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Maltreatment and subsequent violent behavior: A prospective longitudinal study of delinquent
youth

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Ursula C. Thomas

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ABSTRACT

Maltreatment and subsequent violent behavior: A prospective longitudinal study of delinquent youth

Ursula C. Thomas

Child maltreatment and violence are two major public health concerns in the United States. The relationship between maltreatment and subsequent violent behavior, also referred to as the “cycle of violence”, is not well understood. The present study examines whether a history of maltreatment predicts violent behavior in a sample of youth already at high risk for violence: delinquent youth. Using a stratified, random sample of 1612 detained youth, large enough to generate reliable rates of maltreatment and violent behavior, this study addresses the following questions: (1) What is the prevalence of neglect, physical abuse, sexual abuse, multiple types of maltreatment, and any maltreatment in a sample of delinquent youth? (2) What is the prevalence of violent behavior in a sample of delinquent youth? (3) Among delinquent youth, is a history of maltreatment a significant predictor of violent behavior? (4) Among delinquent youth, is a history of a specific type of maltreatment (neglect, physical abuse, sexual abuse, or multiple types of maltreatment) a significant predictor of violent behavior? (5) Are there gender, racial/ethnic, or age differences in the cycle of violence? The results show that *one-third* of males and *two-thirds* of females had an official record of maltreatment and/or reported any maltreatment. In terms of violent behavior, *over half* of males and *almost 40%* of females reported engaging in at least one act of violence during the 5-year follow-up period. After controlling for race/ethnicity,

age, maltreatment after the baseline interview, violence prior to the baseline interview, and incarceration during follow-up, maltreatment in general did not predict subsequent violent behavior for males or females. However, males with a history of *multiple types of maltreatment (that is, neglect and physical abuse)* were three times more likely than nonmaltreated males to commit robbery. Controlling for race/ethnicity and age did not significantly affect the relationship between a history of multiple types of maltreatment and robbery for males. For females we did not find a relationship between specific types of maltreatment and subsequent violent behavior. Implications for future research, public policy, and clinical practice are discussed.

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Maltreatment and subsequent violent behavior: A prospective longitudinal study of delinquent youth

The maltreatment of children is a pervasive problem in the United States. In 2005, Child Protective Services [CPS] agencies around the country found that 899,000 children were abused and/or neglected. Nationally, 63% of child victims experienced neglect, 17% were physically abused, and 9% were sexually abused. Child fatalities are the most tragic consequence of maltreatment. In 2005, 1,460 children died as a result of abuse and/or neglect. Although these numbers are alarmingly high, they are considered to be an underestimate of the true number of maltreated children. There are many children who do not come to the attention of CPS agencies (US Department of Health and Human Services [US DHHS], 2007).

The harmful consequences of abuse and/or neglect in childhood often extend into adolescence and adulthood. Victims of childhood maltreatment are more likely than nonmaltreated individuals to engage in risky behaviors such as abusing alcohol and drugs, driving while intoxicated, engaging in unsafe sexual practices (Bennett & Kemper, 1994; Downs, Smyth, & Miller, 1996; Felitti et al., 1998; Walker et al., 1999; Widom & White, 1997), and living on the street (Herman, Susser, Struening, & Link, 1997). Furthermore, studies have shown a link between childhood maltreatment and subsequent mental health problems, including depression, dysthymia, anxiety (Horwitz, Widom, McLaughlin, & White, 2001; Lipovsky, Saunders, & Murphy, 1989), posttraumatic stress disorder (Widom, 1999), self-destructive behaviors such as self-mutilation and suicide attempts (McCauley et al., 1997; Mullen, Martin, Anderson, Romans, & Herbison, 1993), dissociation (Ogawa, Sroufe, Weinfield, Carlson, & Egeland, 1997), and personality disorders (Johnson, Cohen, Brown, Smailes, & Bernstein, 1999) especially antisocial (Horwitz et al., 2001; Luntz & Widom, 1994). Compared to nonmaltreated

children, abused and neglected children have higher rates of physical health problems in adulthood, such as ischemic heart disease, cancer, chronic bronchitis, emphysema, hepatitis, and obesity (Felitti et al., 1998; Walker et al., 1999).

Although research has provided solid empirical evidence that childhood maltreatment is often associated with risky behaviors as well as mental and physical health problems later in life, other negative outcomes of childhood maltreatment – though important – are not as well supported. A key possible outcome of childhood maltreatment that has received mixed empirical support is violent behavior. The hypothesis that victims of childhood violence have a higher likelihood than nonvictims to engage in violent behavior later in life has been referred to as the “cycle of violence” (Widom, 1989). While early studies generally reported a relationship between childhood maltreatment and later violent behavior (e.g., Egeland, Jacobvitz, & Papatola, 1987; Herrenkohl, Herrenkohl, & Toedtler, 1983; Spinetta & Rigler, 1972; Steel & Pollack, 1968), a literature review by Widom (1989) found that most of these early studies had serious methodological shortcomings. These shortcomings include lack of specificity in defining predictor and/or outcome variables, use of retrospective data, weak sampling techniques, lack of control groups, overdependence on official data, and lack of longitudinal designs. Although more recent studies examining the cycle of violence hypothesis have overcome some of these shortcomings, they have not been without methodological limitations. As a result, the findings from more recent studies have been inconsistent. Therefore, we still do not have a clear picture of the cycle of violence.

Why is it important to study *violence* as a possible outcome of childhood maltreatment?

Violence is a major public health concern in the US. A violent crime is committed every 23

seconds (US Department of Justice [US DOJ], 2006). By the time you have read this paragraph, a person somewhere in this country has been assaulted, robbed, raped, or murdered. Violence is very much a part of our lives. We read about it in the newspaper and see it on television every day. The devastating effects of violence touch many people from all walks of life. Since the epidemic of violence that lasted from 1983 to 1993 (Cook & Laub, 1998), violence seems to have decreased. In the last decade, arrest records for violent crime have shown a downward trend (US DOJ, 2006). The latest available statistics show that from 2003 to 2004, arrests for violent crime in the US fell by 1.2 percent (US DOJ, 2006).

However, the problem of violence in US society has not been resolved. Even though violent arrest rates have declined over the last decade, an estimated 1,367,009 violent crimes were committed nationwide in 2004 (US DOJ, 2006). Each one of these violent crimes may have serious consequences for the victims and perpetrators, as well as society in general.

Consequences often include mental health and financial problems for victims and perpetrators (Elliott, Huizinga, & Menard, 1989; Miller, Fisher, & Cohen, 2001; Moffitt, 1993; Pollock, 1999), and significant costs to society (Miller, Fisher, & Cohen, 2001). In addition, despite a decline in juvenile arrests, the number of adolescents involved in violent behavior remains disconcertingly high. According to the Federal Bureau of Investigation [FBI], youth accounted for 12.1% of all violent crime arrests in 2004 (US DOJ, 2006). While juvenile arrest records for violent crimes have declined since the epidemic of violence in the 80s and 90s, *self-reports* about juvenile violent behavior have shown no change (US DHHS, 2001).

How should we study the hypothesized cycle of violence?

Table 1 lists specific factors at the individual-, family-, peer-, school-, and neighborhood

levels that have been shown to increase the risk of engaging in violent behavior (Hawkins et al, 2000).

Table 1. Risk factors for violent behavior

| Level | Risk Factors for Violent Behavior in Adolescence/Adulthood | Study |
|---------------------|---|---|
| <i>Individual</i> | Impulsivity | Farrington & Loeber, 2000; Herrenkohl, Maguin, Hill, Hawkins, Abbott, & Catalano, 2000 |
| | Hyperactivity | Farrington & Loeber, 2000; Herrenkohl, Maguin, Hill, Hawkins, Abbott, & Catalano, 2000; White, Moffitt, Caspi, Bartusch, Needles, & Stouthamer-Loeber, 1994 |
| | Low self-esteem | Donnellan, Trzesniewski, Robins, Moffitt, & Caspi, 2005; Fergusson & Horwood, 2002 |
| | Low IQ | Farrington & Loeber, 2000; Fergusson & Horwood, 2002 |
| | Early aggressive behavior | Herrenkohl, Maguin, Hill, Hawkins, Abbott, & Catalano, 2000 |
| | Male | Fergusson & Horwood, 2002; Herrenkohl, Maguin, Hill, Hawkins, Abbott, & Catalano, 2000 |
| <i>Family</i> | Severe or inconsistent parental discipline | Farrington & Loeber, 2000 |
| | Inadequate parental monitoring | Herrenkohl, Maguin, Hill, Hawkins, Abbott, & Catalano, 2000 |
| | Parental criminal history | Fergusson & Horwood, 2002; Herrenkohl, Maguin, Hill, Hawkins, Abbott, & Catalano, 2000 |
| | Parental divorce | Herrenkohl, Maguin, Hill, Hawkins, Abbott, & Catalano, 2000 |
| <i>Peer</i> | Deviant peers | Herrenkohl, Maguin, Hill, Hawkins, Abbott, & Catalano, 2000 |
| | Gang membership | Herrenkohl, Maguin, Hill, Hawkins, Abbott, & Catalano, 2000 |
| <i>School</i> | Multiple school transitions | Fergusson & Horwood, 2002; Herrenkohl, Maguin, Hill, Hawkins, Abbott, & Catalano, 2000 |
| | Academic failure | Fergusson & Horwood, 2002; Herrenkohl, Maguin, Hill, Hawkins, Abbott, & Catalano, 2000 |
| <i>Neighborhood</i> | Poverty | Herrenkohl, Maguin, Hill, Hawkins, Abbott, & Catalano, 2000 |
| | Availability of drugs and guns | Farrington & Loeber, 2000 |
| | Presence of gangs | Farrington & Loeber, 2000 |

Studies of multiple risk factors for violence have found that risk factors have independent, additive effects. That is, the more risk factors an individual is exposed to, the greater the likelihood that he or she will become violent. One study found that a 10-year-old exposed to *six or more* risk factors is ten times as likely to be violent by age 18 as a 10-year-old exposed to only *one* risk factor (Herrenkohl et al., 2000). Another study found that the percentage of males convicted for violence more than doubled in the presence of *one* risk factor but increased tenfold in the presence of *four or five* risk factors (Farrington & Loeber, 2000).

To investigate whether maltreatment is a risk factor for later violent behavior we should study youth who already are at high risk for engaging in violent behavior, as evidenced by the multiple risk factors present in their lives. If maltreatment predicts violent behavior for these youth above and beyond the established risk factors, we can assume that a history of maltreatment is associated with perpetration of violence.

