDHHS,

2010). Thus, because I did not use a random sample derived from the general population of children, I cannot generalize my results.

Counterbalancing the benefits provided by use of official records, particularly CPS referrals, is reporting bias. Specifically, those who are poor, live in less affluent areas, or are identifiable as minorities are more likely to be reported to CPS than those who are more affluent, live in less deprived areas, or are non-minority (Barnett, Manly, & Cicchetti, 1993). The implication is that official maltreatment reports likely are systematically biased. However, these biases are associated with the demographic factors upon which the Eastern and Southern samples were recruited (e.g., poverty). Therefore some of the systematic bias that may have influenced likelihood of being reported to CPS was likely diffused to some degree because each sample was demographically homogeneous and therefore subject to the same biases affecting reporting of maltreatment to CPS.

As noted earlier, measures of social bonds were created using proxy measures from LONGSCAN interviews, with face validity serving as the core criterion of index item selection. Operationalization of the mediating variables was based upon the original conceptualizations of those constructs laid out in the original work surrounding SCT. The constructs, particularly belief and commitment, are in turn closely tied to how conventional social values are perceived by respondents. There is evidence that conventional values (Gottfredson, 2001; May, 1999; McGee, 1992; Ovadia, 2002; Wright & Younts, 2009) might in fact be perceived differently by different subsets of the general population.

Because this was a secondary analysis of previously collected data, I was unable to conduct formative research on the social norms, expectations, and perceptions of broader social values by the study sample. This meant it was necessary to rely primarily upon my understanding of the social mores and perceptions of the study sample rather than key informant interviews to select items that reflected contemporary values and norms of the study population. Although my assessments were augmented by the input of experts, they too lacked direct background or immersion in the socioecological context of the study population. It is therefore plausible that what I perceived to be normative values, which were used to guide the construction of the mediators, did not accurately reflect the normative values of the study sample. Thus, it is unclear whether the items that composed the mediators accurately reflected the normative values of the study sample. Contemporary tests of SCT, however, have been conducted primarily using investigator-developed items in a manner similar to this study (Agnew, 1991; Foshee et al., 1998).

Although all mediator variables had adequate internal consistency ( $\alpha > 0.70$ ), with some displaying good internal consistency ( $\alpha > 0.80$ ), this did not necessarily ensure that I sufficiently captured the essential characteristics of the particular social bonds. In fact, some have expressed concerns regarding the attenuation of parameter estimates resulting from the use of variables with reliabilities between 0.70 and 0.80 (Agnew, 1991). I cannot say with certainty that social bonds were reliably measured. This may explain why some of the findings were in the opposite direction of what I expected.



As discussed in Chapter 6, although the specific indirect effects for the belief and commitment bonds were positive, the specific indirect effects for the attachment and involvement bonds were not. Whether due to limitations resulting from measurement difficulties or reflective of actual relationships, this finding indicated inconsistent (known also as “iatrogenic” or “opposing”) mediation effects were present.

Contemporaneous measurement of mediators and an outcome is not ideal when seeking to establish causality. Nevertheless, it provides a reasonable remedy to one of the challenges posed by conducting a secondary analysis of previously collected data. The use of data on social bonds collected concurrent to outcome data in place of data on social bonds collected well before the outcome of interest is assessed parallels previous work (see Agnew, 1991). Others have also proposed that the effect of social control on delinquency is mostly contemporaneous, lending support to my approach (Agnew, 1991; Liska & Reed, 1985).

The limits imposed by using preexisting items extended to the outcome variable. Although the DISC-C is characterized by high validity and reliability when used for the diagnosis of DSM mental disorders, it is unclear whether conglomerated DISC-C CD items are fully suitable for the measurement of violence in youth without diagnosable mental disorders. It is also possible that the outcome variable was too narrow for effective measurement of EAV in my sample. Use of another measure (e.g., CBCL aggression), if it had been available could have resulted result in more endorsement of EAV.

This dissertation focused on violence committed by 13- and 14-year olds. Violence, however, is a complex behavior emerging from the interaction of an individual and his or her socioecological environment at a particular developmental period (USDHHS, 2001). Complicating this issue is evidence of two distinct trajectories of violence development in youth (Moffitt, 1993) that intersect at the age and developmental nexus of this dissertation's sample (USDHHS, 2001).

The first pattern is the late-onset trajectory (comparable to Moffitt's "adolescence-limited" taxonomy), characterized by the initiation of violence after puberty. Age 13 is considered the lower threshold (USDHHS, 2001), and the upper limit is 17 (Moffitt, 1993). The second pattern is the early-onset trajectory (analogous to Moffitt's "life-course-persistent" taxonomy), characterized by the emergence of violent behaviors in prepubescent youth<sup>6</sup> (as early as 8 to before 13) as part of a pattern of escalating violence throughout childhood and into adulthood (Moffitt, 1993; Tolan & Gorman-Smith, 1998; USDHHS, 2001). Youth in the early-onset trajectory are also characterized by the commission of more frequent and more serious crimes over a longer period than youth in the late-onset trajectory (Moffitt, 1993; Tolan & Gorman-Smith, 1998; USDHHS, 2001).

The far greater prevalence of youth in the late-onset trajectory (USDHHS, 2001) limits the applicability of these findings to adolescent violence in general because it is likely that many participants who later engaged in EAV had yet begun involvement in those behaviors. It is also possible early initiators were already in detention and

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<sup>6</sup> Moffitt (1993) proposed the life-course-persistent taxonomy applies to only 4-6% of violent youth. Others have argued the early-onset trajectory is applicable to 20-45% of violent adolescent males and an even higher percentage of violent adolescent females (USDHHS, 2001). Only 1-4% of males report initiating any crime at age 18 or later (Elliot, Huizinga, & Menard, 1989).

not available or were less likely to be truthful or participate because of concerns regarding legal consequences because of existing criminal history, monitoring (e.g., fears of report to parole officer), or severity of actions. This possibility, if true, would further skew the composition of the pool of those who would potentially perpetrate violence towards youth in the late-onset trajectory, additionally limiting the applicability of these findings to the broader category of adolescent violence.

## **8. Conclusions**

The few studies that have probed the mediating role of social bonds in the maltreatment-violence link failed to examine the particular contributions of childhood neglect directly. The lack of consistent evidence in the literature supporting the mediating role of social bonds also appears to bear very little on the particular role social bonds may play in mediating the relationship between childhood neglect and early adolescent violence. This dissertation represents a first step in addressing these gaps.

This dissertation yielded a number of important insights with potential application towards understanding and preventing early adolescent violence. The most important finding was that weakened social bonds (attachment, commitment, and belief) appeared to predict higher rates of involvement in the perpetration of serious violence among maltreated children. There are a number of intervention approaches potentially useful for preventing or diminishing the perpetration of violence in maltreated early adolescents by strengthening social bonds. The wide array of potential interventions I proposed reflects a belief that successful efforts to prevent youth violence must involve interventions delivered in as many different

settings within their socioecological environment as possible at every developmental stage. Many of the recommended interventions would benefit from integration of the findings involving peer criminality and sex differences, which also provide intriguing directions for future research on factors influential on the development of youth violence.

Even though I did not find definitive evidence that childhood neglect is more influential upon perpetration of violence than physical abuse, my findings add to the considerable evidence that neglect is clearly deserving of a higher priority for research, prevention, and intervention. On the one hand, the lack of statistical significance involving the relationship between childhood neglect and EAV can be interpreted as evidence that there is not a significant relationship between them. On the other hand, my results can also be interpreted as evidence of an association obscured by the various methodological challenges encountered in this study. This ambiguity alone is compelling evidence of the need for further well-crafted research to assess decisively whether childhood neglect influences EAV.

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Appendix A: LONGSCAN Maltreatment Referral Coding Form

**REVIEW OF MALTREATMENT NARRATIVE - Version C (RMNC)**  
**9/30/05**

Visit #: \_\_\_ \_\_\_ [120 – 189]

LONGSCAN ID#: \_\_\_\_\_

0a. REVIEWER NAME: \_\_\_\_\_

1. TODAY'S DATE: \_\_\_/\_\_\_/\_\_\_  
                          m m d d y y y y

2. PARTICIPANT CHILD'S D.O.B.: \_\_\_/\_\_\_/\_\_\_  
  m m d d y y y y

2a. CURRENT INFORMED CONSENT ON FILE?

- 1- YES
- 2- NO → [Skip to end of form]

SOURCE/LOCATION: Record on paper only. Do not enter.

**CPS CASE FILE STATUS**

[Answer each part of this item in consecutive order]

4. Records searched; participant child-specific data was found for this time period?

- 1- YES → [Go to **4a** & **4a1**, then go to **5**] Complete this form on the LONGSCAN participant child; then complete the Level 2 optional by site Family/sibling CPS data form with the family/sibling information.

- 2- NO → [Skip to **4b**, then skip to end of form]

4a. Case File Number - Record on paper only. Do not enter.

4a1. Family/sibling data also found?

- 1- YES
- 2- NO



**9a2. Type of placement:**

- 1- Receiving care/Foster care → [Skip to **9a3**]
- 2- Relative placement → [Skip to **9a3**]
- 3- Hospital → [Skip to **9a3**]
- 4- Residential treatment → [Skip to **9a3**]
- 5- Other

**9a2a. Specify Other:** \_\_\_\_\_

**9a3. Allegation related to placement?**

- 1- YES
- 2- NO
- 9 -DK

**10. CPS MALTREATMENT TYPE:** *apply codes below as indicated in the record. If anything other than "a/None given" applies, each field in b-l must be coded. If either "a/None given" or "l/DK" do not apply, code these fields "2/No".*

1- YES

2- NO

**10a. None given** → [Skip to 11]

**10b. Physical abuse**

**10c. Sexual abuse**

**10d. Neglect**

**10e. Dependency**

**10f. Caregiver absence/incapacity**

**10g. Emotional maltreatment**

**10h. Moral/legal/educational**

**10i. Abuse**

**10j. General neglect**

**10k. Severe neglect**

**10l. DK**



**12. NIS-2 ALLEGED:**

| <b>MALTREATMENT</b> | <b>SEVERITY</b> | <b>PERPETRATOR (code up to two)<br/>TYPE (3&amp;6)/ GENDER (4&amp;7)/ AGE (5&amp;8)</b> |        |        |        |        |        |
|---------------------|-----------------|---|--------|--------|--------|--------|--------|
| a1)_____            | a2)_____        | a3)___  | a4)___ | a5)___ | a6)___ | a7)___ | a8)___ |
| b1)_____            | b2)_____        | b3)___  | b4)___ | b5)___ | b6)___ | b7)___ | b8)___ |
| c1)_____            | c2)_____        | c3)___  | c4)___ | c5)___ | c6)___ | c7)___ | c8)___ |
| d1)_____            | d2)_____        | d3)___  | d4)___ | d5)___ | d6)___ | d7)___ | d8)___ |
| e1)_____            | e2)_____        | e3)___  | e4)___ | e5)___ | e6)___ | e7)___ | e8)___ |
| f1)_____            | f2)_____        | f3)___  | f4)___ | f5)___ | f6)___ | f7)___ | f8)___ |

**13. MMCS ALLEGED:**

| <b>MALTREATMENT</b> | <b>SEVERITY</b> | <b>PERPETRATOR (code up to two)<br/>TYPE (3&amp;6)/ GENDER (4&amp;7)/ AGE (5&amp;8)</b> |        |        |        |        |        |
|---------------------|-----------------|---|--------|--------|--------|--------|--------|
| a1)_____            | a2)_____        | a3)___  | a4)___ | a5)___ | a6)___ | a7)___ | a8)___ |
| b1)_____            | b2)_____        | b3)___  | b4)___ | b5)___ | b6)___ | b7)___ | b8)___ |
| c1)_____            | c2)_____        | c3)___  | c4)___ | c5)___ | c6)___ | c7)___ | c8)___ |
| d1)_____            | d2)_____        | d3)___  | d4)___ | d5)___ | d6)___ | d7)___ | d8)___ |
| e1)_____            | e2)_____        | e3)___  | e4)___ | e5)___ | e6)___ | e7)___ | e8)___ |
| f1)_____            | f2)_____        | f3)___  | f4)___ | f5)___ | f6)___ | f7)___ | f8)___ |



**17. CPS MALTREATMENT TYPE:**

*(for each subtype, apply appropriate code from conclusions section below)*

**CONCLUSION CODES**

**1\* = FOUNDED/SUBSTANTIATED**

**2 = NOT FOUNDED/UNSUBSTANTIATED**

**3 = INDICATED/SUSPECTED**

**4 = INCONCLUSIVE**

**5 = OTHER UNCLASSIFIED MALTREATMENT**

**6 = D/K**

**7 = N/A**

*\*Code 1 in either "a/None given" and "I/DK" to indicate that it applies. If either "a/None given" or "I/DK" do not apply, code it "7/NA".*

**17a. None given** → *[If 1 or 6, skip to 18]*

**17g. Emotional maltreatment**

**17b. Physical abuse**

**17h. Moral/legal/educational**

**17c. Sexual abuse**

**17i. Abuse**

**17d. Neglect**

**17j. General neglect**

**17e. Dependency**

**17k. Severe neglect**

**17f. Caregiver absence/ incapacity**





|  |
|--|
| <b>FINDINGS FROM NARRATIVE SUMMARY</b> |
|--|

**18. NIS-2 FINDINGS:**

**CONCLUSION**

| CODE | NIS-2 TYPE | SEVERITY | PERPETRATOR (code up to 2)<br>TYPE(4&7)/GENDER(5&8)/AGE(6&9) |  |  |  |  |  |
|------|------------|----------|--|--|--|--|--|--|
|------|------------|----------|--|--|--|--|--|--|

|          |          |          |        |        |        |        |        |        |
|----------|----------|----------|--------|--------|--------|--------|--------|--------|
| a1)_____ | a2)_____ | a3)_____ | a4)___ | a5)___ | a6)___ | a7)___ | a8)___ | a9)___ |
|----------|----------|----------|--------|--------|--------|--------|--------|--------|

|          |          |          |        |        |        |        |        |        |
|----------|----------|----------|--------|--------|--------|--------|--------|--------|
| b1)_____ | b2)_____ | b3)_____ | b4)___ | b5)___ | b6)___ | b7)___ | b8)___ | b9)___ |
|----------|----------|----------|--------|--------|--------|--------|--------|--------|

|          |          |          |        |        |        |        |        |        |
|----------|----------|----------|--------|--------|--------|--------|--------|--------|
| c1)_____ | c2)_____ | c3)_____ | c4)___ | c5)___ | c6)___ | c7)___ | c8)___ | c9)___ |
|----------|----------|----------|--------|--------|--------|--------|--------|--------|

|          |          |          |        |        |        |        |        |        |
|----------|----------|----------|--------|--------|--------|--------|--------|--------|
| d1)_____ | d2)_____ | d3)_____ | d4)___ | d5)___ | d6)___ | d7)___ | d8)___ | d9)___ |
|----------|----------|----------|--------|--------|--------|--------|--------|--------|

|          |          |          |        |        |        |        |        |        |
|----------|----------|----------|--------|--------|--------|--------|--------|--------|
| e1)_____ | e2)_____ | e3)_____ | e4)___ | e5)___ | e6)___ | e7)___ | e8)___ | e9)___ |
|----------|----------|----------|--------|--------|--------|--------|--------|--------|

|          |          |          |        |        |        |        |        |        |
|----------|----------|----------|--------|--------|--------|--------|--------|--------|
| f1)_____ | f2)_____ | f3)_____ | f4)___ | f5)___ | f6)___ | f7)___ | f8)___ | f9)___ |
|----------|----------|----------|--------|--------|--------|--------|--------|--------|

**19. MMCS FINDINGS:**

**CONCLUSION**

| CODE | MMCS TYPE | SEVERITY | PERPETRATOR (code up to 2)<br>TYPE(4&7)/GENDER(5&8)/AGE(6&9) |  |  |  |  |  |
|------|-----------|----------|--|--|--|--|--|--|
|------|-----------|----------|--|--|--|--|--|--|

|          |          |          |        |        |        |        |        |        |
|----------|----------|----------|--------|--------|--------|--------|--------|--------|
| a1)_____ | a2)_____ | a3)_____ | a4)___ | a5)___ | a6)___ | a7)___ | a8)___ | a9)___ |
|----------|----------|----------|--------|--------|--------|--------|--------|--------|

|          |          |          |        |        |        |        |        |        |
|----------|----------|----------|--------|--------|--------|--------|--------|--------|
| b1)_____ | b2)_____ | b3)_____ | b4)___ | b5)___ | b6)___ | b7)___ | b8)___ | b9)___ |
|----------|----------|----------|--------|--------|--------|--------|--------|--------|

|          |          |          |        |        |        |        |       |        |
|----------|----------|----------|--------|--------|--------|--------|-------|--------|
| c1)_____ | c2)_____ | c3)_____ | c4)___ | c5)___ | c6)___ | c7)___ | 8)___ | c9)___ |
|----------|----------|----------|--------|--------|--------|--------|-------|--------|

|          |          |          |        |        |        |        |        |        |
|----------|----------|----------|--------|--------|--------|--------|--------|--------|
| d1)_____ | d2)_____ | d3)_____ | d4)___ | d5)___ | d6)___ | d7)___ | d8)___ | d9)___ |
|----------|----------|----------|--------|--------|--------|--------|--------|--------|

|          |          |          |        |        |        |        |        |        |
|----------|----------|----------|--------|--------|--------|--------|--------|--------|
| e1)_____ | e2)_____ | e3)_____ | e4)___ | e5)___ | e6)___ | e7)___ | e8)___ | e9)___ |
|----------|----------|----------|--------|--------|--------|--------|--------|--------|

|          |          |          |        |        |        |        |        |        |
|----------|----------|----------|--------|--------|--------|--------|--------|--------|
| f1)_____ | f2)_____ | f3)_____ | f4)___ | f5)___ | f6)___ | f7)___ | f8)___ | f9)___ |
|----------|----------|----------|--------|--------|--------|--------|--------|--------|

**20. RISK FACTORS INCLUDED IN NARRATIVE/SUMMARY:** (indicate all that apply; *each field must be coded*)

1- Yes      9- DK

- 20a. Substance Abuse**
- 20b. Domestic Violence**
- 20c. Mental Illness of Caregiver**
- 20d. Child Behavior Problems**
- 20e. Child Fear of Caregiver**

**21. OTHER ISSUES:** (indicate all that apply; *each field must be coded*)

1- Yes      9- DK

- 21a. Custodial Issues**
- 21b. Unstable Living Situation**
- 21c. Other [If 9, Skip to 22]**

**21c1. Describe Other:** \_\_\_\_\_

**21c2. Code 1:** \_\_\_\_\_      **21c3. Code 2:** \_\_\_\_\_

### **PLACEMENT INFORMATION**

**22. PARTICIPANT CHILD PLACED AS A RESULT OF THIS INVESTIGATION?**

- 1- Yes
- 2- No → *[Skip to end of form]*

**22a. FIRST TYPE OF PLACEMENT:**

- 1- Receiving care/Foster care → *[Skip to 23]*
- 2- Relative placement → *[Skip to 23]*
- 3- Hospital → *[Skip to 23]*
- 4- Residential treatment → *[Skip to 23]*
- 5- Other
- 6- DK → *[Skip to 23]*

**22a1. Describe other:** \_\_\_\_\_





## **Appendix B: Modified Maltreatment Classification System (MMCS)**

### **Please cite as:**

English, D. J. & the LONGSCAN Investigators (1997). Modified Maltreatment Classification System (MMCS). For more information visit the LONGSCAN website at <http://www.iprc.unc.edu/longscan/>

### **As modified from the Maltreatment Classification System outlined in:**

Barnett, D., Manly, J.T. and Cicchetti, D. (1993). Defining Child Maltreatment: The interface between policy and research. In: D. Cicchetti and S.L. Toth (Eds.), *Advances in Applied Developmental Psychology: Child Abuse, Child Development and Social Policy*. Norwood, NJ: Ablex Publishing Corp., Chapter 2, pp. 7-73.

## Physical Abuse 100

Physical Abuse is coded when a caregiver or responsible adult inflicts physical injury upon a child by other than accidental means. Injury does not include culturally sanctioned physical alterations such as circumcision and ear piercing.

There are some situations in which the distinction between Physical Abuse and other subtypes becomes ambiguous. The following criteria are provided as guidelines to assist coders in making these distinctions. Physical restraint is typically scored under Emotional Maltreatment. However, in cases in which a child incurs physical injuries when the parent is attempting to restrain the child (e.g. rope burns), then the injury would be scored as Physical Abuse, and the restraint would also be scored under emotional maltreatment. If the caregiver threatens the child but there is no physical contact with the child, Emotional Maltreatment would be scored rather than Physical Abuse. Please see the Emotional Maltreatment scale for further elaboration of these points.

Physical injuries that occur as a direct result of sexual interaction (e.g. vaginal or rectal tears) are coded solely under Sexual Abuse. Other injuries that may accompany sexual acts in an effort to force a child to engage in sexual relations (e.g. beatings, burning) are scored under both Physical Abuse and Sexual Abuse.

## Physical Abuse—Assault – (Hit/Kick) to face/head/neck = 101

### Severity

- 1 Dangerous acts, but no marks indicated  
*Examples:*
- A caregiver *slaps the child on the face*, with *no resulting marks* to the face.
  - A caregiver pulls a child's hair, with *no skin damage*.
- 2 Minor marks (small scratches, cuts or bruises)  
*Examples:*
- A caregiver hits the child on the head, and *a bruise results*.
  - A caregiver grabs the child by the neck (note: not in a choking fashion--this would be scored under Choking/smothering) and *scratches the neck with fingernails*.
- 3 Numerous or nonminor mark(s) – a single non-minor mark is also coded here.  
*Examples:*
- A caregiver punches the child in the face, and *the eye and cheek are bruised and swollen*.
  - A caregiver hits the child repeatedly *in the facial area*, resulting in *multiple bruises*
  - A *large open wound* results from the caregiver's attack on the child's face or head.
- 4 Medical/Emergency Treatment; hospitalized less than 24 hours  
*Examples:*
- A child *goes to the emergency room* to have a broken nose set after a caregiver breaks it.
- 5 Hospitalized more than 24 hours  
*Examples:*
- A child is given a serious concussion due to a parent's repeated blows to the head, and is *monitored in the hospital* for several days.
- 6 Permanent disability/scarring/disfigurement/fatality  
*Examples:*
- A child *dies of brain damage or is in a coma* after having been hit with a baseball bat by his caregiver.



**Physical Abuse--Hit/kick to torso (neck to legs except for buttocks) = 102**

Severity

- 1 Dangerous acts, but no marks indicated  
*Examples:*
- A caregiver hits a child on the back, with *no resulting marks to the body.*
- 2 Minor marks (small scratches, cuts or bruises)  
*Examples:*
- A caregiver hits the child on the chest, and *a bruise results.*
  - A caregiver grabs the child's waist and *scratches the child.*
- 3 Numerous or nonminor marks  
*Examples:*
- A caregiver throws an object at a child, which results in *a large bruise* on the child's back.
  - A caregiver hits the child with a belt, resulting in *a large open welt.*
- 4 Medical/Emergency Treatment; hospitalized less than 24 hours  
*Examples:*
- A child goes to the emergency room with broken ribs after a fistfight with a caregiver and is *released that day.*
- 5 Hospitalized more than 24 hours  
*Examples:*
- *A child is monitored for a bruised kidney for several days,* and abuse by a parent caused the condition.
- 6 Permanent disability/disfigurement/fatality  
*Examples:*
- A child dies after being stabbed in the heart with a knife by a caregiver.

**Physical Abuse--Hit/kick to buttocks = 103**

Severity

- 1 Dangerous acts, but no marks indicated  
*Examples:*
  - A caregiver spansks the child, with *no resulting marks to the body.*
  
- 2 Minor marks (small scratches, cuts or bruises)  
*Examples:*
  - A caregiver spansks the child with a spoon, and a bruise results.
  
- 3 Numerous or nonminor marks  
*Examples:*
  - A caregiver spansks the child with a belt, resulting in large welts.
  
- 4 Medical/Emergency Treatment; hospitalized less than 24 hours  
*Examples:*
  - A child walks into a doctor's office wanting a salve for the open wound caused by a parent's spanking with a belt.
  
- 5 Hospitalized more than 24 hours
  
- 6 Permanent disability/disfigurement/fatality

## Physical Abuse--Hit/kick to limbs/extremities = 104

### Severity

- 1 Dangerous acts, but no marks indicated  
*Examples:*
- A caregiver hits a child's leg, with *no resulting marks to the body.*
- 2 Minor marks (small scratches, cuts or bruises)  
*Examples:*
- A caregiver grabs the child's wrist and *scratches the child.*
- 3 Numerous or nonminor marks  
*Examples:*
- A caregiver grabs a child's arm and *many bruises are present.*
- 4 Medical/Emergency Treatment; hospitalized less than 24 hours  
*Examples:*
- A child goes to the emergency room with a *spiral fracture* in his arm after a parent has twisted it.
  - A child *needs stitches in his leg* after a parent throws an ashtray at him.
- 5 Hospitalized more than 24 hours  
*Examples:*
- A child is *hospitalized several days* after a parent cuts the child's leg severely, resulting in blood loss.
- 6 Permanent disability/disfigurement/fatality  
*Examples:*
- A child *loses a limb* due to parental abuse.

**Physical Abuse--Violent handling of Child (Pushing, shoving, throwing, pulling, dragging) = 105**

Severity

- 1 Dangerous acts, but no marks indicated  
*Examples:*
  - A caregiver *shoves* the child across the room and the *child is not physically harmed*.
  
- 2 Minor marks (small scratches, cuts or bruises)  
*Examples:*
  - A caregiver *bruises the child* as he *pulls him* along in the grocery store.
  
- 3 Numerous or nonminor marks  
*Examples:*
  - A caregiver *throws the child across the room*, where he hits a part of his body and it is *severely bruised and swollen*.
  
- 4 Medical/Emergency Treatment; hospitalized less than 24 hours  
*Examples:*
  - A child *goes to the emergency room with broken ribs* after being *shoved into a wall* by a caregiver and is *released that day*.
  
- 5 Hospitalized more than 24 hours  
*Examples:*
  - A child is *monitored for a concussion* after having been *thrown* across the room.
  
- 6 Permanent disability/disfigurement/fatality  
*Examples:*
  - A child *dies after being thrown out a window*.

**Physical Abuse--Choking/Smothering (with pillow, putting hand over mouth & nose, cutting off child's ability to breathe) = 106**

Severity

- 1 Dangerous acts, but no marks indicated  
*Examples:*
- A child alleges that his parent tried to choke him, but there is no evidence present.
- 2 Minor marks (small scratches, cuts or bruises)  
*Examples:*
- A caregiver *scratches a child's neck when grabbing the child in a choking fashion.*
- 3 Numerous or nonminor marks  
*Examples:*
- A child's *neck is bruised after a caregiver threatened the child by choking him.*
- 4 Medical/Emergency Treatment; hospitalized less than 24 hours  
*Examples:*
- A child goes to the emergency room with *difficulty breathing after being choked by a caregiver, and is released that day.*
- 5 Hospitalized more than 24 hours  
*Examples:*
- A child's *crushed larynx is operated on, the child fully recovers with no brain damage, and abuse by a parent caused the condition.*
- 6 Permanent disability/disfigurement/fatality  
*Examples:*
- Brain damage or death results from choking or smothering the child.

## Physical Abuse—Burns/Scalding = 107

### Severity

- 1 Dangerous acts, but no marks indicated  
*Examples:*
- The child complains that the caregiver washed him/her in too hot of water, but no burn marks are indicated.
- 2 Minor marks (small scratches, cuts or bruises)  
*Examples:*
- A child has a first degree burn that is caused by a parent washing him/her in hot water.
- 3 Numerous or nonminor marks  
*Examples:*
- A child has 2nd degree burns that are caused by a parent washing him/her in hot water.
  - A child has cigarette burns inflicted by the parent.
- 4 Medical/Emergency Treatment; hospitalized less than 24 hours  
*Examples:*
- A child is seen in the hospital less than 24 hours for having been scalded by the parent washing him/her in hot water.
  - A child is seen in the hospital less than 24 hours after having been burned by a caregiver.
- 5 Hospitalized more than 24 hours  
*Examples:*
- A child is severely burned and requires monitoring for more than 24 hours in a hospital (note: No permanent burn scars can result, or it's coded as 6)
- 6 Permanent disability/disfigurement/fatality  
*Examples:*
- A child has scarring on his torso after having been burned by a caregiver and treated in a Burn Unit for several weeks/months.
  - A child is burned to death by his/her parents.

## Physical Abuse—Shaking = 108

### Severity

- 1 A child over the age of two is shaken by his caregiver, and no marks result.
- 2 A child over the age of two is shaken by a caregiver and bruises are left.
- 3 A child under the age of two is shaken by a caregiver (with no indication of resulting harm).  
A child has a sore neck and arms after being shaken by a caregiver.
- 4 A doctor noticed or suspected as a result of examination that a caregiver was shaking or had shaken a baby.
- 5 A child is hospitalized with Shaken Baby Syndrome.
- 6 A child dies, is brain damaged, or has a broken neck due to having been shaken.

**Physical Abuse--Nondescript abuse--**(can not be used if the allegation states where or how the child was hurt or if injury occurs on more than three body parts which must be indicated separately). = **109**

Severity

- |   |   |
|---|---|
| 1 | Dangerous acts, but no marks indicated<br><i>Examples:</i> <ul style="list-style-type: none"><li>• “The mother hits her kids all the time”</li></ul>  |
| 2 | Minor marks (small scratches, cuts or bruises)<br><i>Examples:</i> <ul style="list-style-type: none"><li>• “The caregiver hit his kids &amp; left a bruise”</li><li>• “She hit at him and scratched him”</li></ul>          |
| 3 | Numerous or nonminor marks<br><i>Examples:</i> <ul style="list-style-type: none"><li>• “There were bruises all over his body after he was hit”</li></ul>  |
| 4 | Medical/Emergency Treatment; hospitalized less than 24 hours (trained medical professional) <ul style="list-style-type: none"><li>• “His mom hit him and we had to go to the emergency room to get him looked at”</li></ul> |
| 5 | Hospitalized more than 24 hours   |
| 6 | Permanent disability/scarring/disfigurement/fatality  |



## Sexual Abuse = 200

Sexual Abuse is coded when any sexual contact or attempt at sexual contact occurs between a caregiver or other responsible adult and a child, for purposes of the caregiver's sexual gratification or financial benefit. In cases of sexual abuse, caregiver or responsible adult refers to any family member or friend who has a relationship with the child, or is in a position of authority over the child (e.g. baby-sitter). Because this system assesses Child Protective records only, there are instances of sexual abuse that are not available in the Child Protective records. For example, sexual abuse that occurs outside of the home perpetrated by nonfamily members typically is investigated solely by criminal courts, and consequently, may not be accessible. Any relevant information in the records related to sexual abuse should be scored. Researchers should be aware of this issue, and we encourage investigators to use additional methods for exploring extrafamilial maltreatment that may not be available through Child Protective records.

Please note that caregivers may use physical or psychological coercion in their attempts to engage a child in sexual relations. In cases where the caregiver verbally threatens a child in an effort to have sexual relations, then Emotional Maltreatment and Sexual Abuse would both be scored. If a nonoffending caregiver tells a child not to tell about the abuse, this would be scored under Emotional Maltreatment as well. As noted under Physical Abuse, physical injuries that occur as a direct result of sexual interaction (e.g. vaginal or rectal tears) are coded solely under Sexual Abuse. Other injuries that may accompany sexual acts in an effort to force a child to engage in sexual relations (e.g. beatings, burning) are scored under both Physical Abuse and Sexual Abuse.

### Severity

- 1 The caregiver *exposes the child to explicit sexual stimuli* or activities, although the child is not directly involved.  
*Examples:*
- The caregiver exposes the child to pornographic materials.
  - The caregiver makes no attempt to prevent the child from being exposed to sexual activity.
  - The caregiver discusses sex explicitly in front of the child in a non-educational fashion. Non-educational discussion of sex includes graphic depiction of parents' sexual activity or fantasies to the child. These discussions are held without any attempt to prevent the child from exposure to such descriptions.
- 2 The caregiver makes direct *requests for sexual contact* with the child.  
The caregiver *exposes his or her genitals* to the child for the purposes of adult sexual gratification or in an

attempt to sexually stimulate the child.

*Examples:*

- The caregiver asks the child to engage in sexual relations, but no physical contact is involved.
- The caregiver invites the child to watch him masturbate.

3 The caregiver engages the child in mutual *sexual touching*, or has the child touch the caregiver for sexual gratification.

The caregiver touches the child for sexual gratification.

*Examples:*

- The caregiver fondles the child for sexual gratification.
- The caregiver engages in mutual masturbation with the child.

4 The caregiver *physically attempts to penetrate the child* or actually penetrates the child sexually. This includes coitus, oral sex, anal sex, or any other form of sodomy.

*Examples:*

- The caregiver molests the child.
- The caregiver engages or attempts intercourse with the child.
- The child has venereal disease. No information regarding the sexual contact is known.
- A mother has oral sex with her son.

5 The caregiver has *forced intercourse* or other forms of sexual penetration. Force includes the use of manual or mechanical restraint, for the purpose of engaging the child in sexual relations. Force also includes use of weapons, physical brutality, and physically overpowering the child, specifically for engaging in sexual relations. Note that Physical Abuse may be scored in addition to Sexual Abuse in cases in which the child is injured as a result of physical force, and the injury is not a direct result of the sexual penetration.

The caregiver *prostitutes the child*. This includes using the child for pornography, allowing, encouraging or forcing the child to have sex with other adults.

Any mention of the word 'rape' is coded here.

*Examples:*

- The caregiver ties the child to the bed and rapes the child (Note that Emotional Maltreatment would also be scored).

- The caregiver sodomizes the child at gunpoint.
- The caregiver forces the child to participate in the filming of pornographic movies.
- The caregiver invites one or more other partners to have sexual relations with the child.

### Physical Neglect, Failure to Provide (FTP) 300

Physical Neglect, Failure to Provide, is coded when a caregiver or responsible adult fails to exercise a minimum degree of care in meeting the child's physical needs. When families are below the poverty level, physical neglect is scored if children's physical needs are not met because the parents fail to access available community resources for the well-being of their children. For example, parents are unable to provide food for their children; however, they have not taken the necessary steps to apply for food stamps or to seek alternate sources of emergency sustenance.

Failure to provide includes not meeting children's physical needs in any of the following domains:

- a. Supplying the child with adequate *food*.
- b. Ensuring that the child has *clothing* that is sanitary, appropriate for the weather and permits the child freedom of movement.
- c. Providing adequate *shelter*
- d. Ensuring adequate *medical, dental, and mental health care*
- e. Ensuring the child's adequate *hygiene*.

As with each of the severity scales, the 5-point range for Failure to Provide is meant to be a helpful guideline in making judgments about the seriousness of the impact of the incident on the child's development. However, as with each subtype of maltreatment, there will be occurrences in which the specific nature of the incident dictates to the coder that an event requires a higher rating than indicated by the guidelines of the system. For example, parental failure to follow through with treatment for a low to moderate elevation in the child's blood lead level would typically be given a code of 3 under FTP-Medical. However, if the child has extremely high lead levels that remain untreated through parental negligence, a 4 or 5 could be scored, depending on the severity of the impairment to the child.

## FTP-Food = 301

### Severity

- 1 The caregiver does not ensure that food is available for *regular meals*. The child (less than age 10) often has had to fix his or her own supper and/or occasionally misses meals because of parental negligence.  
*Examples:*  
\* A 9-year old child fixes dinner several times per week because the caregivers are sleeping.
- 2 The caregiver does not ensure that any *food is available*. The house is without food often, and two or more consecutive meals are missed 2-3 times per week. The caregiver does not feed the child for 24 hours.  
*Examples:*
  - A social worker has visited the home several times when no food has been available. The children report that they do not have lunch or dinner two or three times per week.
- 3 The caregiver does not provide meals on a regular basis, thereby perpetuating a pattern of *frequently missed meals*; as many as four or more periods of at least two consecutive meals per week are unavailable to the child.  
*Examples*
  - The children are not fed frequently. They have missed two consecutive meals an average of four times a week for several months.
- 4 The caregiver has provided such poor nourishment that the *child fails to gain weight or grow at the rate expected* for their development. The failure to grow as expected is not due to any identifiable organic factors.
- 5 The caregiver has provided such *poor nourishment or care* to the child that physical consequences have ensued such as weight loss in an infant, severe malnutrition, or severe nonorganic failure-to-thrive (diagnosed by a physician or other medical professional).  
*Examples:*
  - The child is diagnosed as being severely malnourished.

## Failure to Provide—Clothing = 302

### Severity

1 The caregiver fails to provide *clothing* for the child that is adequately clean and *allows freedom of movement* (e.g. the clothing is so small that it restricts movement or so large the child often trips or has difficulty keeping the clothing on).

#### *Examples:*

- The child always wears clothing so small it restricts movement.

2 The caregiver does not dress the child in *clothing* that is *appropriate for the weather* (e.g. lightweight clothing during the winter).

#### *Examples:*

- A child has walked to school several days wearing only a thin jacket without hat or gloves. The temperature has averaged 25 degrees Fahrenheit.

No Examples given for severity levels 3-5.

**Failure to Provide--Shelter** (Note that the initial levels of shelter have to do with cleanliness & mess. Levels 3-5 are about actual physical problems with having shelter. Severe cleanliness levels are scored under Failure to Provide--Hygiene.) = **303**

Severity

- 1 The caregiver does not attempt to *clean the house*. Garbage has not been removed, dirty dishes are encrusted with food, and floors & other surfaces are very dirty. An unpleasant odor from garbage and other debris permeates living quarters. **INCLUDE, NON SPECIFIC POTENTIALLY HAZARDOUS LIVING SITUATIONS, EXAMPLE: AN INFANT SLEEPING IN A ROOM SO CLUTTERED THEY WOULD BE UNABLE TO GET IT OUT IN A CASE OF FIRE**
- 2 The caregiver is aware that the *house is infested* with roaches or other vermin and has not attempted to improve the conditions.  
The caregiver does not ensure adequate *sleeping arrangements* for the child (e.g. there are no beds or mattresses, or the mattresses are filthy & sodden with urine or other substances likely to promote the growth of mold or mildew).
- 3 The caregiver fails to make *adequate provisions for shelter* for the family. For example, the caregiver does not acquire or maintain public assistance, resulting in a loss of residence or loss of financial assistance for seven days or more.  
*Examples:*
- The family has been evicted because the parent did not take appropriate actions to maintain public assistance and made no other arrangements for making rent payments. The family had no stable living arrangements for two weeks.
- 4 The caregiver has made *no arrangements for adequate shelter* (e.g. the caregiver has not sought heat during the winter; the family is living in a car because alternative housing was not sought). The condition continues for prolonged periods.  
*Examples:*
- The children live in an unheated home because the parents have failed to ensure that heating was available. During the winter, the children come to school with frostbite.