Research has shown that *delinquent* youth are at particularly high risk for violent behavior because of the multitude of risk factors present in their lives (Crimmins, Cleary, Brownstein, Spunt, & Warley, 2000; Dembo, Wothke, Shemwell, Pacheco, Seeberger, Rollie, Schmeidler, & Livingston, 2000; Elliott, Huizinga, & Menard, 1989; Herrenkohl, Maguin, Hill, Hawkins, Abbott, & Catalano, 2000; Moffitt, 1993; Teplin, Abram, McClelland, Dulcan, & Mericle, 2002). By age 18, almost 45% of delinquent males and 35% of delinquent females have committed a violent act, compared to 10-15% of youth in the general population (US DHHS, 2001). In addition to the presence of numerous risk factors in delinquent youth's lives, these youth often lack protective factors that could offset these risks (Cocozza, 1992). Therefore, it is not surprising that delinquent youth are more violent than youth in the general population.

As can be seen in Table 2, studies that have investigated the cycle of violence have not

examined delinquent youth (Ehrensaft, Cohen, Brown, Smailes, Chen, & Johnson, 2003; English, Widom, & Brandford, 2002; Herrera & McCloskey, 2001; Kwong, Bartholomew, Henderson, & Trinke, 2003; Maxfield & Widom, 1996; Smith & Thornberry, 1995; Stouthamer-Loeber, Loeber, Homish, & Wei, 2001; Weeks & Widom, 1998; White & Widom, 2003; Zingraff, Leiter, Myers, & Johnsen, 1993). One study examined adult felons (Weeks & Widom, 1998). However, the findings from this study are questionable since the study was retrospective in nature.

Table 2. Samples used to investigate the cycle of violence

| Authors | Sample |
|---|---|
| Ehrensaft, Cohen, Brown, Smailes, Chen, & Johnson (2003) <i>J Consult Clin Psychol</i> | Random sample of 543 students from 2 upstate New York counties: 46 maltreated children, 497 nonmaltreated children. |
| Kwong, Bartholomew, Henderson, & Trinke (2003) <i>J Fam Psychol</i> | Non-random sample of 1,249 general population adults from Vancouver, Canada: 600 maltreated adults, 649 nonmaltreated adults. |
| White & Widom (2003) <i>Aggressive Behavior</i> | Non-random sample of 676 maltreated children from a metropolitan area in the Midwest; 520 nonmaltreated controls matched on age, sex, race, and SES. |
| English, Widom, & Brandford (2002) <i>National Institute of Justice</i> | Non-random sample of 877 maltreated children who were made dependents of the Superior Court in a large urban area in the State of Washington; 877 nonmaltreated controls identified from Dept. of Health birth records matched on age, sex, race, and SES. |
| Herrera & McCloskey (2001) <i>Child Abuse & Neglect</i> | Non-random sample of 299 students from a midsize city in Arizona: 129 maltreated children, 170 nonmaltreated children. |
| Stouthamer-Loeber, Loeber, Homish, & Wei (2001) <i>Dev and Psychopathology</i> | Random sample of 506 7th grade students from Pittsburgh: 52 maltreated boys, 454 nonmaltreated boys matched on race, age, and SES. |
| Weeks & Widom (1998) <i>J Interpersonal Violence</i> | Random sample of 301 convicted felons (adults) from a New York State medium-correctional facility. |
| Maxfield & Widom (1996) <i>Arch Pediatr Adolesc Med</i> | Non-random sample of 908 maltreated children from a metropolitan area in the Midwest; 667 nonmaltreated controls matched on age, sex, race, and SES. |
| Smith & Thornberry (1995) <i>Criminology</i> | Random sample of 1,000 7th and 8th grade students from Rochester, New York: 171 maltreated children, 829 nonmaltreated children. |
| Zingraff, Leiter, Myers, & Johnsen (1993) <i>Criminology</i> | Random sample of 655 maltreated children from a midsize city in North Carolina; nonmaltreated controls: 281 students, 177 impoverished children. |

The omission of delinquent youth from studies that have investigated the relationship between maltreatment and subsequent violent behavior is critical. Longitudinal studies on the cycle of violence among delinquent youth are necessary to develop and direct policy aimed at improving identification of those youth most likely to engage in violent behavior. In addition, such information can inform prevention and intervention efforts for those most at risk.

The present study will contribute to, and extend the knowledge base of, the existing literature by examining the effect of maltreatment on violent behavior in a large sample of delinquent youth five years after detention. Chapter 1 reviews findings and further limitations of recent studies on the cycle of violence, and discusses how the present study overcomes the methodological limitations of prior studies. Chapters 2 and 3 provide background information on the most common methodological limitation of previous studies and possible mechanisms involved in the cycle of violence, respectively. Chapters 4 and 5 present the methods and results of the current study. Chapter 6 discusses the findings of the present study as well as implications of these findings for research, public policy, and clinical practice.

Chapter 1

Cycle of violence: What more do we need to know?

The cycle of violence hypothesis was introduced in the 1960s, when Curtis expressed concern that maltreated children would “become tomorrow’s murderers and perpetrators of other crimes of violence, if they survive” (Curtis, 1963). In the next few decades, several studies examined the cycle of violence hypothesis (e.g., Egeland, Jacobvitz, & Papatola, 1987; Herrenkohl, Herrenkohl, & Toedtler, 1983; Spinetta & Rigler, 1972; Steel & Pollack, 1968). These studies often reported conflicting findings as to the relationship between childhood maltreatment and violence. Furthermore, they suffered from a number of methodological problems. Widom, in her 1989 review of the cycle of violence literature, concluded that knowledge about the long-term consequences of abusive home environments was limited (Widom, 1989). She suggested that the results of studies examining the cycle of violence be interpreted with caution because of a lack of convincing empirical evidence. We will review the findings and limitations of studies of the relationship between maltreatment and violent behavior since Widom’s (Widom, 1989) paper was published in 1989.

Review of recent literature on the cycle of violence

The following is a summary of recent studies’ findings on the hypothesized link between violence and a history of neglect, physical abuse, sexual abuse, multiples types of maltreatment, and any maltreatment. Please note that none of these studies have examined delinquent youth.

Neglect and Subsequent Violence. As can be seen in Appendix A, most studies have found that individuals with a history of neglect are at increased risk for violent behavior compared to individuals with no history of maltreatment (English, Widom, Brandford, 2002; Maxfield &

Widom, 1996; Weeks & Widom, 1998). Only one study did not find a relationship between neglect and violence, possibly because violence was not measured beyond adolescence (Zingraff, Leiter, Myers, & Johnsen, 1993).

Physical Abuse and Subsequent Violence. Most recent studies have found that a history of physical abuse is a significant predictor of violent behavior (Ehrensaft, Cohen, Brown, Smailes, Chen, & Johnson, 2003; English, Widom, & Brandford, 2002; Herrera & McCloskey, 2001; Kwong, Bartholomew, Henderson, & Trinke, 2003; Maxfield & Widom, 1996). See Appendix B. Two studies did not find an association between physical abuse and violence (Weeks & Widom, 1998; Zingraff, Leiter, Myers, & Johnsen, 1993). The discrepancy in findings between the latter two studies and the other studies may be explained by differences in research design and length of follow-up. While the studies that found evidence for a relationship between physical abuse and violence were based on prospective designs following individuals into young adulthood, the two studies that did not find such evidence were either based on a retrospective design (Weeks & Widom, 1998), or did not measure violent behavior beyond adolescence (Zingraff, Leiter, Myers, & Johnsen, 1993).

Sexual Abuse and Subsequent Violence. Appendix C shows that, contrary to the above findings on neglect and physical abuse, most studies have suggested that a history of sexual abuse is *not* a significant predictor of violent behavior (Maxfield & Widom, 1996; Weeks & Widom, 1998; Zingraff, Leiter, Myers, & Johnsen, 1993). Only one study found an association between sexual abuse and violence (English, Widom, & Brandford, 2002). This study examined more severe sexual abuse than the other studies (i.e., mostly attempted or actual penetration). The more severe nature of the examined sexual abuse may explain the discrepancy in findings between this study and the studies that did not find evidence for a relationship between sexual

abuse and later violent behavior.

Multiple Types of Maltreatment and Subsequent Violence. Only two studies have examined whether a history of multiple types of maltreatment – i.e., any combination of neglect, physical abuse, and sexual abuse – is related to violent behavior (English, Widom, & Brandford, 2002; Maxfield & Widom, 1996). See Appendix D. English, Widom, and Brandford (2002) found that individuals who experienced multiple types of maltreatment were almost three times as likely as nonmaltreated individuals to become violent. Maxfield and Widom (1996), on the other hand, found that a history of multiple types of maltreatment did not predict violent behavior. This discrepancy in findings may be due to the more severe nature of sexual abuse in the English, Widom, and Brandford (2002) sample compared to the Maxfield and Widom (1996) sample: i.e., mostly attempted or actual penetration versus less severe sexual abuse.

Any Maltreatment and Subsequent Violence. Appendix E shows that, with one exception (Zingraff, Leiter, Myers, & Johnsen, 1993), all recent studies have suggested that a history of any maltreatment (i.e., without distinguishing between different types of maltreatment) is a significant predictor of violent behavior (Ehrensaft, Cohen, Brown, Smailes, Chen, & Johnson, 2003; English, Widom, & Brandford, 2002; Herrera & McCloskey, 2001; Kwong, Bartholomew, Henderson, & Trinke, 2003; Maxfield & Widom, 1996; Smith & Thornberry, 1995; Stouthamer-Loeber, Loeber, Homish, & Wei, 2001; Weeks & Widom, 1998; White & Widom, 2003). The only study that did not find an association between maltreatment and violence may have failed to do so because – contrary to the other studies – it did not measure violent behavior beyond adolescence (Zingraff, Leiter, Myers, & Johnsen, 1993).

In general, the more recent studies on the cycle of violence seem to support an association between violent behavior and a history of neglect, physical abuse, or any maltreatment.

However, when the same studies examined the cycle of violence hypothesis by gender and race/ethnicity, the results proved to be quite inconsistent.