No examples given for level 5

**Failure to Provide—Medical = 304 (Mental health issues are coded either a 1 or a 5 in severity.)**

Severity

- 1      The caregiver has missed several of the child's *medical or dental appointments*, and often fails to take the child to the doctor or dentist for "checkups" or "well-baby appointments". The caregiver does not ensure that the child is taken to the doctor or health clinic for adequate immunizations, and medical personnel have expressed concern.
- The caregiver does not attend to a *mild behavior problem* about which professionals or paraprofessionals have commented (e.g., the child exhibits some symptomatology, but displays relatively mild impairment in school or social functioning).
- Examples:*
- The caregiver has failed to sign papers for evaluation of a behavior problem that has been reported at school.
- 2      The caregiver seeks medical attention but does not follow through consistently with *medical recommendations* for a minor illness or infection (e.g., prescribed medicine is not administered for mild infection, chronic head lice is not treated).
- Examples:*
- The child has been diagnosed with an ear infection, but the parent does not follow through with administration of the prescribed antibiotic.
- 3      The caregiver does not seek or follow through *with medical treatment for moderately severe medical problems* (e.g. the caregiver does not follow preventive measures for a chronic heart condition, or moderately elevated blood lead levels are left untreated), or the caregiver administers medical treatment that is inappropriate without consulting a doctor (e.g., caregiver gives child mild sedatives to control child, without doctor's consultation). Need evidence of symptoms or denial of medically recommended treatment.
- The expectant mother jeopardizes the health of her unborn child by using *alcohol or drugs during pregnancy, but no fetal alcohol or drug symptoms are evident.*
- Examples:*
- The parent has been drunk several times during pregnancy.



- The child has come to school with an infected cut. Despite notes from the school nurse recommending medical attention, the cut continues to be untreated.

4 The caregiver does not seek or comply *with medical treatment for potentially life-threatening illness or injury* (e.g. the child is not taken to the Emergency Room for severe bleeding, third degree burn, fractured skull).

*Examples:*

- The child was hit by a car, receiving a fracture and severe cuts and bruises, The child came to school complaining of pain and stated that the parents would not take him to the hospital.

5 The caregiver has abused alcohol or drugs during pregnancy to the extent that the infant is born with Fetal Alcohol Syndrome or a *congenital drug addiction*.

The caregiver provided such *gross inattention to the child's medical needs* that the child died or was permanently disabled as a result of lack of medical treatment.

The caregiver does not seek professional help for the child's *life-threatening emotional problems* (e.g. suicidal or homicidal attempts).

*Examples:*

- At birth, the child is addicted to heroin.
- The caregiver was informed that the child had expressed suicidal ideation, but the caregiver did nothing to ensure the child's safety.

## Failure to Provide—Hygiene = 305

### Severity

- 1 The caregiver does not attempt to keep the child clean. The caretaker *bathes* the child and/or washes the child's hair very infrequently. The child brushes teeth only infrequently or not at all, and signs of tooth decay or discoloration are evident  
*Examples:*
- The child is dirty and frequently scratches matted hair.
  - Clothing is dirty and smells of urine.
- 2 The caregiver does not change the infant's diaper frequently, often leaving *soiled diapers unchanged* for several hours, resulting in diaper rash.
- 3 The caregiver maintains a *somewhat unsanitary living situation*, where spoiled food or garbage are frequently present and/or where rat or vermin infestation is extreme and untreated.  
*Examples:*
- A social worker has visited the home several times, and each time the house has been a mess. Dirty dishes and spoiled food were all over the kitchen table, counters, and sink. Rats were seen in the open garbage bins by the front door.
- 4 The caregiver maintains the home environment such that *living conditions are extremely unhealthy* (e.g. feces and urine are present in living areas).

None given for 5

## Physical Neglect, Lack of Supervision 400

Presently, Lack of Supervision is one of the most frequently reported subtypes of maltreatment; however, it is a particularly ambiguous subtype, in part because no clear criteria or standards exist regarding what constitutes age-appropriate supervision. Within this system, Lack of Supervision is coded when a caregiver or responsible adult does not take adequate precautions to ensure a child's safety in and out of the home, given the child's particular emotional and developmental needs. The parent's failure to insure the child's safety may include both permitting the child to be exposed to dangerous situations (e.g. allowing the child to play in an unsafe area, permitting the child to accompany someone with a known history of violent acts) as well as failing to take adequate precautions to evaluate the conditions pertaining to the child's safety (e.g. neglecting to screen the background or competency of alternate caregivers, failing to ascertain the child's whereabouts). There are four broad elements that caregivers may violate to jeopardize children's physical safety:

1 401 *Supervision*--failing to take steps to ensure that the child is engaging in safe activities. According to this dimension, as the number of hours that the child is unsupervised increases, so does the potential for harm. Therefore, severity scores for Lack of Supervision are augmented with more prolonged periods of inadequate supervision. To assist coders in making distinctions about the relative seriousness of particular instances of Lack of Supervision, we have provided approximate duration's of inadequate supervision that are intended to serve as guidelines rather than as firm criteria. We recognize that these cutoff points are somewhat arbitrary and that exact times are frequently unavailable in the records; however, we felt that establishing ranges of time was necessary to clarify coding decisions and, thus, to increase reliability among coders.

2 402 *Environment*--Failing to ensure that the child is playing in a safe area. This dimension is distinguished from lack of hygiene or medically unhealthy conditions of the living environment covered under Failure to Provide. In the case of Lack of Supervision, environment refers to immediate physical dangers inside or outside the home such as broken glass, unguarded electrical fixtures, toxic chemicals, and firearms.

3 403 *Substitute Care*--Failing to provide for adequate substitute care in the caregiver's absence, or mental or physical incapacity. In this respect, lack of substitute care includes situations when auxiliary supervision is not obtained, when parents do not ensure that substitute caregivers are able to adequately supervise the child, when caregivers are unable to adequately monitor the child's safety because the caregivers are intoxicated with alcohol or drugs, or when caregivers have a severe psychiatric condition that makes appropriate supervision of children highly unlikely (e.g., caregiver has delusions or hallucinations).

Additionally, children who have a history of dangerous, impulsive, or immature behavior require more intensive supervision, and may be given a higher severity rating if they are unsupervised. For example, an adolescent who is

known to exhibit poor judgment and to engage in impulsive and destructive behavior would require more supervision than most children of the same age. Failing to recognize the developmental needs of the child in providing adequate supervision to ensure the child's safety must also be accounted for. Because, in general, the consequences of failing to supervise younger children are potentially more serious, the influence of the child's developmental level should be considered when making decisions about the severity of parental failure to provide adequate supervision. It is difficult to quantify the amount of supervision that is required at each developmental level. The examples provided give some guidelines of relative severity, but the information available for each case must be considered with regard to the age and particular developmental needs of each child.

**Neglect, Lack of Supervision = 401 (no time frame stated = a severity code of 1 regardless of child's age)**

Severity

- 1 The caregiver fails to provide adequate supervision or arrange for alternate adequate supervision for *short periods of time* (i.e. less than 3 hours) with *no immediate source of danger* in the environment.  
*Examples:*
- An eight year-old is *left alone* during the day for a few hours.
- 2 The caregiver fails to provide supervision or arrange for alternate adequate supervision for *several hours* (approximately 3-8 hours) with *no immediate source of danger in the environment*. Children receive *inadequate supervision despite a history of problematic behavior* (e.g., impulsive behavior, hyperactivity).  
*Examples:*
- The child is left alone frequently during the day *without a responsible caregiver* available.
  - Children get into trouble with neighbors because of lack of supervision.
- 3 The caregiver fails to provide adequate supervision for *extended periods of time* (e.g., approximately 8 to 10 hours.)  
*Examples:*
- The child is left *alone at night* (e.g. for 8-10 hours).
  - A 6-year old is locked out of the home alone, and the caregiver does not return until evening.
- 4 The caregiver does not provide supervision for *extensive periods* of time (e.g., overnight, “hours at a time,” or approximately 10-12 hours). A child with a known *history of destructive or dangerous acts* (e.g., fire-setting, suicidal ideation) is left unsupervised.  
*Examples:*
- A grade-school-aged child is *left alone overnight*.
- 5 The caregiver fails to provide adequate supervision for *more than 12 hours*.  
*Examples:*
- A preschool child is *left alone for 24 hours*.
  - A child is *kicked out* of the home with no alternative living arrangements.

## Neglect, Lack of Supervision—Environment = 402

### Severity

- 1 Preschoolers play outside unsupervised.
- 2 The caregiver fails to provide supervision for *short periods of time* (less than 3 hours) when the children are in an *unsafe* play area.  
*Examples:*
- The child is allowed to play in an unsafe play area (e.g. broken glass present, old basement or garage cluttered with toxic chemicals, power tools, or old refrigerator) unsupervised.
- 3 The caregiver allows the child to play in an *unsafe play area for several hours* (approximately 3-8 hours).
- 4 The caregiver allows the child to play in an area that is *very dangerous* (i.e. high probability that the child will be hit by a car or fall out of a window, get burned, or drown).  
*Examples:*
- The child is allowed to play by highway, or on the roof of a condemned building.
- 5 The caregiver places the child in a *life-threatening situation*, or does not take steps to prevent the child from being in a life-threatening situation. **INCLUDE HERE DRIVING DRUNK WITH CHILDREN IN CAR.**  
*Examples:*
- The caregivers keep *loaded firearms* in a location that is accessible to the child.
  - A toddler plays near a swimming pool unsupervised (Note that for a toddler, being unsupervised near water is considered life threatening because of the high frequency of deaths by drowning to this age of child).
  - Not in a car seat if younger than 6 years old or weighing less than 60 pounds.

## Lack of Supervision--Substitute Care = 403

### Severity

- 1 Children are left in the care of *questionably suitable baby-sitters* (e.g., preadolescent, mildly impaired elderly person) for short periods of time (i.e. less than 3 hours).
- 2 The caregiver provides poor supervisors for *several hours* (3-8 hours).  
Example:
- An infant is left in the care of an 8 year old for several hours (In this case the infant is given a code of 2. The 8-yr. old would be given a code of 1 under Lack of Supervision, similar to the example under level 1 in this category).
- 3 The child is left in the care of an unreliable caregiver (e.g. one who is known to drink, or is extremely inattentive, or the parent makes no attempt to ensure that the caregiver was reliable) for several hours.
- 4 The child is *allowed to go with a caregiver* who has a known history of violence (known to the caregiver) and/or sexual acts against children or who has a restraining order prohibiting contact with the child.  
INCLUDE HERE IF THE PRESENCE OF A SEXUAL OFFENDER IS IN THE HOME OR IS ALLOWED TO HAVE ANY CONTACT WITH THE CHILD.

No examples given for 5.

## Emotional Maltreatment 500

There is a growing consensus that virtually all acts of abuse and neglect carry negative emotional/psychological messages to their victims. Consequently, it may be argued that every act of maltreatment constitutes Emotional Maltreatment. We have differentiated acts of Emotional Maltreatment from other forms of maltreatment for the purposes of maintaining the individual conceptual integrity of each of the subtypes defined within our system. The majority of incidents falling into Emotional Maltreatment involve persistent or extreme thwarting of children's basic emotional needs. This category also includes parental acts that are harmful because they are insensitive to the child's developmental level. These needs include, but are not limited to, the following:

- 1 *Psychological safety & security*: the need for a family environment free of excessive hostility and violence, and the need for an available and stable attachment figure. Note that this category refers to the interpersonal climate of the home, whereas Lack of Supervision (LOS) refers to cases in which the physical environment is unsafe (See below for additional distinctions between subtypes).
- 2 *Acceptance & self-esteem*: the need for positive regard and the absence of excessively negative or unrealistic evaluation, given the child's particular developmental level.
- 3 *Age-appropriate autonomy*: the need to explore the environment and extrafamilial relationships, to individuate within the bounds of parental acceptance, structure, and limit setting, without developmentally inappropriate responsibility or constraints placed on the child.

These are acts of maltreatment that may be scored solely as Emotional maltreatment or that may be scored in conjunction with other subtypes of maltreatment. To clarify potentially confusing areas, we specify the following inclusion/exclusion criteria:

- 1 One area of interface between Emotional Maltreatment and incidents of Physical Abuse concerns physical restraint or confinement of a child. Because restraint or confinement jeopardizes the child's need for autonomy, we consider these acts to be Emotional Maltreatment. However, if the acts result in physical injuries, (e.g. rope burns), these acts would be scored as both Emotional Maltreatment and Physical Abuse.

A second area of overlap surrounds incidents of homicidal threats. In situations in which parents attempt to terrorize children by threatening them or making gestures of harm, Emotional Maltreatment is scored. However, if during the act, the parents actually inflict injury to the children, the act is considered Physical Abuse.



2 In instances in which there is evidence that threats or psychological coercion are employed in an effort to engage the child in sexual relations, then both Sexual Abuse and Emotional Maltreatment would be scored (Please see Sexual Abuse for elaboration of this point).

3 An important distinction between Emotional Maltreatment and Physical Neglect is necessary in instances of abandonment. In cases in which a parent abandons a child but ensures that the child is adequately supervised and that the child's physical needs are met (e.g., leaves the child with relatives with no information about the parent's whereabouts), we consider this to be Emotional Maltreatment. If the child is left completely alone with no [provisions for supervision or physical needs, then Lack of Supervision, Failure to Provide, and Emotional Maltreatment may each be scored.

4 In situations in which a young child is forced to accept primary responsibility for the care of another individual and in which criteria for Lack of Supervision are met (as a result of either child's need for more intensive supervision), then both Emotional Maltreatment (for the supervising child) and Lack of Supervision (for one or both children) would be scored.

### **Emotional Maltreatment = 500**

#### Severity

- |    |  |
|----|--|
| 11 | The caregiver regularly expects or requires the child to assume an <i>inappropriate level of responsibility</i> (e.g., school-aged children assuming primary responsibility for caretaking younger children; the report must include an explicit statement that the child is responsible for the caretaking role). |
| 12 | The caregiver <i>undermines the child's relationships</i> with other people significant to the child (e.g., makes frequent derogatory comments about other parents).   |
| 13 | The caregiver often <i>belittles or ridicules the child</i> (e.g. calls the child "stupid", "loser", wimp").   |
| 14 | The caregiver <i>ignores or refuses to acknowledge</i> the child's bids for attention (e.g., the caregiver generally does not respond to infant cries or older child's attempts to initiate interaction)   |
| 15 | The caregiver <i>uses fear or intimidation</i> as a method of disciplining. INCLUDE HERE PRESSURING A CHILD TO KEEP SECRET(S) ABOUT A FAMILY SITUATION.  |

- 21 The caregiver does not permit *age-appropriate socialization* (e.g., school age child not permitted to play with friends).
- 22 The caregiver places the child in a *role-reversal* (e.g., child is expected to take care of the caregiver).
- 23 The caregiver consistently thwarts the child's developing sense of maturity and responsibility (e.g., *infantilizes* the child).
- 24 The caregiver *rejects or is inattentive to* or unaware of the child's needs for affection and positive regard (e.g., the caregiver does not engage in positive or affectionate interactions with the child; this lack of attention is a chronic pattern).
- 25 The caregiver allows the child to be exposed to the caregiver's extreme but *nonviolent marital conflict*.
- 
- 31 The caregiver *blames the children for marital or family problems* (e.g., tells the children that they are the reason for the spouses divorce).
- 32 The caregiver sets up the child to fail or to feel inadequate by *having inappropriate or excessive expectations* for the child.
- 33 The caregiver makes a serious and convincing *threat to injure* the child.
- 34 The caregiver calls the child *derogatory names* (e.g. "slut", "whore", "worthless").
- 35 The caregiver *binds* the child's hands and feet for moderate periods of time (e.g. approximately 2 to 5 hours), the child is not attended
- 36 The caregiver exposes the child to *extreme, unpredictable, and/or inappropriate behavior* (e.g. violence toward other family members, psychotic or paranoid ideation that results in violent outbursts that terrorize the child; not used for DV between adult partners).
- 37 The caregiver demonstrates a pattern of *negativity or hostility* toward the child (e.g. the caregiver screams at the children that they can never do anything right).
- 
- 41 The caregiver threatens *suicide or abandonment* in front of the child.
- 42 The caregiver allows the child to be exposed to *extreme marital violence* in which serious injuries occur to the caregiver; or life-threatening behaviors like choking.
- 43 The caregiver *blames* the child for the *suicide or death* of another family member .

- 44 The caregiver *confines and isolates the child* (e.g., locks the child in his or her room), and the confinement is between five and eight hours.
- 45 The caregiver uses *restrictive methods to bind* a child or places the child in close confinement for less than two hours. (Close confinement is scored in situations in which the child's movement is extremely restricted, or the temperature, ventilation, or lighting is severely limited or is maintained in a detrimental range).
- 51 The caregiver makes a *suicidal attempt* in the presence of the child.
- 52 The caregiver makes a *homicidal attempt* or *realistic homicidal threat* against the child without actual physical harm to the child.
- 53 The primary caregiver *abandons the child* for 24 hours or longer without any indication of when or if he or she will return and where he or she can be located (Note: Lack of Supervision and Failure to Provide may also be scored unless provisions are made for the child's physical well-being and need for supervision to be addressed. See earlier description for an elaboration of the interface among Emotional Maltreatment, Lack of Supervision, and Failure to Provide in instances of abandonment).
- 54 The caregiver uses *extremely restrictive methods to bind* a child or places the child in close confinement for two or more hours (e.g. the child is tightly tied to a chair, or locked in a trunk).
- 55 The caregiver *confines the child to an enclosed space* (e.g. locks the child in a closet or small space) for extended periods (e.g., more than 8 hours).

## Moral-Legal/Educational Maltreatment 600/700

Moral-Legal/Educational Maltreatment is coded when any behaviors on the part of the caregiver or responsible adult occur that fail to demonstrate a minimum degree of care in assisting the child to integrate with the expectations of society, which includes insuring the child's adequate education. The caregiver either exposes or involves the child in illegal activity or other activities that may foster delinquency or antisocial behavior in the child. Alternately, the caregiver does not ensure that the child is properly socialized by regularly attending school.

**MORAL/LEGAL = 600**

**EDUCATIONAL = 700**

### Severity

- 1 ML: The caregiver permits the child to be present for adult activities for which the child is under age.  
ED: The caregiver often lets the child stay home from school, and the absences are not the result of illness or family emergency (e.g. a death in the family). The absences occur for less than 15% of the reported period.  
*Examples:*
- ML: The caregiver takes the child to drunken parties and adult bars that are clearly not family situations.
  - ED: The caregiver allows the child to miss 25 days of school in a school year without exceptions.
- 2 ML: The caregiver participates in illegal behavior with the child's knowledge (e.g., shoplifting, selling stolen merchandise)..  
ED: The caregiver allows the child to miss school as much as 15%-25% of the reported period, not due to illness.  
*Examples:*
- ML: The child was present when the caregiver was selling drugs.
  - ED: The caregiver allows the child to miss school as much as 15%-25% of the reported period, not due to illness.
- 3 ML: The caregiver knows that the child is involved in illegal activities but does not attempt to intervene (e.g., permits vandalism, shoplifting, drinking).  
ED: The caregiver keeps the child out of school or knows that the child is truant for extended periods

(26%-50% of year, or as many as 16 school days in a row) without caregiver's intervention.

*Examples:*

- ML: The caregiver has been informed that the child has been shoplifting, but the caregiver has done nothing.
- ED: The child missed 3 consecutive weeks of school, not due to illness.

4 ML: The caregiver involves the child in misdemeanors (e.g. child is encouraged to shoplift, child is given drugs). Adults encourage or force participation in illegal activities. INCLUDE HERE GIVING DRUGS OR ALCOHOL TO A CHILD.

ED: The caregiver frequently keeps the child out of school for significant amounts of time (more than 50% of the reported period, or 16+ days in a row), but the child maintains school enrollment.

*Examples:*

- ML: The caregiver encourages the child to steal food from the grocery store.
- ED: The family has moved several times, and each time, the child has missed significant periods of school. The child is enrolled, but has missed more than half of the school year.

5 ML: The caregiver involves the child in felonies (e.g., the child participates in armed robbery, kidnapping).

ED: The caregiver encourages a child (less than 16 years old) to drop out of school or does not send the child to school at all.

*Examples:*

- ML: The child has been living in a drug house run by the caregivers. The child has been involved in selling drugs and has participated in armed conflicts with other drug dealers.
- ED: The caregiver has not enrolled the child in school, and the child is receiving no educational instruction.

## Drugs/Alcohol - 800

The use of drugs and/or alcohol has a negative effect on the well-being, caretaking or safety of the child. The severity for all 800 cases is 6. This is not to indicate an actual severity but rather an arbitrary number assigned as a blanket severity.