Gender Differences in the Cycle of Violence. Studies that have examined the relationship between physical abuse and later violent behavior have suggested that a history of physical abuse may lead to different outcomes for males and females. Although two studies reported no gender differences (Ehrensaft, Cohen, Brown, Smailes, Chen, & Johnson, 2003; Kwong, Bartholomew, Henderson, & Trinke, 2003), one study reported different outcomes for physically abused males and females (Herrera & McCloskey, 2001). The latter study showed that, while physical abuse did not predict a violent crime arrest record for males, females who had been physically abused were over seven times more likely than nonmaltreated females to have an arrest for a violent crime.

Similar to research on the relationship between physical abuse and later violent behavior, studies that have examined the relationship between any maltreatment and later violent behavior have also reported gender differences. While some studies have found that maltreated males and maltreated females are at equally increased risk for violence compared to their nonmaltreated counterparts (Ehrensaft, Cohen, Brown, Smailes, Chen, & Johnson, 2003; White & Widom, 2003), other studies have reported important differences between males and females. For example, one study found that maltreated males were 2.5 times as likely as nonmaltreated males to become violent, while maltreated females were over seven times as likely as nonmaltreated females to become violent (English, Widom, & Brandford, 2002). In another investigation, maltreated females were more likely than nonmaltreated females to participate in violence whereas maltreated males were more likely than nonmaltreated males to have a higher frequency

of participation in violence (the number of violent arrests; Maxfield & Widom, 1996).

Racial/Ethnic Differences in the Cycle of Violence. Studies on the relationship between any maltreatment and later violent behavior have suggested that African American and White individuals with a history of any maltreatment may have different outcomes. Two studies found that maltreated African Americans are about twice as likely as nonmaltreated African Americans to become violent (English, Widom, & Brandford, 2002; Maxfield & Widom, 1996). These same studies reported conflicting findings regarding Whites. One study found that maltreated Whites are six times more likely than nonmaltreated Whites to engage in violent behavior (English, Widom, Brandford, 2002), while the other study found that maltreated Whites were not at increased risk for violence compared to nonmaltreated Whites (Maxfield & Widom, 1996).

Why are the findings of studies on the cycle of violence inconsistent?

The reason why studies on the cycle of violence reported inconsistent findings may be due to methodological limitations related to: (1) identification of maltreated children, (2) classification of maltreated children, and (3) measurement of violent behavior.

1) Identification of Maltreated Children

Most studies relied exclusively on official records, i.e., substantiated maltreatment (English, Widom, & Brandford, 2002; Maxfield & Widom, 1996; Smith & Thornberry, 1995; Stouthamer-Loeber, Loeber, Homish, & Wei, 2001; White & Widom, 2003; Zingraff, Leiter, Myers, & Johnsen, 1993). Some studies relied on self-report data to identify maltreated individuals (Herrera & McCloskey, 2001; Kwong, Bartholomew, Henderson, &

Trinke, 2003; Weeks & Widom, 1998). Only one study used a combination of official records and self-report data on maltreatment (Ehrensaft, Cohen, Brown, Smailes, Chen, & Johnson, 2003). Given that many maltreated children do not have an official record of maltreatment (Sedlak & Broadhurst, 1996), children tend to underreport their maltreatment experiences (Widom & Shepard, 1996; Widom & Morris, 1997), and the overlap between maltreatment records and self-reported maltreatment is limited (Brown, Cohen, Johnson, & Salzinger, 1998; Swahn, Whitaker, Phippen, Leeb, Teplin, Abram, & McClelland, 2006), relying on either official records or self-report of maltreatment leads to errors in the identification of maltreated children. Therefore, using only one method to identify individuals with a history of maltreatment is a methodological limitation that results in different samples of maltreated children.

Using different samples may lead to discrepant findings regarding gender and race/ethnicity. For example, maltreated females (as per self-report) are more likely to have a maltreatment record than males who report a history of maltreatment (Swahn et al., 2006). This means that, in contrast to studies that use self-report data, maltreated males are more likely than maltreated females to be misclassified as “not maltreated” in studies that rely on maltreatment records. In terms of race/ethnicity, maltreated African American youth are more likely than maltreated White or Hispanic youth to have a maltreatment record (US DHHS, 2006) while there are no racial/ethnic differences in self-reported maltreatment (Lau, McCabe, Yeh, Garland, Hough, & Landsverk, 2003). This indicates that studies using maltreatment records versus self-report data on maltreatment are likely to result in different findings regarding race/ethnicity. Since most studies on the cycle of violence relied on a single method to identify maltreated individuals, Chapter 2 goes into more detail on the

problems associated with the use of either official records or self-report data to identify maltreated individuals.

2) *Classification of Maltreated Children*

Some studies classified all maltreated individuals into one group (Smith & Thornberry, 1995; Stouthamer-Loeber, Loeber, Homish, & Wei, 2001; White & Widom, 2003), while others examined maltreated children by *type* of maltreatment such as neglect, physical abuse, and sexual abuse (Ehrensaft, Cohen, Brown, Smailes, Chen, & Johnson, 2003; English, Widom, & Brandford, 2002; Maxfield & Widom, 1996; Weeks & Widom, 1998; Zingraff, Leiter, Myers, & Johnsen, 1993). Failure to distinguish between different types of maltreatment may mask important differences and is therefore a methodological limitation. For example, females are more likely than males to be sexually abused (US DHHS, 2006) while they are less likely than males to engage in violent behavior (US DOJ, 2006). Hence, including sexually abused females in one maltreatment group may underestimate violent behavior among maltreated children.

3) *Measurement of Violent Behavior*

Some studies relied exclusively on violent crime arrest records (English, Widom, & Brandford, 2002; Herrera & McCloskey, 2001; Maxfield & Widom, 1996; Weeks & Widom, 1998; Zingraff, Leiter, Myers, & Johnsen, 1993), while others relied on self-report data on violent behavior (Ehrensaft, Cohen, Brown, Smailes, Chen, & Johnson, 2003; Kwong, Bartholomew, Henderson, & Trinke, 2003; White & Widom, 2003). Two studies used a combination of arrest records and self-report data on violent behavior (Smith & Thornberry,

1995; Stouthamer-Loeber, Loeber, Homish, & Wei, 2001). Prior research has shown that self-report data on criminal behavior produce more accurate estimates of participation in crime and frequency of offending than arrest records (Elliott, 1994; Weis, 1986). This appears to be especially true for individuals with a history of maltreatment. One study found that abused and/or neglected individuals self-reported proportionately more crimes not known to police compared to nonmaltreated controls (Maxfield, Weiler, & Widom, 2000). Contrary to self-report data on violent behavior, violent crime arrest records are a notoriously unreliable measure of violence (Elliott, 1994; Weis, 1986; Maxfield, Weiler, & Widom, 2000). One of the reasons for this is that most individuals who commit a violent crime are never arrested for a violent crime (Elliott, Huizinga, & Menard, 1989; Huizinga, Loeber, & Thornberry, 1995; Loeber, Farrington, & Waschbusch, 1998). In addition, previous research has suggested that males have a higher likelihood of getting arrested for a violent crime than females (Pope & Snyder, 2003). Also, minority youth may have greater odds of being arrested for a violent crime than Caucasian youth (Wordes, Bynum, & Corley, 1994). Therefore, relying on violent crime arrest records to measure violent behavior is a methodological limitation.

Studies on the cycle of violence not only differ in terms of *how* they measured violence, they also differ on *when* they measured violence. Some of the more recent studies on the cycle of violence only followed youth until age 14 (Herrera & McCloskey, 2001), 15 (Zingraff, Leiter, Myers, & Johnsen, 1993), or 17 (Smith & Thornberry, 1995), which means they missed the most crucial period for violent behavior. Prior research has shown that violence usually starts in early adolescence, peaks in late adolescence (age 17 for males and age 15/16 for females; Elliott, Huizinga, & Menard, 1989), and then decreases with age

(Loeber & Hay, 1997). This pattern is referred to as the “age-crime curve” (Farrington, 1986). Hence, failure to follow maltreated youth into young adulthood is a methodological limitation.

Table 3 summarizes the limitations of the more recent studies on the relationship between maltreatment and subsequent violent behavior. Because of the methodological limitations and inconsistent findings of prior studies, we still do not have a clear picture of the cycle of violence.

Table 3. Methodological limitations of recent studies on the cycle of violence

| Authors | Study Examined Delinquent Youth | Study Relied on Multiple Methods to Identify Maltreated Individuals | Study Differentiated Between Different Types of Maltreatment | Study Used Self-Report to Measure Violent Behavior | Study Followed Maltreated Individuals into Young Adulthood |
|---|--|--|---|---|---|
| Ehrensaft et al. (2003) <i>J Consult Clin Psychol</i> | | √ | √ | √ | √ |
| Kwong, Bartholomew, Henderson, & Trinke (2003) <i>J Fam Psychol</i> | | | | √ | √ |
| White & Widom (2003) <i>Aggressive Behavior</i> | | | | √ | √ |
| English, Widom, & Brandford (2002) <i>National Institute of Justice</i> | | | √ | | √ |
| Herrera & McCloskey (2001) <i>Child Abuse & Neglect</i> | | | | | |
| Stouthamer-Loeber, Loeber, Homish, & Wei (2001) <i>Dev and Psychopathology</i> | | | | √ | √ |
| Weeks & Widom (1998) <i>J Interpersonal Violence</i> | | | √ | | √ |
| Maxfield & Widom (1996) <i>Arch Pediatr Adolesc Med</i> | | | √ | | √ |
| Smith & Thornberry (1995) <i>Criminology</i> | | | | √ | |
| Zingraff, Leiter, Myers, & Johnsen (1993) <i>Criminology</i> | | | √ | | |

What kind of study do we need to better understand the cycle of violence?

To gain more insight into the cycle of violence so we can identify those individuals who are most likely to engage in violence, and for whom prevention and intervention efforts are most needed, we need a study that addresses the limitations of previous studies. That is, it is important that this study examine delinquent youth to determine whether maltreatment predicts violent behavior above and beyond the well-known risk factors for violence. The sample of delinquent youth should be large enough so that possible gender, racial/ethnic, and age differences may be detected. In addition, the proposed study should use multiple methods to identify maltreated individuals, distinguish between different types of maltreatment, use self-report data to measure violence, and follow youth into young adulthood.

Present study

The purpose of the present study is to examine whether a history of maltreatment among delinquent youth predicts violent behavior five years after detention. This study has the following strengths:

- 1) random, stratified sample of delinquent youth large enough to examine gender, racial/ethnic, and age differences;
- 2) combination of official records and self-report data to identify maltreated individuals;
- 3) examination of the effect of different types of maltreatment on violent behavior;
- 4) self-report data to measure violence; to facilitate comparisons between the findings of the present study and those of prior cycle of violence studies that have relied on official arrest records, the self-reported data in this study match violent crime arrest categories (that is, robbery, aggravated assault, forcible rape, and murder/nonnegligent manslaughter);

- 5) prospective longitudinal design, following maltreated individuals for five years into emerging adulthood thereby capturing the most critical period for violent behavior.

This dissertation investigates the following questions:

- 1) What is the prevalence of neglect, physical abuse, sexual abuse, multiple types of maltreatment, and any maltreatment in a sample of delinquent youth?
- 2) What is the prevalence of violent behavior in a sample of delinquent youth?
- 3) Among delinquent youth, is a history of maltreatment a significant predictor of violent behavior?
- 4) Among delinquent youth, is a history of a specific type of maltreatment (neglect, physical abuse, sexual abuse, or multiple types of maltreatment) a significant predictor of violent behavior?
- 5) Are there gender, racial/ethnic, or age differences in the cycle of violence?

Since the most common methodological limitation of previous studies on the cycle of violence is the use of a single method to identify maltreated individuals, Chapter 2 is devoted to providing a more in-depth understanding of the problems associated with the exclusive reliance on either official records or self-report data of maltreatment.

Chapter 2

Why is it necessary to use multiple methods to identify maltreated children?

As stated in Chapter 1, with the exception of one study, prior studies on the cycle of violence relied on maltreatment records *or* self-report data to identify individuals with a history of maltreatment. Exclusive reliance on either one of these methods is unreliable. This chapter describes problems associated with the exclusive use of official records or self-report data of maltreatment as it pertains to (1) reporting, (2) investigating, and (3) substantiating maltreatment.

1) Reporting Maltreatment

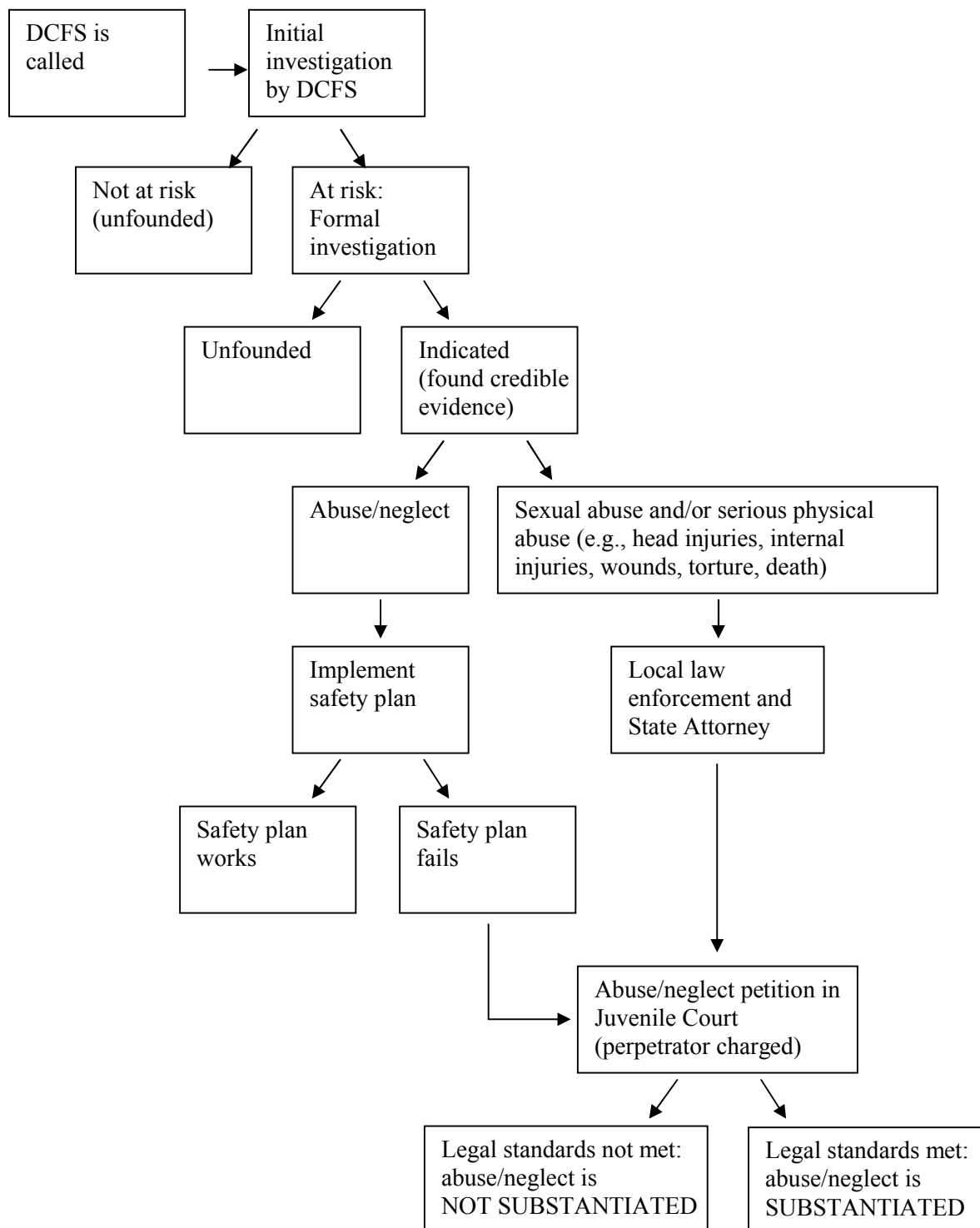
As noted before, the actual number of maltreated children is even higher than official estimates because child maltreatment is widely underreported to authorities. The National Incidence Study of Child Abuse and Neglect (Sedlak & Broadhurst, 1996) found that only 28% of cases known to professionals in the community could be traced to an investigation that the local child protection system conducted. The percentage was higher for physical and sexual abuse (48% and 42%, respectively) than for neglect (18%). Estimating the incidence of child maltreatment is further complicated by the fact that a considerable amount occurs that is not known even to professionals. Another study found that the incidence rate of physical abuse as per parents' self-reports was five times greater than the incidence rate according to official records (Straus, Hamby, Finkelhor, Moore, & Runyan, 1997). Even this number is likely to be an underestimate of actual maltreatment taking place, because parents may have been reluctant to admit child abuse. It is clear from studies like these that the maltreatment of thousands of children goes unreported.

Similar to official records, estimating maltreatment based on self-reports also leads to an underestimate of the actual number of maltreated children. Previous studies comparing official records with self-reported information on maltreatment have found that childhood victims of physical abuse and sexual abuse tend to underreport their maltreatment experiences (Widom & Shepard, 1996; Widom & Morris, 1997). Victims may distort or lose information associated with their maltreatment experience(s), especially maltreatment that happened a long time ago (Squire, 1989). Other problems may include repression of the abuse and/or neglect, or social desirability issues. Studies that have examined to what extent individuals' self-reports of maltreatment overlap with official maltreatment records have found low concordance rates (Brown, Cohen, Johnson, & Salzinger, 1998; Swahn et al., 2006).

2) Investigating Maltreatment

Figure 1 shows that, even if reported to authorities, not all maltreatment allegations are formally investigated. Nationwide, about 62% of reports are accepted for investigation or assessment (US DHHS, 2006). In most states, only serious allegations are investigated formally. When cases involve less serious allegations and lower levels of risk, child protection agencies assess the family only for the possibility that it needs services. The majority of reports are *assessed* rather than investigated (Finkelhor, Cross, & Cantor, 2005).

Figure 1. The long road from initial report to substantiation of maltreatment.



3. Substantiating Maltreatment

As can be seen in Figure 1, even when maltreatment is formally investigated, it is an arduous task to have the maltreatment substantiated. The investigator must determine whether or not maltreatment occurred. This determination generally requires a preponderance of evidence as its standard of proof, referred to as “substantiation.” Nationwide, about 25% of all investigations are substantiated (US DHHS, 2000). Reports of child maltreatment may not be substantiated for a variety of reasons. This may include failure of the family to cooperate with the investigation, agencies’ inability to adequately investigate because of time or manpower constraints, or lack of sufficient evidence (Finkelhor, Cross, & Cantor, 2005). Evidence required to substantiate a maltreatment allegation varies by type of maltreatment and by state, and is guided by the Abused and Neglected Child Reporting Act (ANCRA) of 1975.

For allegations of physical abuse, the supporting evidence is the physical harm to the child. While some physical abuse may result in no visible physical harm (for example, internal injuries), the presence of an injury is usually needed to confirm physical abuse. Sexual abuse investigations are often more complex than investigations of physical abuse. Sexual abuse can include acts that leave little or no physical evidence. Furthermore, most sexual abuse is conducted in secrecy, and children are frequently bribed or threatened into silence by the perpetrators of the abuse. Witnesses are seldom available to corroborate the abuse. Therefore, in a significant number of cases, the decision to substantiate the sexual abuse or not comes down to weighing the testimonies of the alleged victims and perpetrators. Allegations of neglect can be the most challenging for investigators because there are many areas subject to individual interpretation. Many state laws focus on minimum parenting

standards required to provide for the basic physical needs of children. These may differ significantly from community standards. Investigators examine whether an incident of neglect has occurred, whether there is evidence that the caretakers did not fulfill their responsibilities to provide for the child's basic needs, and whether the neglect is serious enough, if it continues, to result in serious harm to the child.

In sum, finding sufficient evidence to substantiate child abuse and/or neglect that actually took place is an arduous task. As a result, many maltreated children do not have an official maltreatment record. Therefore, relying on maltreatment records is not a reliable method of identifying maltreated individuals. As mentioned before, relying on self-report data of maltreatment is also not reliable since maltreated individuals often underreport their maltreatment experiences. Hence, the present study uses a combination of maltreatment records and self-report data to identify individuals with a history of maltreatment.

So far, this dissertation has focused on *outcomes*; that is, the effect of maltreatment on violent behavior. The next chapter reviews some of the *processes* that may be involved in the cycle of violence.

Chapter 3

Possible mechanisms involved in the cycle of violence

Many theories have been proposed to explain the hypothesized link between childhood maltreatment and subsequent violent behavior. The six most influential theories have been based on (1) social learning (Bandura, 1973, 1977), (2) attachment (Bowlby, 1969), (3) object relations (e.g., Klein, 1932), (4) physiological changes (e.g., Perry, 1997), (5) maladaptive coping strategies (e.g., Widom, Weiler, & Cottler, 1999), and (6) genetics (e.g., Dilalla & Gottesman, 1991). To date, empirical studies have not provided empirical evidence regarding the mechanism(s) involved in the cycle of violence.