Examples:

- Drug use in the home
- Caregiver overdoses
- Mom stays out drinking
- Dad picked child up at daycare and was clear he had been drinking.
- Mom is a crack addict, she and her friends stay up all night doing drugs. Child comes to school late and is often tired.

## Appendix C: Risk Behaviors of Family and Friends Scale

### RBFA

*These next questions are about the people you live with (like parents, brothers, sisters, or anyone who lives with you at your home) and things they might use. If you don't know, just give your best guess.*

1. **Does anyone that you live with smoke cigarettes?**  
 NO (0)  YES (1)
2. **Does anyone that you live with chew tobacco or snuff?**  
 NO (0)  YES (1)
3. **Does anyone that you live with drink beer, wine, liquor, malt liquor, or wine coolers?**  
 NO (0)  YES (1)
4. **Does anyone that you live with smoke marijuana (weed, pot or grass)?**  
 NO (0)  YES (1)
5. **Does anyone that you live with use cocaine or crack?**  
 NO (0)  YES (1)
6. **Does anyone that you live with use meth, speed, crystal or uppers?**  
 NO (0)  YES (1)
7. **Does anyone that you live with inject drugs to get high?**  
 NO (0)  YES (1)
8. **Does anyone that you live with use any other type of drugs like LSD or heroin?**  
 NO (0)  YES (1)
9. **Does anyone that you live with get drunk or high?**  
 NO (0) (*skip to #10*)  YES (1)
  - 9a. **About how often is someone in your house drunk or high?**  
 Almost every day (4)  
 Once or twice a week (3)  
 1-3 times per month (2)  
 Less than once a month (1)

*These next questions are about your close friends and things they do. Again, if you don't really know, just give your best guess.*

**How many of your close friends...**

**10. Get good grades in school?**

- None of my friends (0)
- Some of my friends (1)
- Most of my friends (2)

**How many of your close friends...**

**11. Behave well in school?**

- None of my friends (0)
- Some of my friends (1)
- Most of my friends (2)

**How many of your close friends...**

**12. Attend church?**

- None of my friends (0)
- Some of my friends (1)
- Most of my friends (2)

**How many of your close friends...**

**13. Participate in school clubs?**

- None of my friends (0)
- Some of my friends (1)
- Most of my friends (2)

**How many of your close friends...**

**14. Participate in sports?**

- None of my friends (0)
- Some of my friends (1)
- Most of my friends (2)

**How many of your close friends...**

**15. Smoke cigarettes?**

- None of my friends (0)
- Some of my friends (1)
- Most of my friends (2)



**How many of your close friends...**

**16. Drink alcohol?**

- None of my friends (0)
- Some of my friends (1)
- Most of my friends (2)

**How many of your close friends...**

**17. Have had sexual intercourse?**

- None of my friends (0)
- Some of my friends (1)
- Most of my friends (2)

**How many of your close friends...**

**18. Carry guns, knives, or other weapons?**

- None of my friends (0)
- Some of my friends (1)
- Most of my friends (2)

**How many of your close friends...**

**19. Smoke marijuana?**

- None of my friends (0)
- Some of my friends (1)
- Most of my friends (2)

**How many of your close friends...**

**20. Use cocaine or crack?**

- None of my friends (0)
- Some of my friends (1)
- Most of my friends (2)

**How many of your close friends...**

**21. Use heroin?**

- None of my friends (0)
- Some of my friends (1)
- Most of my friends (2)

**How many of your close friends...**

**22. Use other drugs?**

- None of my friends (0)
- Some of my friends (1)
- Most of my friends (2)

**How many of your close friends...**

**23. Sell or deliver drugs?**

- None of my friends (0)
- Some of my friends (1)
- Most of my friends (2)

**How many of your close friends...**

**24. Shoplift or steal?**

- None of my friends (0)
- Some of my friends (1)
- Most of my friends (2)

**How many of your close friends...**

**25. Set fires?**

- None of my friends (0)
- Some of my friends (1)
- Most of my friends (2)

**How many of your close friends...**

**26. Get into fights?**

- None of my friends (0)
- Some of my friends (1)
- Most of my friends (2)

**How many of your close friends...**

**27. Damage or destroy things, like cars, buildings or other people's property?**

- None of my friends (0)
- Some of my friends (1)
- Most of my friends (2)

## Appendix D: History of Witnessed Violence Scale

### HWVA

*These questions are about things you may have seen at some time during your life. In your answers, DO NOT INCLUDE THINGS YOU HAVE SEEN ON TV, IN THE MOVIES, OR ON VIDEOS, but only things you have seen in real life. This is only about what you have seen; NOT things that actually happened to you or that you have done to someone else.*

#### 1. Have you ever seen someone arrested?

No (0) (*skip to 2*)       Yes (1)

#### 1a. How many times have you EVER seen someone arrested?

1 time (1)       2-3 times (2)       4 or more times (3)

#### Who did you see being arrested? (*check all that apply*)

- 1b1. your father or someone like a father to you       1b4. another family member of yours
- 1b2. your mother or someone like a mother to you       1b5. a friend or someone you knew
- 1b3. your sister or brother       1b6. a stranger

#### 1c. How often have you seen someone arrested IN THE LAST YEAR?

Never (0) (*skip to 2*)       1 time (1)       2-3 times (2)       4 or more times (3)

#### Who did you see being arrested in the last year? (*check all that apply*)

- 1d1. your father or someone like a father to you       1d4. another family member of yours
- 1d2. your mother or someone like a mother to you       1d5. a friend or someone you knew
- 1d3. your sister or brother       1d6. a stranger

**2. Have you ever seen someone being slapped, kicked, hit with something, or beaten up?**

No (0) (*skip to 3*)       Yes (1)

**Here are a few more questions about seeing someone being slapped, kicked, hit with something, or beaten up.**

**2a. How many times have you EVER seen this happen?**

1 time (1)       2-3 times (2)       4 or more times (3)

**2b. How often have you seen this happen IN THE LAST YEAR?**

Never (0)       1 time (1)       2-3 times (2)       4 or more times (3)

**Of the following people, who have you EVER seen this being done to? (check all that apply)**

- 2c1. Your father or someone like a father to you
- 2c2. Your mother or someone like a mother to you
- 2c3. Your sister or brother
- 2c4. Another family member of yours
- 2c5. Someone not in your family

*(Administer if **father** is a victim: see 2c1)*

**Who was doing this to your father or someone like a father to you? (check all that apply)**

- 2d1. his wife, ex-wife, partner, ex-partner, girlfriend or ex-girlfriend
- 2d2. another family member of yours
- 2d3. someone else, not in your family

*(Administer if **mother** is a victim: see 2c2)*

**Who was doing this to your mother or someone like a mother to you? (check all that apply)**

- 2e1. her husband, ex-husband, partner, ex-partner, boyfriend or ex-boyfriend
- 2e2. another family member of yours
- 2e3. someone else, not in your family

(Administer if **sister or brother** is a victim: see 2c3)

**Who was doing this to your sister or brother?** (check all that apply)

- 2f1. your father or someone like a father to you
- 2f2. your mother or someone like a mother to you
- 2f3. your sister or brother
- 2f4. another family member of yours
- 2f5. a friend or someone you knew
- 2f6. a stranger

(Administer if **another family member** is a victim: see 2c4)

**Who was doing this to another family member of yours?** (check all that apply)

- 2g1. your father or someone like a father to you
- 2g2. your mother or someone like a mother to you
- 2g3. your sister or brother
- 2g4. another family member of yours
- 2g5. a friend or someone you knew
- 2g6. a stranger

(Administer if **someone not in child's family** is a victim: see 2c5)

**Who was doing this to someone not in your family?** (check all that apply)

- 2h1. your father or someone like a father to you
- 2h2. your mother or someone like a mother to you
- 2h3. your sister or brother
- 2h4. another family member of yours
- 2h5. a friend or someone you knew
- 2h6. a stranger

**3. Have you ever seen someone pull a gun on another person?**

No (0) (skip to 4)       Yes (1)

**Here are a few more questions about seeing someone pull a gun on another person.**

**3a. How many times have you EVER seen this happen?**

1 time (1)       2-3 times (2)       4 or more times (3)

**3b. How often have you seen this happen IN THE LAST YEAR?**

Never (0)  1 time (1)  2-3 times (2)  4 or more times (3)

**Of the following people, who have you EVER seen this being done to? (check all that apply)**

- 3c1. Your father or someone like a father to you
- 3c2. Your mother or someone like a mother to you
- 3c3. Your sister or brother
- 3c4. Another family member of yours
- 3c5. Someone not in your family

*(Administer if **father** is a victim: see 3c1)*

**Who was doing this to your father or someone like a father to you? (check all that apply)**

- 3d1. his wife, ex-wife, partner, ex-partner, girlfriend or ex-girlfriend
- 3d2. another family member of yours
- 3d3. someone else, not in your family

*(Administer if **mother** is a victim: see 3c2)*

**Who was doing this to your mother or someone like a mother to you? (check all that apply)**

- 3e1. her husband, ex-husband, partner, ex-partner, boyfriend or ex-boyfriend
- 3e2. another family member of yours
- 3e3. someone else, not in your family

*(Administer if **sister or brother** is a victim: see 3c3)*

**Who was doing this to your sister or brother? (check all that apply)**

- 3f1. your father or someone like a father to you
- 3f2. your mother or someone like a mother to you
- 3f3. your sister or brother
- 3f4. another family member of yours
- 3f5. a friend or someone you knew
- 3f6. a stranger

(Administer if **another family member** is a victim: see 3c4)

**Who was doing this to another family member of yours?** (check all that apply)

- 3g1. your father or someone like a father to you
- 3g2. your mother or someone like a mother to you
- 3g3. your sister or brother
- 3g4. another family member of yours
- 3g5. a friend or someone you knew
- 3g6. a stranger

(Administer if **someone not in child's family** is a victim: see 3c5)

**Who was doing this to someone not in your family?** (check all that apply)

- 3h1. your father or someone like a father to you
- 3h2. your mother or someone like a mother to you
- 3h3. your sister or brother
- 3h4. another family member of yours
- 3h5. a friend or someone you knew
- 3h6. a stranger

**4. Have you ever seen someone pull a knife (or something like a knife) or razor on anyone?**

- No (0) (Skip to 5)       Yes (1)

**Here are a few more questions about seeing someone pull a knife (or something like a knife) or razor on another person.**

**4a. How many times have you EVER seen this happen?**

- 1 time (1)       2-3 times (2)       4 or more times (3)

**4b. How often have you seen this happen IN THE LAST YEAR?**

- Never (0)    1 time (1)    2-3 times (2)       4 or more times (3)

**Of the following people, who have you EVER seen this being done to?** (check all that apply)

- 4c1. Your father or someone like a father to you
- 4c2. Your mother or someone like a mother to you
- 4c3. Your sister or brother

4c4. Another family member of yours

4c5. Someone not in your family

*(Administer if **father** is a victim: see 4c1)*

**Who was doing this to your father or someone like a father to you?** *(check all that apply)*

4d1. his wife, ex-wife, partner, ex-partner, girlfriend or ex-girlfriend

4d2. another family member of yours

4d3. someone else, not in your family

*(Administer if **mother** is a victim: see 4c2)*

**Who was doing this to your mother or someone like a mother to you?** *(check all that apply)*

4e1. her husband, ex-husband, partner, ex-partner, boyfriend or ex-boyfriend

4e2. another family member of yours

4e3. someone else, not in your family

*(Administer if **sister or brother** is a victim: see 4c3)*

**Who was doing this to your sister or brother?** *(check all that apply)*

4f1. your father or someone like a father to you

4f2. your mother or someone like a mother to you

4f3. your sister or brother

4f4. another family member of yours

4f5. a friend or someone you knew

4f6. a stranger

*(Administer if **another family member** is a victim: see 4c4)*

**Who was doing this to another family member of yours?** *(check all that apply)*

4g1. your father or someone like a father to you

4g2. your mother or someone like a mother to you

4g3. your sister or brother

4g4. another family member of yours

4g5. a friend or someone you knew

4g6. a stranger



(Administer if **someone not in child's family** is a victim: see 4c5)

**Who was doing this to someone not in your family?** (check all that apply)

- 4h1. your father or someone like a father to you
- 4h2. your mother or someone like a mother to you
- 4h3. your sister or brother
- 4h4. another family member of yours
- 4h5. a friend or someone you knew
- 4h6. a stranger

**5. Have you ever seen someone get stabbed or cut with some type of weapon?**

- No (0) (skip to 6)       Yes (1)

**Here are a few more questions about seeing someone get stabbed or cut with some type of weapon.**

**5a. How many times have you EVER seen this happen?**

- 1 time (1)       2-3 times (2)       4 or more times (3)

**5b. How often have you seen this happen IN THE LAST YEAR?**

- Never (0)       1 time (1)       2-3 times (2)       4 or more times (3)

**Of the following people, who have you EVER seen this being done to?** (check all that apply)

- 5c1. Your father or someone like a father to you
- 5c2. Your mother or someone like a mother to you
- 5c3. Your sister or brother
- 5c4. Another family member of yours
- 5c5. Someone not in your family

(Administer if **father** is a victim: see 5c1)

**Who was doing this to your father or someone like a father to you?** (check all that apply)

- 5d1. his wife, ex-wife, partner, ex-partner, girlfriend or ex-girlfriend
- 5d2. another family member of yours
- 5d3. someone else, not in your family

(Administer if **mother** is a victim: see 5c2)

**Who was doing this to your mother or someone like a mother to you?** (check all that apply)

5e1. her husband, ex-husband, partner, ex-partner, boyfriend or ex-boyfriend

5e2. another family member of yours

5e3. someone else, not in your family

(Administer if **sister or brother** is a victim: see 5c3)

**Who was doing this to your sister or brother?** (check all that apply)

5f1. your father or someone like a father to you

5f2. your mother or someone like a mother to you

5f3. your sister or brother

5f4. another family member of yours

5f5. a friend or someone you knew

5f6. a stranger

(Administer if **another family member** is a victim: see 5c4)

**Who was doing this to another family member of yours?** (check all that apply)

5g1. your father or someone like a father to you

5g2. your mother or someone like a mother to you

5g3. your sister or brother

5g4. another family member of yours

5g5. a friend or someone you knew

5g6. a stranger

(Administer if **someone not in child's family** is a victim: see 5c5)

**Who was doing this to someone not in your family?** (check all that apply)

5h1. your father or someone like a father to you

5h2. your mother or someone like a mother to you

5h3. your sister or brother

5h4. another family member of yours

5h5. a friend or someone you knew

5h6. a stranger

**6. Have you ever seen someone get shot?**

No (0) (*Skip to 7*)       Yes (1)

**Here are a few more questions about seeing someone get shot.**

**6a. How many times have you EVER seen this happen?**

1 time (1)       2-3 times (2)       4 or more times (3)

**6b. How often have you seen this happen IN THE LAST YEAR?**

Never (0)       1 time (1)       2-3 times (2)       4 or more times (3)

**Of the following people, who have you EVER seen this being done to?** (*check all that apply*)

- 6c1. Your father or someone like a father to you
- 6c2. Your mother or someone like a mother to you
- 6c3. Your sister or brother
- 6c4. Another family member of yours
- 6c5. Someone not in your family

(*Administer if **father** is a victim: see 6c1*)

**Who was doing this to your father or someone like a father to you?** (*check all that apply*)

- 6d1. his wife, ex-wife, partner, ex-partner, girlfriend or ex-girlfriend
- 6d2. another family member of yours
- 6d3. someone else, not in your family

(*Administer if **mother** is a victim: see 6c2*)

**Who was doing this to your mother or someone like a mother to you?** (*check all that apply*)

- 6e1. her husband, ex-husband, partner, ex-partner, boyfriend or ex-boyfriend
- 6e2. another family member of yours
- 6e3. someone else, not in your family

(*Administer if **sister or brother** is a victim: see 6c3*)

**Who was doing this to your sister or brother?** (*check all that apply*)

- 6f1. your father or someone like a father to you

- 6f2. your mother or someone like a mother to you
- 6f3. your sister or brother
- 6f4. another family member of yours
- 6f5. a friend or someone you knew
- 6f6. a stranger

(Administer if **another family member** is a victim: see 6c4)

**Who was doing this to another family member of yours?** (check all that apply)

- 6g1. your father or someone like a father to you
- 6g2. your mother or someone like a mother to you
- 6g3. your sister or brother
- 6g4. another family member of yours
- 6g5. a friend or someone you knew
- 6g6. a stranger

(Administer if **someone not in child's family** is a victim: see 6c5)

**Who was doing this to someone not in your family?** (check all that apply)

- 6h1. your father or someone like a father to you
- 6h2. your mother or someone like a mother to you
- 6h3. your sister or brother
- 6h4. another family member of yours
- 6h5. a friend or someone you knew
- 6h6. a stranger

**7. Have you ever seen someone killed by another person?**

- No (0) (Skip to 8)       Yes (1)

**Here are a few more questions about seeing someone killed by another person.**

**7a. How many times have you EVER seen this happen?**

- 1 time (1)       2-3 times (2)       4 or more times (3)

**7b. How often have you seen this happen IN THE LAST YEAR?**

- Never (0)       1 time (1)       2-3 times (2)       4 or more times (3)

**Of the following people, who have you EVER seen this being done to?** *(check all that apply)*

- 7c1. Your father or someone like a father to you
- 7c2. Your mother or someone like a mother to you
- 7c3. Your sister or brother
- 7c4. Another family member of yours
- 7c5. Someone not in your family

*(Administer if **father** is a victim: see 7c1)*

**Who was doing this to your father or someone like a father to you?** *(check all that apply)*

- 7d1. his wife, ex-wife, partner, ex-partner, girlfriend or ex-girlfriend
- 7d2. another family member of yours
- 7d3. someone else, not in your family

*(Administer if **mother** is a victim: see 7c2)*

**Who was doing this to your mother or someone like a mother to you?** *(check all that apply)*

- 7e1. her husband, ex-husband, partner, ex-partner, boyfriend or ex-boyfriend
- 7e2. another family member of yours
- 7e3. someone else, not in your family

*(Administer if **sister or brother** is a victim: see 7c3)*

**Who was doing this to your sister or brother?** *(check all that apply)*

- 7f1. your father or someone like a father to you
- 7f2. your mother or someone like a mother to you
- 7f3. your sister or brother
- 7f4. another family member of yours
- 7f5. a friend or someone you knew
- 7f6. a stranger

*(Administer if **another family member** is a victim: see 7c4)*

**Who was doing this to another family member of yours?** *(check all that apply)*

- 7g1. your father or someone like a father to you
- 7g2. your mother or someone like a mother to you

- 7g3. your sister or brother
- 7g4. another family member of yours
- 7g5. a friend or someone you knew
- 7g6. a stranger

(Administer if **someone not in child's family** is a victim: see 7c5)

**Who was doing this to someone not in your family?** (check all that apply)

- 7h1. your father or someone like a father to you
- 7h2. your mother or someone like a mother to you
- 7h3. your sister or brother
- 7h4. another family member of yours
- 7h5. a friend or someone you knew
- 7h6. a stranger

**8. Have you ever seen someone getting sexually assaulted, molested or raped?**

No (0) (End of form)       Yes (1)

**Here are a few more questions about seeing someone getting sexually assaulted, molested or raped.**

**8a. How many times have you EVER seen this happen?**

1 time (1)       2-3 times (2)       4 or more times (3)

**8b. How often have you seen this happen IN THE LAST YEAR?**

Never (0)       1 time (1)       2-3 times (2)       4 or more times (3)

**Of the following people, who have you EVER seen this being done to?** (check all that apply)

- 8c1. Your father or someone like a father to you
- 8c2. Your mother or someone like a mother to you
- 8c3. Your sister or brother
- 8c4. Another family member of yours
- 8c5. Someone not in your family

*(Administer if **father** is a victim: see 8c1)*

**Who was doing this to your father or someone like a father to you?** *(check all that apply)*

8d1. his wife, ex-wife, partner, ex-partner, girlfriend or ex-girlfriend

8d2. another family member of yours

8d3. someone else, not in your family

*(Administer if **mother** is a victim: see 8c2)*

**Who was doing this to your mother or someone like a mother to you?** *(check all that apply)*

8e1. her husband, ex-husband, partner, ex-partner, boyfriend or ex-boyfriend

8e2. another family member of yours

8e3. someone else, not in your family

*(Administer if **sister or brother** is a victim: see 8c3)*

**Who was doing this to your sister or brother?** *(check all that apply)*

8f1. your father or someone like a father to you

8f2. your mother or someone like a mother to you

8f3. your sister or brother

8f4. another family member of yours

8f5. a friend or someone you knew

8f6. a stranger

*(Administer if **another family member** is a victim: see 8c4)*

**Who was doing this to another family member of yours?** *(check all that apply)*

8g1. your father or someone like a father to you

8g2. your mother or someone like a mother to you

8g3. your sister or brother

8g4. another family member of yours

8g5. a friend or someone you knew

8g6. a stranger

(Administer if **someone not in child's family** is a victim: see 8c5)

**Who was doing this to someone not in your family?** (check all that apply)

- 8h1. your father or someone like a father to you
- 8h2. your mother or someone like a mother to you
- 8h3. your sister or brother
- 8h4. another family member of yours
- 8h5. a friend or someone you knew
- 8h6. a stranger



## Appendix E: Child Demographics Module of Age 4 Caregiver Interview

### Child Demographics

#### BKGA

(5/91)

I want to start by getting some information about (CHILD): about his/her background and how she/he's been feeling and acting over the last few months. First, I'm just going to record some basic information.