1) Social Learning

Social learning theory (Bandura, 1973, 1977) postulates that behavior is learned through observation. Growing up in an abusive family provides children with a model through which they learn aggressive behaviors. Children come to believe that aggression is an appropriate method to achieve goals and a viable means for dealing with interpersonal conflicts. The aggressive behaviors and beliefs learned in childhood tend to be carried into adulthood (Moffitt, Caspi, Harrington, & Milne, 2002).

2) Attachment

According to attachment theory (Bowlby, 1969), children develop a secure attachment to their primary caregiver if they regard this caregiver as caring and predictable. For example, securely attached children will seek out their primary caregiver for comfort after a brief separation. In contrast, maltreated children tend to develop insecure attachments

to their primary caregiver (Main & Solomon, 1986). That is, maltreated children usually display contradictory behavior upon reunion with their caregiver, such as approach followed by avoidance. Maltreated children may also appear disoriented upon reunion with their caregiver.

An insecurely attached child is likely to interpret neutral or even positive behaviors as hostile, adopting a “hostile world view” which can lead to aggressive behaviors (Ainsworth, 1989). This increased hostility has been demonstrated in research examining how maltreated children process social information. Compared to nonmaltreated children, physically abused children seem to display deviant patterns of social information processing (Dodge, Bates, & Pettit, 1990). That is, they are less attentive to relevant social cues, more biased toward attributing hostile intent, and they find it difficult to generate appropriate solutions to interpersonal problems. These deviant patterns of social information processing are related to aggressive behaviors (Dodge, Bates, & Pettit, 1990).

3) Object Relations

Object relations theory (e.g., Klein, 1932) suggests that individuals have internal working models, also known as cognitive structures or schemas, which are dynamic representations of the self and others (so-called “objects”). These internal working models guide the appraisal of, and response to, others. They also mediate the transmission of patterns of relating to others across generations. Abuse and neglect strongly affect the internal working models of children. That is, victims of childhood abuse and neglect may form an internal working model of an abusing parent-child dyad in which they see the abusive parent as inaccessible or frightening and themselves as inadequate and unlovable. As a defense against their feelings

of fear and helplessness, maltreated children may “identify with the aggressor” (Freud, 1936) by taking on some of the aggressor’s qualities. Instead of feeling like a helpless victim, they want to feel like the powerful aggressor. Therefore, the defensive mechanism called “identification with the aggressor” may potentially perpetuate the cycle of violence.

4) Physiological Changes

Although brain damage in children may be caused by a direct injury to the head, damage to a child's brain can also result from other factors. For example, children can sustain brain damage from being shaken violently (Dykes, 1986) or as a result of malnutrition (Galler, Ramsey, Solimano, & Lowell, 1983). At a neurobiological level, abuse and neglect in childhood may dysregulate certain brain functions, leading to a decrease in cortical and subcortical inhibitory functions. The accompanying overstimulation of the stress response systems in the midbrain and the brain stem produces impulsivity, hyperactivity, and a lower threshold for violence (Eichelman, 1990; Perry, 1997). Studies have also suggested an association between childhood maltreatment and subsequent violent behavior in part through an effect on the serotonin system (Lewis, 1992). In addition, studies have found that being reared under neglectful conditions affects levels of norepinephrine and serotonin. The changes in these neurotransmitter levels have been linked to aggressive behavior (Higley, Melman, & Taub, 1991).

5) Maladaptive Coping Strategies

In order to cope with – and protect themselves from – the physical and emotional pain associated with maltreatment, children may develop certain coping styles. The nature of these

coping styles depends on the child's developmental stage (Cole & Putnam, 1992). For example, in the preschool years, coping skills are limited; maltreated children tend to depend on denial and dissociative strategies. As they move into the school-age years, children develop introspection, making them vulnerable to feelings of guilt and shame, which in turn may disrupt social interactions with their peers as well as their sense of self-competency. Adolescents tend to cope with maltreatment through denial, aggressiveness, or by engaging in risky behaviors, such as substance abuse, sexual acting out, or running away (Cole & Putnam, 1992). Although certain coping strategies may be adaptive at one point in a child's life – for example, lying, avoiding an abusive parent, denial, and aggressive behavior – these same strategies become maladaptive once the maltreatment stops or as the child enters adolescence/ adulthood.

Research on coping strategies used by maltreated children is not extensive. Most studies have examined the coping strategies of sexual abuse victims (for review see Spaccarelli, 1994). Despite the scarcity of research, there has been one consistent finding across a number of studies: the link between childhood maltreatment and substance abuse as a coping strategy (e.g., Miller, 1993; Widom, Weiler, & Cottler, 1999). Alcohol and drug abuse may serve the following functions for victims of childhood maltreatment (Widom, Weiler, & Cottler, 1999): emotional and/or psychological escape (Downs, Miller, & Testa, 1991); self-medication in an attempt to gain control over negative life experiences (Downs, Miller, & Testa, 1991); enhancement of self-esteem (Dembo, Williams, La Voie, Schmeidler, Kern, Getreu, Barry, Genung, & Wish, 1990); reduction of loneliness and isolation by befriending substance abusing peers (Singer, Petchers, & Hussey, 1989); and self-destructiveness arising from feelings of worthlessness and guilt (Lindberg & Distad, 1985).

In addition to childhood maltreatment, substance abuse is often associated with criminal behavior and violence (e.g., Chaiken & Chaiken, 1990; White, 1997). Substance abuse and criminal/violent behavior may reciprocally influence each other. For example, drug use is illegal and thus increases the risk of an arrest. Furthermore, drug users are more likely to commit other crimes in order to obtain money to buy drugs. Taking part in the illegal drug market also increases the risk of being involved in potentially violent situations (Goldstein, 1985; White, 1997). Conversely, individuals who engage in criminal/violent behavior are usually part of a specific subculture – a subculture that tends to include substance abuse (White, 1990). In sum, it seems that maltreated children may cope with their maltreatment by abusing alcohol and drugs, which is associated with involvement in criminal/violent behavior.

6) Genetics

Although most theories that attempt to explain the cycle of violence include only environmental factors, genetic factors may also contribute to the perpetuation of violence. Researchers have argued that the link between childhood maltreatment and subsequent violent behavior may reflect genetic transmission (DiLalla & Gottesman, 1991). That is, parents not only provide their children's rearing environment, but also their children's genotype. This has been referred to as the "passive gene-environment (G-E) correlation" (Plomin, DeFries, & Loehlin, 1977). Maltreating a child is considered a form of antisocial behavior that often co-occurs with other forms of adult antisocial behavior (Brown, Cohen, Johnson, & Salzinger, 1998; Moffitt, Caspi, Harrington, & Milne, 2002). Previous research has shown that antisocial behavior is at least moderately heritable (Rhee & Waldman, 2002).

Therefore, maltreatment in childhood and subsequent antisocial behavior may be linked because children inherit their parents' antisocial genes. Other genetic factors that have been associated with antisocial behavior are low IQ (White, Moffitt, & Silva, 1989), Attention-Deficit/Hyperactivity Disorder (Mannuzza, Gittelman-Klein, Konig, & Giampino, 1989), and early aggressiveness (Stattin & Magnusson, 1989). Each of these factors has been shown to be moderately to highly heritable and may therefore play an important role in the cycle of violence.

To sum up, the most influential theories about the possible mechanisms involved in the cycle of violence are based on social learning, attachment, object relations, physiological changes, maladaptive coping strategies, and genetics. While studies have examined the processes that may be involved in the cycle of violence, empirical evidence on a specific mechanism is lacking. It is plausible that the cycle of violence, if supported, is perpetuated by several processes.

Before presenting whether this study found empirical support for the cycle of violence (Chapter 5), the next chapter describes the methods used in the current study.

Chapter 4

Methods

Participants and Sampling Procedures

Participants were 1829 youth (males and females, ages 10-18 years) who had been randomly sampled at intake into the Cook County Juvenile Temporary Detention Center [CCJTDC] between November 1995 and June 1998 as part of the Northwestern Juvenile Project [NJP]. The NJP is a study of the mental health needs, service use, and development of high-risk behaviors of juvenile detainees over time (Teplin, Abram, McClelland, Dulcan, & Mericle, 2002). The sample was stratified by sex, age (10-13 years, ≥ 14 years of age), race/ethnicity (African American, non-Hispanic white, Hispanic), and legal status (processed as a juvenile or as an adult). To obtain enough participants to compare key subgroups, certain subgroups (females and Hispanics) were over-sampled.

During the baseline study, CCJTDC received approximately 8500 admissions each year (John Howard Association, unpublished data, 1992) and was used solely for pretrial detention and for offenders sentenced for less than 30 days. Detainees under age 17 are held at CCJTDC; youth up to age 21 may be detained in CCJTDC if they are being prosecuted for an arrest that originally occurred when they were younger than 17.

Like juvenile detainees nationwide, approximately 90% of CCJTDC detainees are males, and most are racial/ethnic minorities (Snyder & Sickmund, 1999). CCJTDC's population is 77.9% African American, 5.6% non-Hispanic white, 16.0% Hispanic, and 0.5% other racial/ethnic groups. The age and offense distributions of CCJTDC detainees are also similar to detained juveniles nationwide (Snyder & Sickmund, 1999).

The detention center in Cook County was chosen for three reasons. First, Cook County includes the city of Chicago and surrounding suburbs. Since most juvenile detainees in the United States live in – and are detained in – urban areas (Pastore & Maguire, 2000), the present study’s participants are considered representative of juvenile detainees nationwide. Second, Cook County is ethnically diverse and has the third largest Hispanic population in the United States (US Bureau of the Census, 2001a). Therefore, CCJTDC offered a good opportunity to study Hispanic juvenile detainees. Since Hispanic youth are overrepresented in the juvenile justice system (Snyder & Sickmund, 1999) and the Hispanic population is growing (US Bureau of the Census, 2001b), it was important to ensure enough Hispanic participants to represent the Hispanic population of juvenile detainees. Finally, the detention center’s size (daily census of approximately 650 youth and intake of 20 youth per day) ensured that enough participants would be available.