1. CHILD'S DATE OF BIRTH: \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
(MO) (DAY) (YR)
- So right now s/he is . . . \_\_\_\_\_ years \_\_\_\_\_ months  
2a. 2b.

3. CHILD' SEX

- 1 MALE  
2 FEMALE

4. Which one of these best describes (CHILD)'s race or ethnic group?

- 1 WHITE  
2 BLACK  
3 HISPANIC  
4 NATIVE AMERICAN
- 5 ASIAN  
6 MIXED RACE  
7 OTHER \_\_\_\_\_  
(specify)

5. What is (CHILD)'s **first** language, that is, the language s/he speaks most often at home?

- 1 ENGLISH  
2 SPANISH  
3 OTHER \_\_\_\_\_  
(specify)

6. Does child have a second language?
- 0 NO-----> (GO TO Q. 7)
  - 1 YES-----> 6a. What is (CHILD)'s second language?
    - 1 ENGLISH
    - 2 SPANISH
    - 3 OTHER \_\_\_\_\_(specify)
7. What position was (CHILD) born into in his/her family?  
(READ RESPONSES) ?
- 0 ONLY CHILD
  - 1 FIRST (OLDEST)
  - 2 MIDDLE
  - 3 LAST (YOUNGEST)
  - DON'T KNOW
8. Who makes the decisions about what's best for (CHILD) **most of the time**? (like bedtime, when s/he goes to the doctor, what s/he eats for meals)
- 1 RESPONDENT (or RESPONDENT AND SPOUSE)
  - 2 RESPONDENT'S SPOUSE
  - 3 OTHER \_\_\_\_\_  
(specify)

**Appendix F: Family Demographics at Age 14 (Caregiver Interview)**

**DEMB**

**1. Does [child] live with you...**

- Rarely or never (0)
- Some of the time (1)
- Most of the time (2)
- All the time (3)

*This next set of questions are some general questions about yourself.*

**2. What is your date of birth?**

\_\_ \_\_ / \_\_ \_\_ / \_\_ \_\_ \_\_ \_\_  
m m/ d d/ y y y y

**3. What is your racial or ethnic background?**

- White (not Hispanic) (1)
- Black/African-American (not Hispanic) (2)
- Hispanic (3)
- Native American/American Indian (4)
- Asian; Middle Eastern (5)
- Mixed race or multi-ethnic (6)
- Other (7) \_\_\_\_\_  
(specify)

**4. What is your current legal marital status?**

- Married (1)
- Single; never married (2)
- Separated (3)
- Divorced (4)
- Widowed (5)

5. **What is the highest grade in school or college that you have passed or completed?** (Do not count vocational certificates, only formal high school or post-high school degree programs)

|                          |    |    |    |     |   |   |   |   |   |    |    |    |  |
|--------------------------|----|----|----|-----|---|---|---|---|---|----|----|----|--|
| No formal schooling      | 0  |    |    |     |   |   |   |   |   |    |    |    |  |
| Elementary - high school | 1  | 2  | 3  | 4   | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |  |
| College                  | 13 | 14 | 15 | 16  |   |   |   |   |   |    |    |    |  |
| Grad/professional        | 17 | 18 | 19 | 20+ |   |   |   |   |   |    |    |    |  |

6. **Did you receive a high school diploma? (If NO) ...or pass a high school equivalency test like a GED?**

No, did not receive diploma or GED (0)

Received diploma (1)

Passed Equivalency test or got GED (2)

7. **What educational or training degrees or certificates have you received since high school?** [Do not read list. Record **highest** level.]

None (or part college) (0)

Vocational certificate or Technical Certificate (1)

Associate (AA or Jr. College degree) (2)

Bachelor's (BA, AB, BS, etc.) (3)

Master's (MA, MS, MBA, MPH, etc.) (4)

Doctoral (PhD, MD, JD, DDS, etc.) (5)

8. **Which one of these best describes your current employment status?**  
[Read answers out loud for respondent]

Regularly work full-time, 35 or more hours/week (1) [skip to 12]

Regularly work part-time, less than 35 hours/week (2) [skip to 12]

Work sometimes, when work's available (3) [skip to 12]

Unemployed, looking for work (4)

Don't work because: retired, ill, disabled, don't want to, or family responsibilities (5)

Don't work because currently a student (6)

Other (7) \_\_\_\_\_  
[specify]

9. **Have you been employed any time in the last 6 months?**

No (0) *[skip to 15a]*

Yes (1)

10. **What kind of work did you do? What were your main duties?**

*Get type of work and position.*

---

11. **What kind of company or place did you work for?**

---

Employment Code\_\_ \_\_ *[Hollingshead Index Code; office use only] (skip to 15a)*

12. **Do you have more than one job?**

No (0)

Yes (1)

13. **What kind of work do you do on your (main) job? What are your main duties?** *[Get type of work & position]*

---

14. **What kind of company or place do you work for?**

---

Employment Code \_\_\_\_ [ Hollingshead Index; office use only ]

15a. **Does respondent live with spouse/partner?**

No (0) *[Skip to 25]*

Yes (1)

*These questions are about your husband (or partner).*

15. **What is the highest grade in school or college that your husband (or partner) passed or completed?** *(Do not count vocational certificates, only formal high school or post-high school degree programs)*

No formal schooling            0

Elementary - high school    1   2   3   4   5   6   7   8   9   10   11   12

College                            13 14 15 16

Grad/professional            17 18 19 20+



22. Does he have more than one job?

- \_\_\_ No (0)
- \_\_\_ Yes (1)

23. What kind of work does he do on his (main) job? *[type of work & position]*

---

24. What kind of company or place does he work for?

---

Employment Code \_\_\_ \_\_\_ *[ Hollingshead Index; office use only ]*

25. About how much money does **[child]**'s household take in each week, or month or year?

**Which one of the amounts on this card best describes the household's take-home pay? *[Hand card]***

*[Help the respondent focus on the column that best fits how she thinks of family's take-home pay. Check the number in the left-hand column that corresponds to salary level.]*

| <u>Per Year</u>           | <u>Per Month</u> | <u>Per Week</u> |
|---------------------------|------------------|-----------------|
| ___(1) Less than \$5,000  | Less than \$418  | Less than \$97  |
| ___(2) \$5,000 - \$9,999  | \$418 - \$833    | \$97 - \$192    |
| ___(3) \$10,000-\$14,999  | \$834- \$1250    | \$193- \$288    |
| ___(4) \$15,000-\$19,999  | \$1251 -\$1666   | \$289 - \$384   |
| ___(5) \$20,000-\$24,999  | \$1667 - \$2083  | \$385 - \$480   |
| ___(6) \$25,000-\$29,999  | \$2084 - \$2500  | \$481 - \$576   |
| ___(7) \$30,000-\$34,999  | \$2501 - \$2916  | \$577 - \$673   |
| ___(8) \$35,000-\$39,999  | \$2917 - \$3333  | \$674 - \$769   |
| ___(9) \$40,000-\$44,999  | \$3334 - \$3750  | \$770 - \$865   |
| ___(10) \$45,000-\$49,999 | \$3751 - \$4166  | \$866 - \$961   |
| ___(11) \$50,000 or more  | More than \$4166 | More than \$961 |
| ___(12) DK/NA             |                  |                 |

**26. How many people, including yourself, are dependent on this income?**

\_\_ \_\_ = Total # of people *[2 digits]*

**27. How many rooms, including the kitchen and bathrooms, are there in your entire home?**

\_\_ \_\_ total number of rooms in home *[2 digits]*



**Appendix G: Quality of Neighborhood, Residential Stability, and Organizational and Religious Affiliation Scale (Caregiver Age 14 Interview)**

**Neighborhood and Organization NOAA**

*The following questions are about the neighborhood or community that you live in.*

**1. How long have you lived in this neighborhood? (If you have moved in and out, how long have you lived in this neighborhood since the last time you moved in?)**

- Less than 1 year (0)
- 1-2 years (1)
- 3-5 years (2)
- More than 5 years (3) *(skip to 2)*

**1a. How many times have you moved in the last five years?**

[\_\_ \_\_] (# times moved; 2 digits)

**2. How long has [child] lived in this neighborhood? (If s/he has moved in and out, how long has s/he lived in this neighborhood since the last time s/he moved in?)**

- Less than 1 year (0)
- 1-2 years (1)
- 3-5 years (2)
- More than 5 years (3) *(skip to 3)*

**2a. How many times has [child] moved in the last five years?**

[\_\_ \_\_] (# times moved; 2 digits)

*Now I'd like you to tell me about the neighborhood you live in right now, by telling how much you agree or disagree with each of the following statements.*

**3. In this neighborhood, houses and yards are kept up.**

- Strongly disagree (1)
- Disagree (2)
- Agree (3)
- Strongly Agree (4)

**4. People don't live in this neighborhood for very long.**

- Strongly disagree (1)
- Disagree (2)
- Agree (3)
- Strongly Agree (4)

**5. My neighbors could be counted on to intervene in various ways if children were skipping school.**

- Strongly disagree (1)
- Disagree (2)
- Agree (3)
- Strongly Agree (4)

**6. In this neighborhood, adults set good examples for children.**

- Strongly disagree (1)
- Disagree (2)
- Agree (3)
- Strongly Agree (4)

**7. In this neighborhood, there is vandalism**

- Strongly disagree (1)
- Disagree (2)
- Agree (3)
- Strongly Agree (4)

**8. People around here are willing to help their neighbors.**

- Strongly disagree (1)
- Disagree (2)
- Agree (3)
- Strongly Agree (4)

**9. In this neighborhood, there is graffiti on buildings and walls.**

- Strongly disagree (1)
- Disagree (2)
- Agree (3)
- Strongly Agree (4)

**10. Most of the people in this neighborhood are renters.**

- Strongly disagree (1)
- Disagree (2)
- Agree (3)
- Strongly Agree (4)

**11. Neighbors could be counted on to intervene in various ways if children were spray-painting graffiti on a local building.**

- Strongly disagree (1)
- Disagree (2)
- Agree (3)
- Strongly Agree (4)

**12. In this neighborhood, there are unemployed adults loitering on the streets.**

- Strongly disagree (1)
- Disagree (2)
- Agree (3)
- Strongly Agree (4)

**13. In this neighborhood, there is open drug activity.**

- Strongly disagree (1)
- Disagree (2)
- Agree (3)
- Strongly Agree (4)

**14. This is a close knit neighborhood.**

- Strongly disagree (1)
- Disagree (2)
- Agree (3)
- Strongly Agree (4)

**15. In this neighborhood, there is litter and trash on sidewalks and streets.**

- Strongly disagree (1)
- Disagree (2)
- Agree (3)
- Strongly Agree (4)

**16. People move in and out of this neighborhood a lot.**

- Strongly disagree (1)
- Disagree (2)
- Agree (3)
- Strongly Agree (4)

**17. Neighbors could be counted on to intervene in various ways if children were showing disrespect to an adult.**

- Strongly disagree (1)
- Disagree (2)
- Agree (3)
- Strongly Agree (4)

**18. In this neighborhood, adults act in responsible ways.**

- Strongly disagree (1)
- Disagree (2)
- Agree (3)
- Strongly Agree (4)

**19. In this neighborhood, homes or businesses get broken into.**

- Strongly disagree (1)
- Disagree (2)
- Agree (3)
- Strongly Agree (4)

**20. People in this neighborhood can be trusted.**

- Strongly disagree (1)
- Disagree (2)
- Agree (3)
- Strongly Agree (4)

**21. In this neighborhood, there are abandoned or boarded up buildings.**

- Strongly disagree (1)
- Disagree (2)
- Agree (3)
- Strongly Agree (4)

**22. Most families live in this neighborhood for a long time.**

- Strongly disagree (1)
- Disagree (2)
- Agree (3)
- Strongly Agree (4)

**23. Neighbors could be counted on to intervene in various ways if a fight broke out in front of their house.**

- Strongly disagree (1)
- Disagree (2)
- Agree (3)
- Strongly Agree (4)

**24. In this neighborhood, there are drunks hanging around.**

- Strongly disagree (1)
- Disagree (2)
- Agree (3)
- Strongly Agree (4)

**25. In this neighborhood, I always feel safe.**

- Strongly disagree (1)
- Disagree (2)
- Agree (3)
- Strongly Agree (4)

**26. People in this neighborhood generally don't get along.**

- Strongly disagree (1)
- Disagree (2)
- Agree (3)
- Strongly Agree (4)

**27. In this neighborhood, there are abandoned cars.**

- Strongly disagree (1)
- Disagree (2)
- Agree (3)
- Strongly Agree (4)

**28. In this neighborhood, most people own the homes they live in.**

- Strongly disagree (1)
- Disagree (2)
- Agree (3)
- Strongly Agree (4)

**29. Neighbors could be counted on to intervene in various ways if the fire station closest to their home was threatened with budget cuts.**

- Strongly disagree (1)
- Disagree (2)
- Agree (3)
- Strongly Agree (4)

**30. In this neighborhood, men are good fathers to their children.**

- Strongly disagree (1)
- Disagree (2)
- Agree (3)
- Strongly Agree (4)

**31. In this neighborhood, people are victims of crime like muggings and beatings.**

- Strongly disagree (1)
- Disagree (2)
- Agree (3)
- Strongly Agree (4)

**32. People in this neighborhood do not share the same values.**

- Strongly disagree (1)
- Disagree (2)
- Agree (3)
- Strongly Agree (4)

*For the next questions, please tell whether you have participated in the following activities WITHIN THE PAST 2 MONTHS.*

**33. Athletic team or league (as a participant, not as a fan or spectator)?**

- NO (0)
- YES (1)

**34. PTA or other parents' group at school (or day care)?**

NO (0)

YES (1)

**35. Adult leader for a youth program (Scouts, Boys or Girls Club, 4-H, etc.)?  
(WITHIN THE PAST 2 MONTHS)**

NO (0)

YES (1)

**36. Adult leader or coach for sports team or recreation program?**

NO (0)

YES (1)

**37. Music or dance group or other arts-related group?**

NO (0)

YES (1)

**38. An apartment meeting, block club, neighborhood or other community meeting? (WITHIN THE PAST 2 MONTHS)**

NO (0)

YES (1)

**39. Political or advocacy group meeting?**

NO (0)

YES (1)

**40. Church group or activities (other than a mass or worship service)**

NO (0)

YES (1)

**41. Do you do regular volunteer work for some other group or agency not already listed?**

NO (0)

YES (1)

**42. How often do you vote in local, state or national elections?**

- Not registered to vote (0)
- Almost never (1)
- Occasionally (2)
- Most of the time (3)
- All of the time (4)

**43. How important are religious or spiritual beliefs in the way you raise your child(ren)?**

- Not important (0)
- Somewhat important (1)
- Very important (2)

**44. Are you affiliated with a particular religious group or denomination? (If YES, what?)**

- NO (0)
- CATHOLIC (1)
- JEWISH (2)
- ISLAMIC (MOSLEM) (3)
- PROTESTANT/other CHRISTIAN denomination (like Baptist, Pentecostal, Holiness)
- OTHER (5)

**45. In the last year, how often did you attend religious or spiritual services?**

- Never (0)
- 1-2 times (1)
- 3-12 times (2)
- 2-3 times a month (3)
- At least once a week (4)



## Appendix H: Mother-Child Relationship Scale (Child Age 14 Interview)

### MCCA

*These questions are about your mom.*

**1. Do you live with your mother right now, or someone who acts like a mother to you?**

- NO (0)
- YES (1) *(skip to 2)*

**1a. Do you have a mother or someone who acts most like a mother who does not live with you?**

- NO (0) *(end of form)*
- YES (1) *(skip to 2a)*

**2. What is the exact relationship of this woman to you? (If you live with more than one woman who acts like a mother to you, choose the one who is MOST like a mother to you.)**

- BIRTH (or NATURAL) MOTHER (1) *(skip to 3)*
- STEP-MOTHER (2) *(skip to 3)*
- ADOPTIVE MOTHER (3) *(skip to 3)*
- FOSTER MOTHER (4) *(skip to 3)*
- FATHER'S GIRLFRIEND (5) *(skip to 3)*
- GRANDMOTHER (6) *(skip to 3)*
- OTHER (7) *(skip to 3)*

**2a. What is the exact relationship of this woman to you? (If you have more than one woman who acts like a mother to you, choose the one who is MOST like a mother to you.)**

- BIRTH (or NATURAL) MOTHER (1)
- STEP-MOTHER (2)
- ADOPTIVE MOTHER (3)
- FOSTER MOTHER (4)
- FATHER'S GIRLFRIEND (5)
- GRANDMOTHER (6)
- OTHER (7)

***The next questions are about this woman who is MOST like a mother to you.***

**3. How close do you feel to her?**

- NOT AT ALL (1)
- VERY LITTLE (2)
- SOMEWHAT (3)
- QUITE A BIT (4)
- VERY MUCH (5)

**4. How much do you think she cares about you?**

- NOT AT ALL (1)
- VERY LITTLE (2)
- SOMEWHAT (3)
- QUITE A BIT (4)
- VERY MUCH (5)

**5. How often does she interfere with your activities?**

- NEVER (1)
- SELDOM (2)
- SOMETIMES (3)
- OFTEN (4)
- ALWAYS (5)

**6. How often does she trust you?**

- NEVER (1)
- SELDOM (2)
- SOMETIMES (3)
- OFTEN (4)
- ALWAYS (5)

**7. How often does she understand you?**

- NEVER (1)
- SELDOM (2)
- SOMETIMES (3)
- OFTEN (4)
- ALWAYS (5)

**8. How often do you and she get along well?**

- NEVER (1)
- SELDOM (2)
- SOMETIMES (3)
- OFTEN (4)
- ALWAYS (5)

**9. How often do you and she make decisions together about things in your life?**

- NEVER (1)
- SELDOM (2)
- SOMETIMES (3)
- OFTEN (4)
- ALWAYS (5)

**10. How often do you feel that you are interfering with her activities?**

- NEVER (1)
- SELDOM (2)
- SOMETIMES (3)
- OFTEN (4)
- ALWAYS (5)

***Which of these things have you done with her in the past 4 weeks?***

**In the past 4 weeks, have you...**

**11. gone shopping with her?**

- NO (0)
- YES (1)

**In the past 4 weeks, have you...**

**12. played a sport with her?**

- NO (0)
- YES (1)

**In the past 4 weeks, have you...**

**13. gone to a religious service or church-related event with her?**

NO (0)

YES (1)

**In the past 4 weeks, have you...**

**14. talked with her about your friends or things you were doing with friends?**

NO (0)

YES (1)

**In the past 4 weeks, have you...**

**15. gone to a movie, play, museum, concert, or sports event with her?**

NO (0)

YES (1)

**In the past 4 weeks, have you...**

**16. had a talk with her about a personal problem you were having?**

NO (0)

YES (1)

**In the past 4 weeks, have you...**

**17. had a serious argument with her about your behavior?**

NO (0)

YES (1)

**In the past 4 weeks, have you...**

**18. talked about your school work or grades with her?**

NO (0)

YES (1)

**In the past 4 weeks, have you...**

**19. worked on a project for school with her?**

NO (0)

YES (1)

**In the past 4 weeks, have you...**

**20. talked with her about other things you're doing in school?**

NO (0)

YES (1)

**21. How disappointed would she be if you did not graduate from COLLEGE?**

NOT DISAPPOINTED AT ALL (1)

NOT VERY DISAPPOINTED (2)

A LITTLE DISAPPOINTED (3)

SOMEWHAT DISAPPOINTED (4)

REALLY DISAPPOINTED (5)

**22. How disappointed would she be if you did not graduate from HIGH SCHOOL?**

NOT DISAPPOINTED AT ALL (1)

NOT VERY DISAPPOINTED (2)

A LITTLE DISAPPOINTED (3)

SOMEWHAT DISAPPOINTED (4)

REALLY DISAPPOINTED (5)

## Appendix I: Future Events Questionnaire (Child Age 14 Interview)

### FEQA

The next questions are about your future - they ask how LIKELY you think it is that these things will happen in your future.