No single site can represent the entire country because different jurisdictions have different options for diversion. Nevertheless, Illinois’ criteria for detaining juveniles are similar to those of other states. All states allow pretrial detention if a youth needs protection, is likely to flee, or is considered a danger to the community (Grisso, Tomkins, & Casey, 1988; Illinois Criminal Justice Information Authority, 1997).

Procedures at the Baseline Interview

Following intake into the detention center, youth were approached by project staff. Project staff explained the Northwestern Juvenile Project (NJP) and asked youth if they were interested in being a part of this study. Youth were informed that any information they provided would remain confidential (except acute suicidal or homicidal intent). Participants signed an assent

form (if they were under 18 years of age) or consent form (if they were 18 or older). Federal regulations allow parental consent to be waived if the research involves minimal risk (45 CFR 46.116(c), 45 CFR 46.116 (d), and 45 CFR 46.408 (c)) (Federal Register, 1991). The Northwestern University Institutional Review Board, the Centers for Disease Control and Prevention Institutional Review Board, and the US Office of Protection from Research Risks waived parental consent. However, as ethicists recommend, we nevertheless tried to contact parents to provide them an opportunity to decline participation and to offer them additional information (Fisher, 1993). If after repeated attempts to contact a youth's parents or guardians parental consent could not be obtained, youth assent was overseen by a Participant Advocate, representing the interests of the participants. Federal regulations allow for a Participant Advocate when parental consent is not feasible (45 CFR 46.116 (d)) (Fisher, 1993).

Interviews were held in a private area, usually within two days of intake. The duration of most interviews was two to three hours. Interviewers were male and female Master's level clinical interviewers. Only female interviewers interviewed female participants. One third of the interviewers were fluent in Spanish. To maintain consistency throughout the study, interviewers conducted scripted interviews with mock participants on a regular basis.

Detainees were eligible to participate in the study regardless of psychiatric morbidity, state of alcohol or other substance intoxication, or fitness to stand trial. Within each stratum, a random numbers table was used to select names from the CCJTDC's intake log. Throughout the study, the number of participants still needed to fill each stratum was monitored. Project staff sampled the rarest cells first. A random numbers table was used when more than one participant was available for a given stratum. The final sampling fractions ranged from 0.018 to 0.689.

Of the 2275 names selected for participation, 4.2% (34 youth and 62 parents or guardians) refused. There were no significant differences in refusal rates by gender, race/ethnicity, or age. Some youth processed as adults (automatic transfers) were counseled by their lawyers to refuse participation; in this stratum, the refusal rate was 7.1% (26 of 368 youth). Twenty-seven selected youth left the detention center before we could schedule an interview; 312 were not interviewed because they left while we were attempting to locate their guardians for consent. Eleven others were excluded: 9 became physically ill during the interview and could not finish it, 1 was too cognitively impaired to be interviewed, and 1 appeared to be lying. The final sample size was 1829. This sample size allows us to reliably detect (that is, distinguish from zero) behaviors that have a base rate in the general population of at least 1.0% with a power of 80% (Cohen, 1988). Participants who had an official record of maltreatment or who reported a history of maltreatment were classified into various maltreatment groups. Participants who were *not* maltreated, i.e. those who did not have an official record of maltreatment and did not report a history of maltreatment, were classified into the comparison group.

Interview Procedures at Follow-Up

Follow-up interviews took place in four waves. We planned to re-interview all 1829 participants at 3 and 4.5 years, and additionally a random sub-sample of 997 participants at 3.5 and 4 years. Participants were contacted by letter, phone, or in person if necessary to invite them for a follow-up interview. Master's level clinicians conducted structured clinical interviews. The entire interview lasted about three hours. Afterwards, youth received \$50 for their participation.

Face-to-face structured interviews were conducted with youth who lived in the community (within a two-hour drive of Chicago), or who were incarcerated in any Illinois correctional

facility at the time of the follow-up interview. At the request of participants who were not incarcerated, we conducted the interview at a mutually agreed upon location such as their home, a church, library or restaurant. Non-incarcerated youth who lived more than two hours away by car were interviewed by telephone. Phone interviews are not ideal but are an acceptable substitute to contain costs and maintain participant contact. Phone interviews produce reliable data, especially if respondents have been interviewed before. We used similar consent/assent procedures as in the baseline interview.

Excluded and Missing Data

Of the 1829 participants who were interviewed at baseline, 109 participants (6.0%) were excluded from these analyses. Sixteen participants (0.9%) were 18 years or older. To reliably capture maltreatment that took place during childhood or adolescence, participants who had become adults (i.e., reached age 18) at the time of the baseline interview were excluded. Another 93 participants (5.1%) were excluded because they did not complete self-report measures of maltreatment at baseline due to time constraints or interviewer error.

Of the remaining participants (n=1720), 108 (6.4%) are missing from these analyses: 34 participants (2.0%) died before completing a follow-up interview; 10 participants (0.6%) withdrew from the study before completing a follow-up interview; 32 participants (1.9%) could not be located for follow-up; 32 participants (1.9%) completed a follow-up interview more than 5.5 years after the baseline interview. Since the follow-up interviews cover a time span of 2.9 years to 9.5 years, with a mean of 5.0 years and a standard deviation of 0.5 years, a cut-off period of 5.5 years was established. By establishing a cut-off period, we ensured that participants did

not vary significantly in terms of time at risk for violent behavior. The final sample size was 1612, 88.1% of the original sample of 1829.

Analyses of the missing participants showed that:

- 1) more males (n=28) than females (n=6) died during the follow-up period (1.6% versus 0.4%; $p < .05$);
- 2) more males (n=76) than females (n=32) were missing (4.5% versus 1.9%; $p < .05$);
- 3) more African American (n=47) than non-Hispanic White (n=20) participants were missing (2.8% versus 1.2%; $p < .05$);
- 4) more Hispanic (n=14) than non-Hispanic White (n=8) participants were lost to follow-up (0.8% versus 0.5%; $p < .05$);
- 5) missing participants (n=108) did not differ from the rest of the sample in terms of prevalence of maltreatment ($p > .05$).

Demographic Data

Table 4 presents unweighted demographic characteristics of the sample (N=1612), which includes 1007 males (62.5%) and 605 females (37.5%), 905 African Americans (56.1%), 263 non-Hispanic whites (16.3%), 441 Hispanics (27.4%), and 3 participants of “other race/ethnicity” (0.2%). The mean age of participants was 14.9 years at baseline and 19.9 years at follow-up.

Table 4. Unweighted sample characteristics (N=1612)

| | N | % |
|----------------------------------|------------|------|
| Gender | | |
| Male | 1007 | 62.5 |
| Female | 605 | 37.5 |
| Race/Ethnicity | | |
| African American | 905 | 56.1 |
| Non-Hispanic white | 263 | 16.3 |
| Hispanic | 441 | 27.4 |
| Other | 3 | 0.2 |
| Specific Ages at Baseline | | |
| 10 – 13 years | 316 | 19.6 |
| 14 – 15 years | 642 | 39.8 |
| 16 – 17 years | 654 | 40.6 |
| Age | | |
| Mean age at baseline | 14.9 years | |
| Mean age at follow-up | 19.9 years | |

Measures

1. Measures of maltreatment

The measures of maltreatment are based on a combination of official records and self-report data.

a) Official records of maltreatment

At baseline, project staff searched records from the Cook County Court Child Protection Division for our study participants. These records consist of abuse/neglect petitions that were filed with the court after investigators of the Illinois Department of Children & Family Services [DCFS] had found “credible evidence” of maltreatment (see Figure 1). Credible evidence is a lower standard of proof than that required for any judicial procedure. The lower standard of proof allows DCFS to serve families and protect children in many situations that could not be proven using higher legal standards (DCFS, 2005).

To identify cases of abuse and neglect, all participants with an abuse/neglect petition were considered maltreated, whether or not the maltreatment was substantiated. We included all participants with an abuse/neglect petition for the following two reasons: (1) the legal standards for substantiation of maltreatment are extremely stringent; (2) abuse/neglect petitions are based on DCFS’ determination that there is credible evidence of maltreatment. Therefore, using all abuse/neglect petitions was considered to be the best method for identifying an official record of maltreatment among our participants.

Abuse/neglect petitions are based on definitions of neglect, physical abuse, and sexual abuse as described in the Child Abuse Prevention and Treatment Act [CAPTA], which was first approved in 1974. Table 5 lists these definitions.

Table 5. Definitions of different types of maltreatment according to CAPTA

| Type of Maltreatment | Child Abuse Prevention and Treatment Act (CAPTA) Definition |
|-----------------------------|--|
| Neglect | <p>When a person responsible for the child:</p> <ol style="list-style-type: none"> 1) deprives or fails to provide the child with adequate food, clothing, shelter, or needed medical treatment; or 2) provides inadequate supervision of a child; or 3) places a child in an environment that is injurious to the child's health and welfare; or 4) gives birth to a newborn infant whose blood, urine, or meconium contains any amount of controlled substance, with the exception of a controlled substance or metabolite thereof whose presence in the newborn infant is the result of medical treatment administered to the mother or newborn infant. |
| Physical Abuse | <p>When a person responsible for the child:</p> <ol style="list-style-type: none"> 1) inflicts, causes to be inflicted, or allows to be inflicted upon such child physical injury, by other than accidental means, which causes death, disfigurement, impairment of physical or emotional health, or loss or impairment of any bodily function; or 2) creates a substantial risk of physical injury; or 3) inflicts excessive corporal punishment. |
| Sexual Abuse | <p>When a person responsible for the child commits any of the following acts:</p> <ol style="list-style-type: none"> 1) sexual penetration; or 2) sexual exploitation (sexual use of a child for sexual arousal, gratification, advantage, or profit); or 3) sexual molestation (sexual conduct with a child when such contact, touching, or interaction is used for arousal or gratification of sexual needs or desires). |

Abuse/neglect petitions reflect the charges with which the perpetrator is charged. The Cook County Court Child Protection Division uses ten different types of charges. We grouped these ten types of charges into four different categories of maltreatment (see

Table 6) based on the CAPTA (1974) definitions of neglect, physical abuse, and sexual abuse.