1. How likely is it that you will have a child without being married?

- Very unlikely (1)
- Unlikely (2)
- Not sure (3)
- Likely (4)
- Very likely (5)

2. How likely is it that you will get married within two years after high school?

- Very unlikely (1)
- Unlikely (2)
- Not sure (3)
- Likely (4)
- Very likely (5)

3. How likely is it that you will get divorced?

- Very unlikely (1)
- Unlikely (2)
- Not sure (3)
- Likely (4)
- Very likely (5)

4. How likely is it that you will have to go on welfare at some point during your adult life?

- Very unlikely (1)
- Unlikely (2)
- Not sure (3)
- Likely (4)
- Very likely (5)

5. How likely is it that you will go to college?

- Very unlikely (1)
- Unlikely (2)
- Not sure (3)
- Likely (4)
- Very likely (5)

6. How likely is it that you will be able to get the money necessary to go to college?

- Very unlikely (1)
- Unlikely (2)
- Not sure (3)
- Likely (4)
- Very likely (5)

7. How likely is it that you will have a successful career?

- Very unlikely (1)
- Unlikely (2)
- Not sure (3)
- Likely (4)
- Very likely (5)

8. How likely is it that you will get a scholarship for college?

- Very unlikely (1)
- Unlikely (2)
- Not sure (3)
- Likely (4)
- Very likely (5)

9. How likely is it that you will lose your job?

- Very unlikely (1)
- Unlikely (2)
- Not sure (3)
- Likely (4)
- Very likely (5)

10. How likely is it that you will get the job you want?

- Very unlikely (1)
- Unlikely (2)
- Not sure (3)
- Likely (4)
- Very likely (5)

11. How likely is it that you will be unemployed at some time during your adult life?

- Very unlikely (1)
- Unlikely (2)
- Not sure (3)
- Likely (4)
- Very likely (5)

12. How likely is it that you will have difficulty finding a good job when you become an adult?

- Very unlikely (1)
- Unlikely (2)
- Not sure (3)
- Likely (4)
- Very likely (5)



## Appendix J: Resilience Factors Scale (Child Age 14 Interview)

### RSFA

*You're almost finished! The next few questions are about whether or not you have adults you can count on – to encourage you, or help you with any serious problems that come up.*

**1. Is there an adult (or adults) you can turn to for help if you have a serious problem?**

NO (0) *(Skip to 3)*

YES (1)

**2a. Could you go to a parent or someone who is like a parent, with a serious problem?**

NO (0)

YES (1)

**2b. Could you go to another relative (not a parent), with a serious problem?**

NO (0)

YES (1)

**2c. Could you go to another adult (not a relative), with a serious problem?**

NO (0)

YES (1)

**3. Has there ever been an adult, OUTSIDE OF YOUR FAMILY, who has encouraged you and believed in you?**

NO (0) *(Skip to 5)*

YES (1)

**4. Would you say this has made a difference in your life?**

NO (0)

YES (1)

**5. How important is religion or spirituality to you?**

- Not important AT ALL (1)
- Only a little important (2)
- Somewhat important (3)
- Very important (4)

**6. Over the past year, how many times did you attend religious or spiritual services or activities?**

- Never (0)
- 1 or 2 times (1)
- 3-12 times (2)
- 2-3 times PER MONTH (3)
- At least once a WEEK (4)

**Which of the following things have you EVER done?**

Have you ever . . .

**7. Been part of a sports team?**

- NO (0)
- YES (1)

Have you ever . . .

**8. Been a captain or co-captain of a team?**

- NO (0)
- YES (1)

Have you ever . . .

**9. Won a sports medal, ribbon, trophy or other sports award?**

- NO (0)
- YES (1)

Have you ever . . .

**10. Been a member of a club at school?**

- NO (0)
- YES (1)

Have you ever . . .

**11. Been an officer or leader in a club or organization?**

NO (0)

YES (1)

Have you ever . . .

**12. Received a school award or prize?**

NO (0)

YES (1)

Have you ever . . .

**13. Been on the honor roll?**

NO (0)

YES (1)

Have you ever . . .

**14. Been part of a drama, music, dance or other performing arts group?**

NO (0)

YES (1)

Have you ever . . .

**15. Been part of a scout troop?**

NO (0)

YES (1)

Have you ever . . .

**16. Been part of a volunteer group, or participated in volunteer activities?**

NO (0)

YES (1)

Have you ever . . .

**17. Been part of a church group?**

NO (0)

YES (1)

**Have you ever . . .**

**18. Received a volunteer or community service award?**

NO (0)

YES (1)

## Appendix K: Institutional Review Board (IRB) Materials

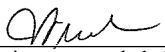


THE UNIVERSITY  
of NORTH CAROLINA  
at CHAPEL HILL

OFFICE OF HUMAN RESEARCH ETHICS  
Medical School Building 52  
Mason Farm Road  
CB #7097  
Chapel Hill, NC 27599-7097  
(919) 966-3113  
Web site: [ohre.unc.edu](http://ohre.unc.edu)  
<https://my.research.unc.edu> for IRB status  
Federalwide Assurance (FWA) #4801

To: Desmond K. Runyan  
CB:7240

From: Biomedical IRB

  
Authorized signature on behalf of IRB

Approval Date: 2/18/2008  
Expiration Date of Approval: 2/16/2009

RE: Notice of IRB Approval by Full Board Review  
Submission Type: Renewal  
Study #: 91-0631 Also (91-SOC/MED-253)

Study Title: LONGSCAN: The Longitudinal Studies of Child Abuse and Neglect Coordinating Center

This submission has been approved by the above IRB for the period indicated.

### Study Description:

Summary: LONGSCAN, (LONGitudinal Studies of Child Abuse and Neglect), is a consortium of five independent prospective longitudinal investigations sharing common methodological protocols and a commitment to collaborate in data analysis and dissemination. The participants in the five investigations vary by level of risk for maltreatment and/or by type of intervention. The research is interview based. Face-to-face interviews occur at ages 4, 6, 8, 12, 14, 16, & 18. Telephone follow-ups occur in the years when there is not an in-person interview.

### Submission Description:

With this renewal and amendment dated 2/1/08 addresses:

1. the addition of new research personnel,
2. 2 new forms,
3. embedded dissertation research done by Benjamin Margolis

### Regulatory and other findings:

The Board agreed that this research involves no more than minimal risk and future reviews may be done on an expedited basis, under Expedited Review, Category 9.

This research, which involves children, meets criteria at 45 CFR 46.404 (research involving no greater than minimal risk). Permission of one parent or guardian is sufficient.

### Investigator's Responsibilities

Federal regulations require that all research be reviewed at least annually. It is the Principal Investigator's responsibility to submit for renewal and obtain approval before the expiration date. You may not continue any research activity beyond the expiration date without IRB approval. Failure to receive approval for continuation before the expiration date will result in automatic termination of the approval for this study on the expiration date.

When applicable, enclosed are stamped copies of approved consent documents and other recruitment materials. You must copy the stamped consent forms for use with subjects unless you have approval to do otherwise.

You are required to obtain IRB approval for any changes to any aspect of this study before they can be implemented (use the modification form at [ohre.unc.edu/forms](http://ohre.unc.edu/forms)). Should any adverse event or unanticipated problem involving risks to subjects or others occur it must be reported immediately to the IRB using the adverse event form at the same web site.

CC:  
Lynn Martin,

TO: Biomedical IRB

FROM: Desmond K. Runyan, MD, DrPH

DATE: February 5, 2008

RE: Request for Renewal of IRB Approval of Human Subjects Research  
Study # 91-0631 (Also 91-SOC/MED-253)  
LONGSCAN: The Longitudinal Studies of Child Abuse and Neglect Coordinating Center

Expedited Review Procedures (Category 9) was sanctioned by The Board at the time of last year's review.

CONTENTS OF THIS RENEWAL PACKAGE:

1. Renewal Progress Report (2 copies)
2. Modification Form requesting Board review and approval of the following three study modifications (2 copies):
  - A. Changes in study personnel listed on Page 1 of the revised original IRB application
  - B. Two new forms the purpose of which is described on Page 14 of the original IRB application
  - C. Dissertation research proposal using already collected, de-identified data for secondary analysis. The dissertation proposal has been previously approved by the LONGSCAN Consortium Principal Investigators, and is described in Item #3 of the Modification Form. Also, the student has completed the required online Ethics Training and has signed a LONGSCAN Student Data Use Agreement.
3. LONGSCAN Student Use Agreement signed by Benyamin Margolis, PhD Student in Health Behavior and Health Education (2 copies)
4. Two newly proposed study forms (1 highlighted copy and 1 clean copy of each form)
5. Original Application for IRB Approval of Human Subjects Research revised to include the three requested modifications (2 copies)
6. Addendum for Multi-site Studies Where UNC-CH is the Lead Coordinating Center (2 copies)
7. File copy for the IRB of a blank Restricted Data Use License which is required by the National Data Archive on Child Abuse and Neglect (NDACAN) when our datasets are requested from them (2 copies)

We look forward to your review of this ongoing research effort.

OFFICE OF HUMAN RESEARCH ETHICS  
 Institutional Review Board  
RENEWAL OR TERMINATION OF  
IRB APPROVAL OF HUMAN SUBJECTS RESEARCH (PROGRESS REPORT)  
 version 3-Oct-2007

If the research is continuing:

- Check the relevant items.
  - Include two collated sets of copies (sorted in the order listed) of checked items.
- **Applications will be returned if these instructions are not followed.**

| Check | Item  | Total No. of Copies |
|-------|---|---------------------|
| ×     | 1. This form (renewal or termination).  | 2                   |
| ×     | 2. Any items specifically requested in questions # 4 through 9 (in that order).   | 2                   |
| ×     | 3. The most recent application submitted for IRB approval updated to include any modifications since the study was initially approved or last renewed. <b>If there are any modifications included with this renewal, highlight the proposed modifications by underlining.</b> | 2                   |
| □     | 4. Clean copies of all consent document(s) to be used in the upcoming approval period, for stamping.  | 2                   |
| □     | 5. Only for those study personnel <i>not</i> in the online UNC-CH ethics training database ( <a href="http://cfx3.research.unc.edu/training_comp/">http://cfx3.research.unc.edu/training_comp/</a> ): Documentation of required training in human research ethics.            | 1                   |

IRB study #: 91-0631

Date: 02-01-08

Title of Study: LONGSCAN: The Longitudinal Studies of Child Abuse and Neglect Coordinating Center

Principal Investigator: Desmond K. Runyan, MD, DRPH Faculty advisor (if applicable): NA

**For industry sponsored research (if applicable):**

Sponsor's master protocol version #: NA

Version date: NA

Investigator Brochure version #: NA

Version date: NA

Any other details you need documented on IRB approval: NA

1. In a few sentences, describe the past year's work, and describe what you plan for the upcoming year, including data analysis, if relevant.

At the LONGSCAN Coordinating Center, the majority of study activities during the last year were related to staff training for the sites that continue to collect data; data analysis, retrieval and storage; and dissemination (journal article writing and conference/meeting presentations).

LONGSCAN articles appeared in *American Journal of Orthopsychiatry*, *Child Welfare*, *Child Maltreatment*, *Pediatrics*, and *Gastroenterology*. The consortium principal investigators presented the Age 12 self-report of maltreatment data at the 16<sup>th</sup> National Conference on Child Abuse and Neglect in Portland, Oregon in April of 2007. At the sites, one site has completed all data collection through the Age 18 Interviews; the remaining four sites are at various stages of data collection for Ages 12 through 18.

During the next year, study activities at the Coordinating Center will continue with site staff training when new personnel are hired; dataset compilation and statistical analysis; and dissemination of



findings via journal articles and presentations. In the next month, the cross-site data for Ages 10 and 11 will be sent to the National Data Archive on Child Abuse and Neglect (NDACAN) as required by our funding agency. During the summer of 2008, the Age 12 data are due to be archived at the NDACAN. If the study abstracts are accepted, LONGSCAN data will be presented at the 17<sup>th</sup> ISPCAN International Congress on Child Abuse and Neglect scheduled for Hong Kong in September 2008.

2. Number of subjects involved through direct contact or use of their data (for multi-site studies, include only subjects covered by this IRB) (Note: **b+d** should not be larger than **a**)
  - a. Total projected number as approved by IRB: 1354
  - b. Total number of subjects involved to date: 1354
  - c. Number of subjects added since last renewal: 0 (Recruitment ended in 1996.)
  - d. Number to be included in upcoming year: 0 (Recruitment ended in 1996.)

**Answer the following questions based on information since initial approval or last renewal. Only include subjects covered by this IRB.**

3. Have there been any modifications approved since the last review? If research is continuing, be sure all changes are reflected in the attached revised application for IRB approval. \_\_\_ yes  no
4. Have any subjects withdrawn voluntarily or been withdrawn from the study? \_\_\_ yes  no  
**If yes, explain;** give number and reasons for withdrawals.
5. Have there been any findings (e.g., publications) that alter the risk/benefit ratio or otherwise impact the study? **If yes, explain.** \_\_\_ yes  no
6. Does this study have a Data and Safety Monitoring Committee (DSMC or DSMB)? **If yes, provide a report** from the DSMC. \_\_\_ yes  no
7. Have there been unanticipated problems or serious adverse events since the last renewal? **If yes, include all copies of local** Adverse Event reports with this submission. \_\_\_ yes  no
8. Has this study been audited by external sponsor or monitor since approved or last renewed? **If yes, include a copy** of the audit report. \_\_\_ yes  no
9. Are you requesting any changes? **If yes, include the form** requesting *Modification of Approved Human Subjects Research* and underline the proposed change in the updated application.  yes \_\_\_ no
10. Will you be enrolling, consenting or re-consenting subjects in the upcoming approval period? **If yes, include clean copies** of consents/assents/fact sheets to receive a new stamp. **Include any new recruitment materials** to be used with subjects. \_\_\_ yes  no

**Action requested by Principal Investigator (choose only one):**

Renew approval:

Study has always involved *only* analysis of existing data or specimens.

Continue as approved.

Study involves(ed) direct interaction/intervention or contact with subjects:

Enrollment of new subjects continues.

Enrollment of new subjects closed; interaction/intervention with previously enrolled subjects continues.

Direct interaction with subjects completed but subsequent monitoring or follow up continues.

Subjects' involvement completed but renewal is requested for data analysis.

Terminate approval because:

Research completed: Identifiable data or human biological specimens are stored according to plan already approved by the IRB.

Research completed: All data or human biological specimens are deidentified.

Lack of funding or other (*specify*):

\_\_\_\_\_  
Signature of Principal Investigator

02-01-08

Date

NA  
\_\_\_\_\_  
Signature of Faculty Advisor (if applicable)

NA

\_\_\_\_\_  
Date

OFFICE OF HUMAN RESEARCH ETHICS  
 Institutional Review Board  
MODIFICATION OF APPROVED  
HUMAN SUBJECTS RESEARCH  
 version 3-Oct-2007

Include the items indicated, where applicable:

- Check the relevant items below and include one copy of all checked items 1-5 in the order listed.
  - Also include one additional collated set of copies (sorted in the order listed) for items 1 and 2.
- **Applications will be returned if these instructions are not followed.**

| Check                               | Item   | Total No. of Copies      |
|-------------------------------------|--|--------------------------|
| <input checked="" type="checkbox"/> | 1. A concise summary of the requested modification using this form. List and describe each proposed change to aid in IRB review. Add pages as necessary. Provide a concise summary of changes when submitting an updated Investigator Brochure or Master Protocol. | 2                        |
| <input checked="" type="checkbox"/> | 2. New or revised consent forms, questionnaires, surveys, recruitment materials, advertisements, etc. One copy should have changes highlighted by underlining, and the other clean copy will be used for stamping.   | 1 highlighted<br>1 clean |
| <input type="checkbox"/>            | 3. If you have made substantive changes to the study design or procedures, submit a revised full IRB application with changes highlighted by underlining. If you are making changes only to the first page, just submit that page.                                 | 2                        |
| <input type="checkbox"/>            | 4. The sponsor's document describing the amendment, if any.  | 1                        |
| <input type="checkbox"/>            | 5. Only for those study personnel <i>not</i> in the online UNC-CH ethics training database ( <a href="http://cfx3.research.unc.edu/training_comp/">http://cfx3.research.unc.edu/training_comp/</a> ): Documentation of required training in human research ethics. | 1                        |

Is this modification being submitted in response to an unanticipated problem or adverse event? \_\_\_yes no

IRB study #: 91-0631

Date: 02/01/08

Title of Study: LONGSCAN: The Longitudinal Studies of Child Abuse and Neglect Coord. Ctr.

Principal Investigator: Desmond K. Runyan, MD, DrPH Faculty advisor: NA  
 (if applicable)

For industry sponsored research (if applicable):

Sponsor's master protocol version #:NA

Version date: NA

Investigator Brochure version #:NA

Version date: NA

Any other details you need documented on IRB approval: NA

List and describe each proposed change:

1. New research personnel: There have been a few staff/investigator changes at the Coordinating Center. The names of new staff/investigators are listed on Page 1 of the updated APPLICATION FOR IRB APPROVAL OF HUMAN SUBJECTS RESEARCH included in this renewal package.
2. New Forms (2): Description of two new forms is on Page 14 of the updated APPLICATION FOR IRB APPROVAL OF HUMAN SUBJECTS RESEARCH included in this renewal package.

3. Embedded dissertation research (secondary analysis of already collected and de-identified data):

**Title:** Predictors of Adolescent Violence among Neglected Children: A Longitudinal Analysis

Benjamin Margolis: PhD student in Health Behavior and Health Education (HBHE)  
Advisor: Carol Runyan, PhD, Director of the Injury Prevention Research Center and  
HBHE Faculty

NOTE: Student has completed required ethics training and a study-specific Student Use Agreement is included in this renewal packet.

**Dissertation Research Question(s)/Hypothesis:** Research questions (RO) concerning the relationship of maltreatment history and adolescent violence interpreted within the context of Travis Hirschi's (1969) Social Control Theory (SCT) will be considered in this project.

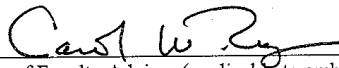
1. Are maltreated youths more likely to perpetrate adolescent violence (AV) than non-maltreated youths?
2. Are neglected youths, when controlling for social environment factors (neighborhood poverty, neighborhood safety), more likely to report perpetrating AV against others than other-maltreated youths?
3. Is the relationship between early neglect (before age 2) and perpetration of AV mediated by selected constructs (*Attachment, Involvement, Commitment*) of SCT?

**Brief Description of Proposal:** A forthcoming LONGSCAN paper provides evidence that early (0-2) neglect, rather than later neglect or any physical abuse, is the most robust predictor of childhood aggression in the LONGSCAN sample. This project will examine whether this finding extends to later stages of development and attempt to gain a greater understanding of the developmental trajectory of aggression in maltreated youths and factors which may influence the commission of violence by them as adolescents, while seeking to explain these findings within the context of a proven theoretical framework.

**Data Analysis Plan:** The initial step will be to generate frequencies and other germane descriptive statistics useful for the characterization of the sample, with particular attention to distributions of maltreatment. The variables used to characterize the constructs of the SCT will be based on age 14 interview items selected for conceptual coherence; these clusters will subsequently be subjected to a confirmatory factor analysis. Logistic regression models will be constructed to examine violence as a binary outcome. Baron and Kenney's procedures will be followed to conduct mediation and moderation analyses. Interaction Contrasts (IC), Synergy Indexes (S), and Interaction Contrast Ratios (ICR) will be calculated to assess additive or joint effects of neglect and early aggressiveness on risk of adolescent violence as appropriate.

\_\_\_\_\_  
Signature of Principal Investigator or designee

02/01/08  
Date

  
\_\_\_\_\_  
Signature of Faculty Advisor (applicable to embedded dissertation only)

02/01/08  
Date

**Student/Post-doc Agreement for Use of LONGSCAN/NEGELCT Data**

1. Students/Post Docs will be required to work in collaboration with an investigator who is familiar with the project(s) and will abide by the procedures outlined in the projects' Publications Policy and Governance Agreement.
2. Authorship rights are the same as for other individuals involved in the study except as noted below. (Also see the part of this document entitled *Criteria for Awarding Authorship Credit* that follows this agreement).
3. Students have the right to publish as first author on the publication(s) resulting from their work on the project or with the project data. The student has three years from the date below to prepare and submit his/her research for publication. If, after three years, no publication has resulted from the dissertation and/or research, another member of the team may write, as first author, a paper based on the student's work. The student may participate as co-author as outlined in the attached guidelines. When the student leaves the project or completes the research, he/she must leave the principal investigator(s) copies of 1) the raw data; 2) analyzed datasets; and 3) the programs that created the variables and analyzed the data. In essence, copies of data collected while with the project must remain on file at the project so that other investigators affiliated with the project will have access.
4. When the student completes his/her research, he/she has the right to take copies of all data used in his/her research (including those data collected by other investigators). However, the student agrees that this data will only be used for descriptive purposes and/or the use to which he or she has put them in his or her research. The data will not be shared with anyone else outside of the project. **Neither will the student/post-doc accept any interviews or share any reports or any other information whatsoever with the news media.**
5. The student may invite any member of his or dissertation committee or research team to be a co-author on publications originating from his or her work. If any of the invited individuals revises the student's work to make it suitable for publication, that person should receive co-authorship credit, not first authorship.

Student Name: **Benyamin Margolis**

Department: **Health Behavior and Health Education**

Brief description of research plan:

**Predictors of Adolescent Violence among Neglected Children: a Longitudinal Analysis**

Data from the NC and BA sites will be examined to identify the influence of child neglect before age 8 on violent behaviors by age 14. Violence will be evaluated using responses to relevant portions of the Conduct Disorder (CD) module of Diagnostic Interview Schedule for Children (DISC) administered at age 14. Social Control Theory (SCT) will be applied to establish features of the teens' bond to his or her caretaker and to society and how these bonds affect teens' involvement in violent behavior, controlling for certain aspects of the teens' environments. The initial step of this dissertation project will be to quantify and explore the relationship between different subtypes of maltreatment to the self-report of violence, as measured through indices to created using applicable DISC CD responses. Poisson and logistic regression analyses will then be used to examine the relationship of neglect to adolescent violence and the role of social bonds as mediators of the connection between child neglect and violent behavior in early teens. In this portion of the dissertation project, particular focus will be on testing the SCT-based theoretical model developed for this project.

Signed:  \_\_\_\_\_

Date: **01/22/08**

(over)

OFFICE OF HUMAN RESEARCH ETHICS

Institutional Review Board

APPLICATION FOR IRB APPROVAL OF

HUMAN SUBJECTS RESEARCH

Version 28-Sep-2005 b

|                  |           |        |      |    |  |
|------------------|-----------|--------|------|----|--|
| For IRB Use      |           |        |      |    |  |
| Behav            | Bio       | Dent   | Nurs | PH |  |
| IRB Study# _____ |           |        |      |    |  |
| Rec'd _____      |           |        |      |    |  |
| Full             | Expedited | Exempt |      |    |  |

Part A.1. Contact Information, Agreements, and Signatures

Title of Study: LONGSCAN: The Longitudinal Studies in Child Abuse and Neglect Coordinating Center. (91-0631)

Date: 02-01-08

Name and degrees of Principal Investigator: Desmond K. Runyan, MD, DrPH

Department: Social Medicine

Mailing address/CB #: Dept. of Social Medicine

CB#7240, Chapel Hill, NC

27599-7240

UNC-CH PID: 7019-48203

Pager: 919-216-3678

Phone #: 919-843-8261

Fax #: 919-966-7499

Email Address: drunyan@med.unc.edu

Name, phone number, email address of project manager or coordinator, if any:

Lynn Martin, MS; 919-843-1671; lynn\_martin@med.unc.edu

List all other project personnel including co-investigators, and anyone else who has contact with subjects or identifiable data from subjects: No Coordinating Center personnel have direct contact with subjects. UNC is the Coordinating Center of this study and receives no identifiable data on our subjects (all data sent to the Coordinating Center from sites is coded with a Subject ID #). Additional study personnel who work with the data include: Shrikant Bangdiwala, Ernestine Briggs-King, Adrea Theodore, Hope Bryan, Carri Casteel, Mark Everson, Linda Hartig, Liz Knight, Terri Lewis, Katherine Roggenkamp, Jamie Smith, Deborah Williams, Deborah Jones, Michael Yonas, Benyamin Margolis, Bryan Elliott, Ashley Bizzell, and Climmom Walker.

Name of funding source or sponsor: Children's Bureau (Office on Child Abuse and Neglect)

Dept. of Health and Human Services

not funded  Federal  State  industry  foundation  UNC-CH

other (specify): Sponsor or award number: OCAN: 90CA1746

Include following items with your submission, where applicable. Check the items below and include in order listed.

- This application. One copy must have original PI signatures.
- Consent and assent forms, fact or information sheets; include phone and verbal consent scripts
- HIPAA authorization addendum to consent form
- All recruitment materials including scripts, flyers and advertising, letters, emails
- Questionnaires, scripts used to guide phone or in-person interviews, etc.
- Focus group guides
- Data use agreements (may be required for use of existing data from third parties)
- Addendum for Multi-Site Studies where UNC-CH is the Lead Coordinating Center
- Documentation of reviews from any other committees (e.g., GCRC, Oncology)
- Documentation of training in human research ethics for all study personnel
- Investigator Brochure if a drug study
- Protocol, grant application or proposal supporting this submission; (e.g., extramural grant application to NIH or foundation, industry protocol, student proposal is described on the completed Modification form)

**Principal Investigator:** I will personally conduct or supervise this research study. I will ensure that this study is performed in compliance with all applicable laws, regulations and University policies regarding human subjects research. I will obtain IRB approval before making any changes or additions to the project. I will notify the IRB of any other changes in the information provided in this application. I will provide progress reports to the IRB at least annually, or as requested. I will report promptly to the IRB all unanticipated problems or serious adverse events involving risk to human subjects. I will follow the IRB approved consent process for all subjects. I will ensure that all collaborators, students and employees assisting in this research study are informed about these obligations. All information given in this form is accurate and complete.

\_\_\_\_\_  
Signature of Principal Investigator

\_\_\_\_\_  
Date

**Department or Division Chair, Center Director (or counterpart) of PI:** (or Vice-Chair or Chair's designee if Chair is investigator or otherwise unable to review): I certify that this research is appropriate for this Principal Investigator, that the investigators are qualified to conduct the research, and that there are adequate resources (including financial, support and facilities) available. I support this application, and hereby submit it for further review.

\_\_\_\_\_  
Signature of Department Chair or designee

\_\_\_\_\_  
Date

\_\_\_\_\_  
Print Name of Department Chair or designee

\_\_\_\_\_  
Department

Part A.2. Summary Checklist

| <i>Are the following involved?</i>   | Yes | No  |
|--|-----|-----|
| A.2.1. Existing data, research records, patient records, and/or human biological specimens?  | _X_ | __  |
| A.2.2. Surveys, questionnaires, interviews, or focus groups with subjects?   | _X_ | __  |
| A.2.3. Videotaping, audiotaping, filming of subjects?  | __  | _X_ |
| A.2.4. Do you plan to enroll subjects from these vulnerable or select populations:<br><i>Study enrollment is complete; our participant population includes:</i>  |     |     |
| a. UNC-CH students or UNC-CH staff? .....  | __  | _X_ |
| b. Non-English-speaking? .....   | __  | _X_ |
| c. Decisionally impaired? .....  | __  | _X_ |
| d. Patients? .....   | __  | _X_ |
| e. Prisoners, parolees and other convicted offenders? .....  | __  | _X_ |
| f. Pregnant women? We plan to interview already recruited participants who have become pregnant.   | _X_ |     |
| g. Minors (less than 18 years)? <b>If yes, give age range: 12 to 17 years</b> .....  | _X_ |     |
| A.2.5. a. Is this a multi-site study (i.e., involves organization(s) outside UNC-CH)?  | _X_ |     |
| b. Will any of these sites be outside the United States?<br><i>If yes, provide contact information for the foreign IRB.</i>  | __  | _X_ |
| c. Is UNC-CH the sponsor or lead coordinating center?<br><i>If yes, include the <u>Addendum for Multi-site Studies where UNC-CH is the Lead Coordinating Center.</u></i>   | _X_ | __  |
| A.2.6. Will there be a data and safety monitoring committee (DSMB or DSMC)?  | __  | _X_ |
| A.2.7. a. Are you collecting sensitive information such as sexual behavior, HIV status, recreational drug use, illegal behaviors, child/physical abuse, immigration status, etc?                                   | _X_ |     |
| b. Do you plan to obtain a federal Certificate of Confidentiality for this study? We already have a Certificate of Confidentiality.  | _X_ |     |
| A.2.8. a. Investigational drugs? (provide <b>IND #</b> )   | __  | _X_ |
| b. Approved drugs for "non-FDA-approved" conditions?<br><i>All studies testing substances in humans must provide a letter of acknowledgement from the UNC Health Care Investigational Drug Service (IDS).</i>      | __  | _X_ |
| A.2.9. Placebo(s)?   | __  | _X_ |
| A.2.10. Investigational devices, instruments, machines, software? (provide <b>IDE #</b> )  | __  | _X_ |
| A.2.11. Fetal tissue?  | __  | _X_ |
| A.2.12. Genetic studies on subjects' specimens?  | __  | _X_ |
| A.2.13. Storage of subjects' specimens for future research?<br><i>If yes, see instructions within the form <u>Consent for Stored Samples.</u></i>  | __  | _X_ |
| A.2.14. Diagnostic or therapeutic ionizing radiation, or radioactive isotopes, which subjects would not receive otherwise?<br><i>If yes, approval by the <u>UNC-CH Radiation Safety Committee</u> is required.</i> | __  | _X_ |
| A.2.15. Recombinant DNA or gene transfer to human subjects?<br><i>If yes, approval by the <u>UNC-CH Institutional Biosafety Committee</u> is required.</i>   | __  | _X_ |
| A.2.16. Does this study involve UNC-CH cancer patients?<br><i>If yes, submit this application directly to the <u>Oncology Protocol Review Committee.</u></i>   | __  | _X_ |



|  |   |     |
|--|---|-----|
| A.2.17. Will subjects be studied in the General Clinical Research Center (GCRC)?<br><i>If yes, obtain the <b>GCRC Addendum</b> from the GCRC and submit complete application (IRB application and Addendum) to the GCRC.</i> | _ | _X_ |
|--|---|-----|

### Part A.3. Conflict of Interest Questions and Certification

The following questions apply to **all investigators and study staff** engaged in the design, conduct, or reporting results of this project **and/or their immediate family members**. For these purposes, "family" includes the individual's spouse and dependent children. "Spouse" includes a person with whom one lives together in the same residence and with whom one shares responsibility for each other's welfare and shares financial obligations.

|   |       |       |
|---|-------|-------|
| A.3.1. Currently or during the term of this research study, does any member of the research team or his/her family member have or expect to have:   |       |       |
| (a) A personal financial interest in or personal financial relationship (including gifts of cash or in-kind) with the sponsor of this study?  | _ yes | _X no |
| (b) A personal financial interest in or personal financial relationship (including gifts of cash or in-kind) with an entity that owns or has the right to commercialize a product, process or technology studied in this project?   | _ yes | _X no |
| (c) A board membership of any kind or an executive position (paid or unpaid) with the sponsor of this study or with an entity that owns or has the right to commercialize a product, process or technology studied in this project?   | _ yes | _X no |
| A.3.2. Has the University or has a University-related foundation received a cash or in-kind gift from the Sponsor of this study for the use or benefit of any member of the research team?  | _ yes | _X no |
| A.3.3. Has the University or has a University-related foundation received a cash or in-kind gift for the use or benefit of any member of the research team from an entity that owns or has the right to commercialize a product, process or technology studied in this project? | _ yes | _X no |

**If the answer to ANY of the questions above is yes**, the affected research team member(s) must complete and submit to the Office of the University Counsel the form accessible at <http://coi.unc.edu>. List name(s) of all research team members for whom any answer to the questions above is yes:

**Certification by Principal Investigator:** By submitting this IRB application, I (the PI) certify that the information provided above is true and accurate regarding my own circumstances, that I have inquired of every UNC-Chapel Hill employee or trainee who will be engaged in the design, conduct or reporting of results of this project as to the questions set out above, and that I have instructed any such person who has answered "yes" to any of these questions to complete and submit for approval a Conflict of Interest Evaluation Form. I understand that as Principal Investigator I am obligated to ensure that any potential conflicts of interest that exist in relation to my study are reported as required by University policy.

\_\_\_\_\_  
Signature of Principal Investigator

\_\_\_\_\_  
Date

## Part A.4. Questions Common to All Studies

*For all questions, if the study involves only secondary data analysis, focus on your proposed design, methods and procedures, and not those of the original study that produced the data you plan to use.*

**A.4.1. Brief Summary.** Provide a *brief* non-technical description of the study, which will be used for internal and external communications regarding this research. Include purpose, methods, and participants. Typical summaries are 50-100 words.

*LONGSCAN, (LONGitudinal Studies of Child Abuse and Neglect), is a consortium of five independent prospective longitudinal investigations sharing common methodological protocols and a commitment to collaborate in data analysis and dissemination. The participants in the five investigations vary by level of risk for maltreatment and/or by type of intervention. The research is interview based. Face-to-face interviews occur at ages 4, 6, 8, 12, 14, 16, & 18. Telephone follow-ups occur in the years when there is not an in-person interview.*

**A.4.2. Purpose and Rationale.** Provide a summary of the background information, state the research question(s), and tell why the study is needed. If a complete rationale and literature review are in an accompanying grant application or other type of proposal, only provide a brief summary here. If there is no proposal, provide a more extensive rationale and literature review.

The goal of the consortium is to provide scientific direction for policy, programs, and services related to child maltreatment by increasing our understanding of child, family, and community factors that: (1) increase risk for different forms of child maltreatment, and (2) exacerbate or ameliorate the harm caused by child maltreatment. The objectives for the Coordinating Center are to: (1) Facilitate cross-site examination of risk or protective factors and child development using the pooled samples, and conduct replications of analyses performed by sites to test the generalizability of conclusions; (2) Continue data collection and handling for existing interviews at child ages 12, 14, 16 and 18; (3) Complete documentation for all interviews developed to date; (4) Archive data from the age 12 interviews at the Child Abuse & Neglect Data Archive; and (5) Nurture new researchers in the field of child maltreatment through the support of such programs as post-doctoral fellowships and long-term minority supplements.

**A.4.3. Full description of the study design, methods and procedures.** Describe the research study. Discuss the study design; study procedures; sequential description of what subjects will be asked to do; assignment of subjects to various arms of the study if applicable; doses; frequency and route of administration of medication and other medical treatment if applicable; how data are to be collected (questionnaire, interview, focus group or specific procedure such as physical examination, venipuncture, etc.). Include information on who will collect data, who will conduct procedures or measurements. Indicate the number and duration of contacts with each subject; outcome measurements; and follow-up procedures. If the study involves medical treatment, distinguish standard care procedures from those that are research. If the study is a clinical trial involving patients as subjects and use of placebo control is involved, provide justification for the use of placebo controls.

The LONGSCAN Consortium consists of three urban sites (Baltimore, Chicago, and Seattle), one suburban site (San Diego), and one statewide site that includes urban, suburban, and rural communities (North Carolina). The studies are linked through a coordinating center (UNC) and an agreement to share objectives, data collection strategies, and data management. LONGSCAN is a multi-disciplinary collaboration with investigators who are recognized as leaders in child

maltreatment research from pediatric medicine, public health, sociology, psychology, social work, and biostatistics.

LONGSCAN is a set of prospective cohort studies which began with children age four or younger and follows them at regularly scheduled intervals (ages 4, 6, 8, 12, 14, 16, and 18 years) using extensive face-to-face (FTF) interviews with the primary caregiver(s) and the child/youth. During intervening years there are annual telephone interviews to enhance sample retention and track service utilization, life events, and behavior problems. The project was designed using ecological-developmental theory to incorporate age-specific risk and protective factors at the child, parent, family, neighborhood, and cultural levels. The longitudinal design of the project accommodates developmental changes in risk and protective factors, and outcomes as children develop from preschool through young adulthood. Project measures follow the onset and progression of outcomes such as behavior problems, as well as intervening factors that may influence the link between risk status and outcome. Samples differ by site, and were carefully chosen to vary by levels of exposure to maltreatment; from those with a substantiated early history of abuse and subsequent foster care placement in San Diego and those in Seattle who have all been reported to DSS, but may or may not have been substantiated, to some subjects in Baltimore, Chicago, and North Carolina with no known history of abuse. Children in LONGSCAN are followed-up regardless of movements into or out of foster care or through other placements.

Study organization: UNC's Coordinating Center is funded only to handle data and provide overall study coordination and direction. Each participating site is a separately funded study. UNC has no direct supervising authority over sites. Study decisions are made by an Executive Board comprised of the five site PIs and the CC PI, each with one vote.

**A.4.4. Benefits to subjects and/or society.** Describe any potential for direct benefit to individual subjects, as well as the benefit to society based on scientific knowledge to be gained; these should be clearly distinguished. Consider the nature, magnitude, and likelihood of any direct benefit to subjects. If there is no direct benefit to the individual subject, say so here and in the consent form (if there is a consent form). Do not list monetary payment or other compensation as a benefit.

**To Participants:** Our experience is that some participants enjoy being interviewed. Some enjoy the opportunity to demonstrate altruism, while others express relief at being able to share problems or concerns. Participation in the study may help families identify needed services.

**To Society:** This study will offer the first solid prospective long-term data on the risk of adverse outcomes among the victims of child maltreatment and the witnessing of severe violence. It will enhance knowledge about the antecedents of maltreatment, the relative risk of adverse outcomes, the impact of intervention, and the factors that contribute to resiliency.

**A.4.5. Full description of risks and measures to minimize risks.** Include risk of psychosocial harm (e.g., emotional distress, embarrassment, breach of confidentiality), economic harm (e.g., loss of employment or insurability, loss of professional standing or reputation, loss of standing within the community) and legal jeopardy (e.g., disclosure of illegal activity or negligence), as well as known side effects of study medication, if applicable, and risk of pain and physical injury. Describe what will be done to minimize these risks. Describe procedures for follow-up, when necessary, such as when subjects are found to be in need of medical or psychological referral. If there is no direct interaction with subjects, and risk is limited to breach of confidentiality (e.g., for existing data), state this.

The Coordinating Center has no direct interaction with participants, and risk is limited to breach of confidentiality for existing data.