Table 6. Maltreatment categories and abuse/neglect petition charges

| Maltreatment Categories | Abuse/Neglect Petition Charges |
|--------------------------------|---------------------------------------|
| Neglect | Neglect |
| | Injurious environment |
| | Drug exposed infant |
| Physical Abuse | Excessive corporal punishment |
| | Substantial risk of physical injury |
| Sexual Abuse | Sexual abuse |
| Unspecified Maltreatment | Abuse |
| | Dependency allegation |
| | Petition for adjudication of wardship |
| | Other |

b) Self-report data on maltreatment

We used the Child Maltreatment Assessment Profile (CMAP) to gather information on physical and sexual abuse that might have happened during childhood or adolescence. The CMAP is a structured interview based on the Child Maltreatment Interview (Briere, 1992) and the Child Abuse Module for the National Institute of Mental Health (NIMH) Methods for the Epidemiology of Child and Adolescent Mental Disorders Study (MECA; Wicks, 1991).

To assess *physical abuse*, participants were asked a series of questions about increasingly severe corporal punishment. The following question was used to define physical abuse: “How many times in your whole life have you been hurt by an adult in charge of you so that you were bruised, had broken bones, or were severely injured?”

Because of the severity of the abuse described in the question, all participants who reported at least one occurrence were classified as physically abused.

To assess *sexual abuse*, participants were asked the following questions: “These next questions are about whether you have ever been touched or kissed, or made to touch or kiss someone else in a way that made you feel uncomfortable. Or about having ever felt sexually pressured, coerced or taken advantage of by someone. Did you ever have an experience like this with: (1) a friend, neighbor, or date, (2) a stranger, (3) a teacher, doctor, other professional, or person in charge of you like a babysitter, (4) biological, adoptive, step, or foster father, (5) other male relative like a brother (biological, adoptive, step, foster), grandfather, or uncle, (6) biological, adoptive, step, or foster mother, (7) other female relative like a sister (biological, adoptive, step, foster), grandmother, or aunt, (8) someone else I haven’t mentioned.” Because there was no “screen” question for sexual abuse, participants could not skip out of the sexual abuse section of the CMAP. That is, participants were asked if they had ever been sexually abused by each of the above perpetrators, regardless of their answer to the previous question.

Since research has shown that self-report data of *neglect* are notoriously unreliable (Hardt & Rutter, 2004; Widom, 1997), we relied only on official records to identify participants with a history of neglect.

2) Measures of violent behavior

We used the Risky Behavior Assessment Profile (RBAP) to measure violent behavior at baseline and follow-up. The RBAP is a structured interview, partly based on the Denver Youth Survey (Institute of Behavioral Science, 1991).

According to the US Department of Justice (US DOJ, 2006), violent crime is composed of four offenses: robbery, aggravated assault, forcible rape, and murder/nonnegligent manslaughter. Participants were asked the following questions, reflecting these four offenses: (1) “How many times have you used a weapon, force, or strong arm methods to get money or things from people”; (2) “How many times have you attacked someone with a weapon with the idea of seriously hurting them or killing them”; (3) “How many times have you had or tried to have sexual relations with someone against their will”; (4) “When you hurt someone, were they killed.” In addition to these questions, participants were asked about the age of onset of specific violent behaviors (“How old were you the first time you did this”). We relied exclusively on self-report data because arrest records severely underestimate actual acts of violence (Elliott, 1994; Weis, 1986; Maxfield, Weiler, & Widom, 2000).

Variables

1) Independent variable: Maltreatment

As shown in Table 7, participants were considered *neglected* if they had a court record of neglect. Participants were considered *physically abused* if they had a court record of physical abuse or they reported physical abuse at baseline. Similarly, participants were considered *sexually abused* if they had a court record of sexual abuse or they reported sexual abuse at baseline. Participants were considered to have a history of *multiple types of maltreatment* if they had a court record of, or self-reported, more than one type of maltreatment (i.e., neglect and physical abuse; neglect and sexual abuse; physical abuse and sexual abuse; neglect, physical abuse, and sexual abuse). Lastly, participants were considered to have a history of

any maltreatment if they had a court record of, or self-reported, any type of maltreatment (i.e., neglect, physical abuse, sexual abuse, or unspecified maltreatment).

2) Dependent variable: Violent behavior

As shown in Table 7, we considered participants perpetrators of *robbery* if they self-reported having used a weapon, force, or strong arm methods to get money or things from people since their last interview. Participants were considered perpetrators of *aggravated assault* if they self-reported having attacked someone with a weapon with the idea of seriously hurting them or killing them since their last interview. Participants were considered perpetrators of *forcible rape* if they self-reported having had or trying to have sexual relations with someone against their will since their last interview. We considered participants perpetrators of *murder* if they self-reported having killed someone since their last interview. Since specific frequencies of murder/nonnegligent manslaughter are not available, the number of murders per participant is limited to one. Also, during the first wave of follow-up interviews participants were asked if they had *ever* committed murder rather than *since the last interview (i.e., since baseline)*. Since we do not have information on the age at which the participants committed murder, we do not know the temporal order of their maltreatment experiences and murder. To avoid confounding the results of the present study, we excluded the murder data from the first wave of follow-up interviews and only included murder data from waves 2 through 4. Participants were considered perpetrators of *any violence* if they self-reported any of the following during the follow-up period: robbery, aggravated assault, forcible rape, or murder/nonnegligent manslaughter (the latter for waves 2 through 4 only).

Table 7. Independent and dependent variables

Independent variable: Maltreatment

| Name of variable | How are variables measured? | Type of variable |
|--------------------------------|--|-------------------------|
| Neglect | Official records of neglect | Binary |
| Physical Abuse | Official records of physical abuse and/or self-reported physical abuse | Binary |
| Sexual Abuse | Official records of sexual abuse and/or self-reported sexual abuse | Binary |
| Multiple Types of Maltreatment | Official records of maltreatment and/or self-reported maltreatment | Binary |
| Any Maltreatment | Official records of maltreatment and/or self-reported maltreatment | Binary |

Dependent variable: Violent behavior

| Name of variable | How are variables measured? | Type of variable |
|----------------------------------|---|-------------------------|
| Robbery | Self-report of robbery | Binary and Count |
| Aggravated Assault | Self-report of aggravated assault | Binary and Count |
| Forcible Rape | Self-report of forcible rape | Binary and Count |
| Murder/Nonnegligent Manslaughter | Self-report of murder/nonnegligent manslaughter | Binary and Count |
| Any Violence | Self-report of robbery and/or aggravated assault and/or forcible rape and/or murder/nonnegligent manslaughter | Binary and Count |

Covariates

The present study also includes three covariates which, if left out, could potentially confound the relationship between maltreatment and subsequent violent behavior. The covariates are: (1)

maltreatment experienced after the baseline interview, (2) violence committed prior to the baseline interview, and (3) incarceration during the follow-up period.

1) Maltreatment after the baseline interview

Several youth reported maltreatment that took place between the interviews at baseline and follow-up. To ensure that we were only examining the association between maltreatment that *preceded* violent behavior and violent behavior, this study controls for maltreatment that took place *after* participants' intake date.

2) Violence prior to the baseline interview

Since a history of violent behavior is strongly correlated with future violent behavior, the present study controls for violent behavior (i.e., self-reported robbery, aggravated assault, forcible rape, and murder/nonnegligent manslaughter) that preceded the baseline interview.

3) Incarceration during follow-up

To ensure that the variability in violent behavior is not due to variation in time at risk for violence, the present study controls for participants' time spent incarcerated during follow-up.

Statistical Analyses

All data were weighted to reflect the detention center's population of juvenile detainees. To correct for sample design, we used Taylor series linearization (Cochran, 1997; Levy & Lemeshow, 1999). The level of significance for all tests was .05. We used logistic regression to

examine the relationship between violence outcomes, maltreatment variables, and demographic characteristics. Dependent variables were any violence, robbery, aggravated assault, forcible rape, and murder/nonnegligent manslaughter. Independent variables were any maltreatment, neglect only, physical abuse only, sexual abuse only, and multiple types of maltreatment. We also included the following covariates: maltreatment after the baseline interview, violence prior to the baseline interview, and incarceration during follow-up. We performed specific tests (e.g., Black versus Hispanic) only when overall tests of the categorical predictor (e.g., race/ethnicity) were significant. Since prior studies showed that the cycle of violence may be different for males and females, we conducted separate logistic regression models for both genders.

Chapter 5

Results

To examine the effect of maltreatment on subsequent violent behavior among our sample of formerly detained youth, we investigated the following questions:

- 1) What is the prevalence of neglect, physical abuse, sexual abuse, multiple types of maltreatment, and any maltreatment?

Tables 8 and 9 present prevalence rates of maltreatment by gender, race/ethnicity, and age.

Table 8. Prevalence of Maltreatment by Gender and Race/Ethnicity (N=1612)^{ab}

| Type of Maltreatment | MALES | | | | | | FEMALES | | | | | | Test of Gender Differences ^c | |
|-------------------------------|--------------------------------|-----------------------------|--------------|--------------|---|----------------------------------|-------------------------------|-----------------------------|-------------|--------------|---|----------------------------------|---|-------|
| | Total (n=1005) ^f | Race/Ethnicity ^d | | | Overall Test of Racial/Ethnic Differences | Specific Tests of Race/Ethnicity | Total (n=599) ^f | Race/Ethnicity ^d | | | Overall Test of Racial/Ethnic Differences | Specific Tests of Race/Ethnicity | | |
| | | AA (n=500) | W (n=182) | H (n=321) | | | | AA (n=398) | W (n=81) | H (n=119) | | | | |
| Any Maltreatment | 32.2 | 32.7 | 43.7 | 25.5 | p < .01 | W > AA W > H | 66.1 | 62.9 | 73.9 | 70.2 | n.s. | | p < .001 | F > M |
| - Any Neglect | 15.7 | 18.1 | 11.5 | 5.7 | p < .001 | AA > H W > H | 24.5 | 27.7 | 9.7 | 23.4 | p < .01 | AA > W H > W | p < .01 | F > M |
| - Any Physical Abuse | 14.3 | 12.9 | 32.6 | 14.3 | p < .001 | W > AA W > H | 34.8 | 27.7 | 44.5 | 50.5 | p < .001 | W > AA H > AA | p < .001 | F > M |
| - Any Sexual Abuse | 11.2 | 11.1 | 9.1 | 12.5 | n.s. | | 41.9 | 37.4 | 59.3 | 42.8 | p < .01 | W > AA W > H | p < .001 | F > M |
| - Neglect Only | 10.7 | 12.6 | 7.2 | 2.7 | p < .001 | AA > H W > H | 9.5 | 12.1 | 1.2 | 4.3 | p < .01 | AA > W AA > H | n.s. | |
| - Physical Abuse Only | 7.6 | 6.0 | 24.3 | 9.5 | p < .001 | W > AA W > H | 10.3 | 9.3 | 12.2 | 14.7 | n.s. | | n.s. | |
| - Sexual Abuse Only | 5.9 | 5.9 | 3.9 | 6.7 | n.s. | | 15.4 | 15.1 | 26.9 | 11.7 | p < .01 | W > AA W > H | p < .001 | F > M |
| - Multiple Types ^f | 7.9 | 8.2 | 8.3 | 6.6 | n.s. | | 30.9 | 26.3 | 33.6 | 39.5 | p < .05 | H > AA | p < .001 | F > M |

^a Each cell is weighted to reflect the population characteristics of the Cook County Juvenile Temporary Detention Center.