Instruments (data collection forms) are carefully screened to minimize reporting risk, and to avoid upsetting youth or their caregivers while still collecting crucial data on maltreatment. At ages 12, 16, and 18 youth participants are asked to report their own history of maltreatment. By using the A-CASI (Audio-Computer Assisted Self Interview) format, LONGSCAN investigators have made every effort to develop the most ethical, low-risk method of asking such questions. Also, subjects are free to stop the interview at any time, to skip any question they do not care to answer, and interviewers are trained to debrief all respondents thoroughly at the close of the interviews. At Ages 14 and 18, youth are completing modules of the Diagnostic Interview for Children-IV (DISC-IV) to enable LONGSCAN to assess existing psychopathology. Individual site protocols are established to respond to participants whose responses indicate thoughts of suicide or possible danger to themselves or others.

At individual study sites there is some risk that subjects may need to be reported to Child Protective Services in accordance with state law if evidence of maltreatment arises during the interview. Caregivers are informed of this risk in the consent form at each site.

Each study site has its own IRB-approved debriefing protocol should subjects appear upset or in need of services. These site-specific debriefing protocols include such procedures as having clinicians on call for consultation, and providing service referrals when necessary.

**A.4.6. Data analysis.** Tell how the qualitative and/or quantitative data will be analyzed. Explain how the sample size is sufficient to achieve the study aims. This might include a formal power calculation or explanation of why a small sample is sufficient (e.g., qualitative research, pilot studies).

*Cross-site analyses: Methodological Issues.* As in any multi-site study, analyses must account for the inevitable variability across sites. In LONGSCAN, this variability comes from the sampling schemes within sites, the different populations of children sampled at each site, and the inevitable departures from common protocol despite our efforts at uniformity. A multi-site study with systematically different samples at each site permits analyses which take advantage of the larger sample size or which test hypothesized differences between sites. The systematic variation among the samples gives the study some of the features of a meta-analysis, and the shared measures, definitions, coding, training and timing by child age strengthen the meta-analytic capability. Individual site samples each have sufficient statistical power for stand-alone studies, and power is enhanced by aggregating data across sites and data points.

The approaches to cross-site analysis depend on the research question, but include site-specific analysis, analyses that compare across sites, and analyses that aggregate data across sites. The criteria for deciding among strategies include statistical power and the specific applicability of a particular question for a particular study design.

When analyzing data pooled across sites, the relationship between site and the dependent and independent variables, including interactions, must be evaluated. Significant interactions between site and the other variables must be taken into account in the analysis strategy. Approaches for aggregating data and/or account for site in analyses include weighting observations to adjust for site; use of Mantel-Haenszel techniques if the variable under study is categorical; stratifying analyses by site; and, most commonly used, accounting for sites in regression models. Site differences can be accounted for in regression models by including indicator variables for sites as main effects and in interaction terms, or by use of mixed linear models (e.g., PROC MIXED of SAS, SAS Institute, Inc., 1992), which are equivalent to structural equation models and hierarchical linear models (Bryce & Raudenbush, 1992) that consider individuals within a site as

random effects and site effects as fixed. Alternatively, aggregate analysis can be done using 'replication methods' in which a result developed for a specific site is validated at other sites. Computer intensive techniques such as cross-validation or prediction models can be utilized in this context.

*Longitudinal data analyses: Methodological issues.* Analyses that address the goals of LONGSCAN are primarily analyses that consider the repeated measures over time. Simple descriptive statistics and graphical representation are used to describe patterns in child outcomes across time. Longitudinal patterns are described using growth curve modeling for continuous variables and probability transition matrices for categorical variables. Mixed models, or hierarchical linear models that consider the multiple measurement of a subject as random effects, and generalized estimating equations (GEE) (Diggle, Liang, & Zeger, 1994) are used to model relationships over repeated measures.

**A.4.7. Will you collect or receive any of the following identifiers as part of the study data? Does not apply to consent forms.**

As the Coordinating Center of the consortium, we do no direct data collection; we receive the collected data from the sites.

No  Yes *If yes, check all that apply:*

- |   |   |
|---|---|
| <ul style="list-style-type: none"> <li>a. <input type="checkbox"/> Names</li> <li>b. <input type="checkbox"/> Telephone numbers</li> <li>c. <input checked="" type="checkbox"/> Any elements of dates (other than year) for dates directly related to an individual, including birth date, admission date, discharge date, date of death. For ages over 89: all elements of dates (including year) indicative of such age, except that such ages and elements may be aggregated into a single category of age 90 and older</li> <li>d. <input type="checkbox"/> Any geographic subdivisions smaller than a State, including street address, city, county, precinct, zip code and their equivalent geocodes, except for the initial three digits of a zip code</li> <li>e. <input type="checkbox"/> Fax numbers</li> <li>f. <input type="checkbox"/> Electronic mail addresses</li> <li>g. <input type="checkbox"/> Social security numbers</li> <li>h. <input type="checkbox"/> Medical record numbers</li> </ul> | <ul style="list-style-type: none"> <li>i. <input type="checkbox"/> Health plan beneficiary numbers</li> <li>j. <input type="checkbox"/> Account numbers</li> <li>k. <input type="checkbox"/> Certificate/license numbers</li> <li>l. <input type="checkbox"/> Vehicle identifiers and serial numbers (VIN), including license plate numbers</li> <li>m. <input type="checkbox"/> Device identifiers and serial numbers (e.g., implanted medical device)</li> <li>n. <input type="checkbox"/> Web universal resource locators (URLs)</li> <li>o. <input type="checkbox"/> Internet protocol (IP) address numbers</li> <li>p. <input type="checkbox"/> Biometric identifiers, including finger and voice prints</li> <li>q. <input type="checkbox"/> Full face photographic images and any comparable images</li> <li>r. <input type="checkbox"/> Any other unique identifying number, characteristic or code, other than dummy identifiers that are not derived from actual identifiers and for which the re-identification key is maintained by the health care provider and not disclosed to the researcher</li> </ul> |
|---|---|

**A.4.8. Data sharing.** With whom will *identifiable* (contains any of the 18 identifiers listed in question 7 above) data be shared outside the immediate research team? For each, explain confidentiality measures. Include data use agreements, if any.

- No one
- Coordinating Center:
- Statisticians:
- Consultants:
- Other researchers: Only when approved by the PIs of the six study sites.
- Registries:
- Sponsors:
- External labs for additional testing:
- Journals: Only in the form of analyzed results, not raw data.
- Publicly available dataset: The Restricted Data Use License for the National Data Archive on Child Abuse and Neglect is Appended to this application. Participants are informed in the study Assent and Consent forms that the study data will be available through this source.
- Other:

Cross-site datasets will be posted on the *internal password protected* pages of our study website to be accessed by the site personnel. However, the Coordinating Center does not share data with other researchers outside of LONGSCAN (unless sanctioned by the collective group of Principal Investigators).

It is the expectation of our funding agency that we submit our data to the National Data Archive on Child Abuse and Neglect (NDACAN) two years after data collection is complete for a specific interview wave.

For distribution to the NDACAN, three important steps are taken to de-identify sensitive or potentially identifying data as much as possible. First, the region of the country replaces the specific state or city identifier in the SITE & ID variables. Second, all dates are recoded to represent the middle of the month (e.g., 01/20/99 = 01/15/99). Third, any potentially sensitive information is not included with the data. This includes referral or case file numbers, interviewer names, and any text narratives describing CPS referrals or investigations.

The NDACAN maintains a strict application process to gain access to the publicly available data. The archive is responsible for ensuring the appropriate use of the data. The Restricted Data Use License for LONGSCAN data is appended to this IRB application.

**A.4.9. Confidentiality of the data.** Describe procedures for maintaining confidentiality of the data you will collect or will receive. Describe how you will protect the data from access by those not authorized. How will data be transmitted among research personnel? Where relevant, discuss the potential for deductive disclosure (i.e., directly identifying subjects from a combination of indirect IDs). Describe your plan to destroy identifiers. When will identifiers be destroyed?

The Coordinating Center (CC) receives de-identified data from the sites. Birth dates and dates of death are included in the data, but are not linked by participant name, address, or any

combination of indirect IDs. Data from the sites are emailed to the Coordinating Center. These files are received by study personnel only. The data are accessible only to study personnel via multiple security precautions including a secure password protected network, passcode protected access to offices, and limited access to the complete set of data even for study personnel. Data are processed at the Coordinating Center and a pooled set of data files from all sites is posted on the study's internal, password-protected website. The files can only be accessed by study personnel for a two-week period, and then they are removed from the website. The potential for deductive disclosure at the Coordinating Center is highly unlikely given there is no access to names, address, birthplace, social security numbers, or geographic locations other than region of the country.

As stated above, the Coordinating Center has no identifying information about participants, since personal identifiers and data are separated at local sites before the data is transmitted to the CC. Also, the CC has received a federal Certificate of Confidentiality, which allows investigators to withhold data from subpoena thus decreasing the likelihood that confidential data will be shared. As of January 5, 1999, LONGSCAN's Certificate of Confidentiality was amended so that there is one study-wide certificate residing at the Coordinating Center that serves to protect the identities of subjects throughout the sites of this longitudinal study.

**A.4.10. Data security for storage and transmission.** Please check all that apply.

*For electronic data:*

Secure network  Password access  Encryption

Other (describe):

Portable storage (e.g., laptop computer, flash drive)

*Describe how data will be protected for any portable device:* Laptops used by the site interviewers to administer the interviews are user ID and password protected to limit access to authorized users only.

*For hardcopy data (including human biological specimens, CDs, tapes, etc.):*

Data de-identified by research team (stripped of the 18 identifiers listed in question 7 above)

Locked suite or office

Locked cabinet

Data coded by research team with a master list secured and kept separately

Other (describe):

The Coordinating Center no longer receives hardcopy data. Data diskettes received in the past are stored in a locked cabinet in a locked office with entry to the suite of offices passcode protected.

## Part A.5. The Consent Process and Consent Documentation (including Waivers)

The standard consent process is for all subjects to sign a document containing all the elements of informed consent, as specified in the federal regulations. Some or all of the elements of consent, including signatures, may be altered or waived under certain circumstances.

- If you will obtain consent in any manner, complete **section A.5.1**.
- If you are obtaining consent, but requesting a waiver of the requirement for a signed consent document, complete **section A.5.2**.
- If you are requesting a waiver of any or all of the elements of consent, complete **section A.5.3**.

You may need to complete more than one section. For example, if you are conducting a phone survey with verbal consent, complete sections A.5.1, A.5.2, and possibly A.5.3.

**A.5.1. Describe the process of obtaining informed consent from subjects.** If children will be enrolled as subjects, describe the provisions for obtaining parental permission and assent of the child. If decisionally impaired adults are to be enrolled, describe the provision for obtaining surrogate consent from a legally authorized representative (LAR). If non-English speaking people will be enrolled, explain how consent in the native language will be obtained. Address both written translation of the consent and the availability of oral interpretation. *After you have completed this part A.5.1, if you are not requesting a waiver of any type, you are done with Part A.5.; proceed to Part B.*

The IRB/HSRB at each of the five data collection sites reviews and approves informed consent and assent procedures according to local regulations. Informed consent from caregivers and informed assent from child/youth participants up to Age 18 are obtained at the time of each LONGSCAN Interview. At Age 18, the Youth participant signs a Consent form. Consent and Assent Forms are not included as part of this renewal application since they are site-specific and are reviewed and approved annually at each of the five interview/data collection sites.

## Part B. Questions for Studies that Involve Direct Interaction with Human Subjects

→ *If this does not apply to your study, do not submit this section.*

**B.1. Subjects.** Specify number, gender, ethnicity, race, and age. Specify whether subjects are healthy volunteers or patients. If patients, specify any relevant disease or condition and indicate how potential subjects will be identified.

Total Sample = 1354; 657 males and 697 females.

353 are Caucasian; 720 are African American; 97 are Hispanic; 162 are Mixed Race; 22 are Other.

The current age range of our sample is 12 to 18.

**B.2. Inclusion/exclusion criteria.** List required characteristics of potential subjects, and those that preclude enrollment. Justify exclusion of any group, especially by criteria based on gender, ethnicity, race, or age. If pregnant women are excluded, or if women who become pregnant are withdrawn, specific justification must be provided.

NA; enrollment into the study is closed.



**B.3. Methods of recruiting.** Describe how and where subjects will be identified and recruited. Indicate who will do the recruiting, and tell how subjects will be contacted. Describe efforts to ensure equal access to participation among women and minorities. Describe how you will protect the privacy of potential subjects during recruitment. *For prospective subjects whose status (e.g., as patient or client), condition, or contact information is not publicly available (e.g., from a phone book or public web site), the initial contact should be made with legitimate knowledge of the subjects' circumstances. Ideally, the individual with such knowledge should seek prospective subjects' permission to release names to the PI for recruitment. Alternatively, the knowledgeable individual could provide information about the study, including contact information for the investigator, so that interested prospective subjects can contact the investigator.* Provide the IRB with a copy of any document or script that will be used to obtain the patients' permission for release of names or to introduce the study. Check with your IRB for further guidance.

Recruitment is finished and the enrollment of participants into LONGSCAN is closed.

**B.4. Protected Health Information (PHI).** If you need to access Protected Health Information (PHI) to identify potential subjects who will then be contacted, you will need a *limited waiver of HIPAA authorization*. If this applies to your study, please provide the following information. NA

- a. Will the information collected be limited only to that necessary to contact the subjects to ask if they are interested in participating in the study?
- b. How will confidentiality/privacy be protected prior to ascertaining desire to participate?
- c. When and how will you destroy the contact information if an individual declines participation?

**B.5. Duration of entire study and duration of an individual subject's participation, including follow-up evaluation if applicable.** Include the number of required contacts and approximate duration of each contact.

LONGSCAN was initiated in 1991 and is funded in five-year phases. October 1, 2005 marked the beginning of the fourth funding phase which will continue until the year 2010 allowing us to follow the large majority of our participants to Age 18. Each individual child's participation is from Age 4 to Age 18. With continued funding LONGSCAN investigators may attempt to follow participants through age 21, since that is the age that they will achieve complete legal independence from Parents/Caregivers.

LONGSCAN is a set of prospective cohort studies which began with children age four or younger and follows them at regularly scheduled intervals (ages 4, 6, 8, 12, 14, 16, and 18 years) using extensive face-to-face (FTF) interviews with the primary caregiver(s) and the child/youth. Administration times of FTF interviews can vary significantly depending on the life experiences of the participant. An average interview takes between 1½ and 2 hours.

During intervening years there are annual telephone interviews to enhance sample retention and track service utilization, life events, and behavior problems. Annual telephone contacts with the Caregiver typically take no longer than half an hour.

**B.6. Where will the subjects be studied?** Describe locations where subjects will be studied, both on and off the UNC-CH campus.

All direct contact with study participants occurs at the five data collection sites; not at the Coordinating Center. Depending upon site-specific procedures, youth participants are interviewed at school, at home, at the offices of the research site, or in a private meeting room at locations such as a public library or college campus. Caregivers are interviewed at home or at the offices of the research site.

**B.7. Privacy.** Describe procedures that will ensure privacy of the subjects in this study. Examples include the setting for interviews, phone conversations, or physical examinations; communication methods or mailed materials (e.g., mailings should not indicate disease status or focus of study on the envelope).

Interviews are conducted privately. If they are conducted in clinic or research offices, only the interviewer and the participant are present. If the interview is done in the home, the interviewer is trained to request privacy; and if other family members insist on being in the room, the interviewer is instructed to discontinue the interview and to re-schedule for another time and location.

Each site has a project title that does not refer to maltreatment, abuse, or neglect. All participant mailings use these titles.

Information that is sensitive is gathered using an Audio-Computer Assisted Self Interview (A-CASI) format. The participant (either Youth or Caregiver) wears headphones and is self-directed through the sensitive sections of the interview so that no one sees the responses. Site-specific protocols include a "flagged item report" that is generated at the end of the interview if any of the Youth's responses indicate that s/he is in danger of harming her/himself, or if anything is shared during the interview that would fall under mandatory reporting laws. Site-specific protocols are in place to handle the follow-up of any "flagged item reports" that are generated.

**B.8. Inducements for participation.** Describe all inducements to participate, monetary or non-monetary. If monetary, specify the amount and schedule for payments and how this will be prorated if the subject withdraws (or is withdrawn) from the study prior to completing it. For compensation in foreign currency, provide a US\$ equivalent. Provide evidence that the amount is not coercive (e.g., describe purchasing power for foreign countries). Include food or refreshments that may be provided.

The Coordinating Center offers no inducements. At the sites, inducements are typically monetary now that the youth are 12 and older. Inducements for the caregiver have always been in the form of cash, check, or gift certificates. For caregivers, the inducement amount ranges from twenty-five to sixty-five dollars per face-to face interview; and from \$15.00 to \$20.00 for an annual telephone follow-up. In addition, caregivers are typically reimbursed for transportation expenses. The youth receive amounts ranging from \$45.00 to \$75.00.

**B.9. Costs to be borne by subjects.** Include child care, travel, parking, clinic fees, diagnostic and laboratory studies, drugs, devices, all professional fees, etc. If there are no costs to subjects other than their time to participate, indicate this.

There are no known costs to participants other than the time required to be interviewed.

Part C. Questions for Studies using Data, Records or Human Biological Specimens without Direct Contact with Subjects

→ *If this does not apply to your study, do not submit this section.*

C.1. What records, data or human biological specimens will you be using? (check all that apply):

- Data already collected for another research study
- Data already collected for administrative purposes (e.g., Medicare data, hospital discharge data)
- Medical records (custodian may also require form, e.g., HD-974 if UNC-Health Care System)
- Electronic information from clinical database (custodian may also require form)
- Patient specimens (tissues, blood, serum, surgical discards, etc.)
- Other (specify):

C.2. For each of the boxes checked in 1, how were the original data, records, or human biological specimens collected? Describe the process of data collection including consent, if applicable.

In LONGSCAN information is abstracted from Child Protective Service (CPS) records by trained abstractors at each site. Site study consent forms include statements informing the participants that LONGSCAN has an interest in reviewing Child Protective Service Records, and asking permission for study review. In addition, each site Principal Investigator negotiates agreements with county and/or state level CPS Offices to access the records of our participants for review as frequently as every two years.

The LONGSCAN Principal Investigators have added two additional forms (appended to this application for Board review) to the CPS record abstraction protocol. One form collects data on the youth participant (younger than Age 18) as a perpetrator of abuse/maltreatment; and a second form collects data on perpetration of abuse/maltreatment by youth participants after they become adults at Age 18. Data needed to complete these forms are obtained from already existing records by trained study personnel; these forms are not completed as part of the participant interview. Consent/assent for record abstraction is obtained site-specifically as part of the overall study consent/assent to participation.

C.3. For each of the boxes checked in 1, where do these data, records or human biological specimens currently reside?

Paper copies reside in locked file cabinets at each site. Abstracted electronic data are keyed into the database on the site's desktop; and are transferred to the Coordinating Center according to the data transfer procedures described in Part A.4.9.

C.4. For each of the boxes checked in 1, from whom do you have permission to use the data, records or human biological specimens? Include data use agreements, if required by the custodian of data that are not publicly available.

We have permission from the participant's primary caregiver until the youth is 18. At Age 18, the Youth gives permission as part of the consent process.

C.5. If the research involves human biological specimens, has the purpose for which they were collected been met before removal of any excess? For example, has the pathologist in charge or the clinical laboratory director certified that the original clinical purpose has been satisfied? Explain if necessary.

yes  no  not applicable (explain)

This research does not involve human biological specimens.

C.6. Do all of these data records or specimens exist at the time of this application? If not, explain how prospective data collection will occur.

yes  no If no, explain.

Additional referrals/investigations can be added to a participant's CPS File until they turn 18 years of age. Our youngest participants are 12; so additional reports may be added to the CPS Files of some participants. CPS records will continue to be reviewed every two years to abstract new data. Consent and assent forms are signed at each new interview wave; so participants have the opportunity to permit or deny study access to their CPS file each time they are interviewed.