^b Analyses do not include 8 participants for whom it was unclear whether they had been neglected or not.

^c Two male participants and one female participant who self-identified as "other" are excluded from analyses of race/ethnicity.

^d AA = African American, W = non-Hispanic White, H = Hispanic

^e M = Males, F = Females

^f Multiple types of maltreatment (i.e., any combination of neglect, physical abuse, or sexual abuse)

Table 9. Prevalence of Maltreatment by Gender and Age (N=1612)^{ab}

| Type of Maltreatment | MALES | | | | | FEMALES | | | | | |
|-------------------------------|-------------------|------------------|------------------|------------------|---------------------------------------|------------------|-----------------|------------------|------------------|---------------------------------------|--------------------------|
| | Total (n=1005) | Age | | | Overall Test of Age Differences | Total (n=599) | Age | | | Overall Test of Age Differences | Specific Tests of Age |
| | | 10-13 (n=262) | 14-15 (n=322) | 16-17 (n=421) | | | 10-13 (n=53) | 14-15 (n=316) | 16-17 (n=230) | | |
| Any Maltreatment | 32.2 | 35.2 | 35.9 | 28.5 | n.s. | 66.1 | 65.2 | 65.1 | 67.5 | n.s. | |
| - Any Neglect | 15.7 | 22.3 | 18.2 | 12.5 | n.s. | 24.5 | 28.7 | 25.4 | 22.4 | n.s. | |
| - Any Physical Abuse | 14.3 | 11.7 | 16.3 | 13.1 | n.s. | 34.8 | 26.9 | 33.8 | 38.0 | n.s. | |
| - Any Sexual Abuse | 11.2 | 8.0 | 11.1 | 11.8 | n.s. | 41.9 | 41.2 | 36.5 | 49.4 | p < .05 | 16-17 > 14-15 |
| - Neglect Only | 10.7 | 17.3 | 11.5 | 8.8 | n.s. | 9.5 | 5.6 | 11.5 | 7.7 | n.s. | |
| - Physical Abuse Only | 7.6 | 7.4 | 8.9 | 6.6 | n.s. | 10.3 | 11.0 | 12.4 | 7.3 | n.s. | |
| - Sexual Abuse Only | 5.9 | 4.6 | 7.0 | 5.3 | n.s. | 15.4 | 20.6 | 14.5 | 15.5 | n.s. | |
| - Multiple Types ^c | 7.9 | 5.9 | 8.5 | 7.9 | n.s. | 30.9 | 28.1 | 26.8 | 37.0 | n.s. | |

^a Each cell is weighted to reflect the population characteristics of the Cook County Juvenile Temporary Detention Center.

^b Analyses do not include 8 participants for whom it was unclear whether they had been neglected or not.

^c Multiple types of maltreatment (i.e., any combination of neglect, physical abuse, or sexual abuse)

The prevalence of maltreatment is reported using “inclusive” categories (i.e., a history of *any* neglect, *any* physical abuse, or *any* sexual abuse) and “mutually exclusive” categories (i.e., a history of neglect *only*, physical abuse *only*, or sexual abuse *only*). In addition, the prevalence rates of multiple types of maltreatment (i.e., any combination of neglect, physical abuse, or sexual abuse) and *any* maltreatment are reported.

At baseline, 32.2% of male delinquents and 66.1% of female delinquents had an official record of maltreatment or self-reported any maltreatment (see Table 8). Among males, neglect (15.7%) was the most prevalent type of maltreatment. Among females, sexual abuse (41.9%) was most prevalent. We assessed gender, racial/ethnic, and age differences in the prevalence of maltreatment using separate logistic regressions. We report the p-values for the associated adjusted Wald tests below.

Gender Differences

The following gender differences were detected (see Table 8). Females were more likely than males to have a history of maltreatment:

- *Any maltreatment*, $F(1, 1606) = 89.70, p < .001$
- *Any neglect*, $F(1, 1598) = 9.27, p < .01$
- *Any physical abuse*, $F(1, 1615) = 39.22, p < .001$
- *Any sexual abuse*, $F(1, 1615) = 75.73, p < .001$
- *Sexual abuse only*, $F(1, 1606) = 15.29, p < .001$
- *Multiple types of maltreatment*, $F(1, 1606) = 50.77, p < .001$.

Racial/Ethnic Differences within Gender

The prevalence rates of maltreatment among males varied by race/ethnicity (see Table 8).

Any maltreatment:

- White males (43.7%) were more likely than African American males (32.7%), $F(1, 1007) = 24.79, p < .01$ to have a history of *any maltreatment*
- White males (43.7%) were also more likely than Hispanic males (25.5%), $F(1, 1007) = 8.70, p < .01$ to have a history of *any maltreatment*.

Any neglect:

- African American males (18.1%) were more likely than Hispanic males (5.7%) to have a history of *any neglect*, $F(1, 1006) = 17.03, p < .001$
- White males (11.5%) were also more likely than Hispanic males (5.7%) to have a history of *any neglect*, $F(1, 1006) = 4.54, p < .05$.

Neglect only:

- African American males (12.6%) were more likely than Hispanic males (2.7%) to have a history of *neglect only*, $F(1, 1007) = 17.48, p = .001$
- White males (7.2%) were more likely than Hispanic males (2.7%) to have a history of *neglect only*, $F(1, 1007) = 5.18, p < .05$.

Any physical abuse:

- White males (32.6%) were more likely than African American males (12.9%), $F(1, 1009) = 21.12, p < .001$ to have a history of *any physical abuse*
- White males (32.6%) were more likely than Hispanic males (14.3%), $F(1, 1009) = 12.55, p < .001$ to have a history of *any physical abuse*.

Physical abuse only:

- White males (24.3%) were more likely than African American males (6.0%), $F(1, 1007) = 24.79, p < .001$ to have a history of *physical abuse only*
- White males (24.3%) were more likely than Hispanic males (9.5%), $F(1, 1007) = 8.70, p < .001$ to have a history of *physical abuse only*.

As can be seen in Table 8, there were no statistically significant racial/ethnic differences among females with a history of *any maltreatment*. However, with regard to specific types of maltreatment, several significant differences were reported.

Any neglect:

- African American females (27.7%) were more likely than White females (9.7%) to have a history of *any neglect*, $F(1, 590) = 10.50, p < .01$

- Hispanic females (23.4%) were more likely than White females (9.7%) to have a history of *any neglect*, $F(1, 590) = 5.74, p < .05$.

Neglect only:

- African American females (12.1%) were more likely than White females (1.2%) to have a history of *neglect only*, $F(1, 597) = 5.57, p < .05$
- African American females (12.1%) were more likely than Hispanic females (4.3%) to have a history of *neglect only*, $F(1, 597) = 5.26, p < .05$.

Physical abuse:

- White females (44.5%) were more likely than African American females (27.7%) to have a history of *any physical abuse*, $F(1, 604) = 8.67, p < .001$
- Hispanic females (50.5%) were more likely than African American females (27.7%) to have a history of *any physical abuse*, $F(1, 604) = 20.77, p < .001$.

Any sexual abuse:

- White females (59.3%) were more likely than African American females (37.4%) to have a history of *any sexual abuse*, $F(1, 604) = 12.64, p < .01$
- White females (59.3%) were more likely than Hispanic females (42.8%) to have a history of *any sexual abuse*, $F(1, 604) = 5.10, p < .05$.

Sexual abuse only:

- White females (26.9%) were more likely than African American females (15.1%) to have a history of *sexual abuse only*, $F(1, 597) = 6.64, p < .01$
- White females (26.9%) were more likely than Hispanic females (11.7%) to have a history of *sexual abuse only*, $F(1, 597) = 8.08, p < .01$.

Multiple types of maltreatment:

- Hispanic females (39.5%) were more likely than African American females (26.3%) to have a history of *multiple types of maltreatment*, $F(1, 604) = 8.28, p < .05$.

Age Differences within Gender

Table 9 shows that there were no statistically significant age differences among males with a history of maltreatment. Among females, 16 to 17-year-old females (49.4%) were more likely than 14 to 15-year-old females (36.5%) to have a history of *any sexual abuse*, $F(1, 606) = 6.40, p < .05$.

2) What is the prevalence of violent behavior?

Tables 10 and 11 present rates of the various types of violence – robbery, aggravated assault, rape, murder, and any violence – by gender, race/ethnicity, and age.

Table 10. Prevalence of Violence by Gender and Race/Ethnicity (N=1612)^a

| Type of Violence | MALES | | | | | FEMALES | | | | | Test of Gender Differences ^d | | |
|----------------------|--------------------------------|-----------------------------|--------------|--------------|---|-------------------------------|-----------------------------|-------------|--------------|---|---|--|-------|
| | Total (n=1007) ^f | Race/Ethnicity ^b | | | Overall Test of Racial/ Ethnic Differences | Total (n=605) ^f | Race/Ethnicity ^b | | | Overall Test of Racial/ Ethnic Differences | | Specific Tests of Race/ Ethnicity | |
| | | AA (n=502) | W (n=182) | H (n=321) | | | AA (n=403) | W (n=81) | H (n=120) | | | | |
| Any Violence | 54.2 | 53.4 | 48.9 | 60.4 | n.s. | 39.1 | 39.4 | 32.9 | 32.9 | n.s. | | p < .001 | M > F |
| - Robbery | 21.1 | 21.5 | 20.0 | 19.7 | n.s. | 7.4 | 4.7 | 14.6 | 15.5 | p < .001 | W > AA H > AA | p < .001 | M > F |
| - Aggravated Assault | 47.5 | 45.8 | 45.6 | 56.5 | n.s. | 36.4 | 37.4 | 32.1 | 25.3 | p < .05 | AA > H | p < .01 | M > F |
| - Rape | 1.6 | 1.8 | 0.9 | 0.6 | n.s. | 0.8 | 1.0 | 1.2 | 0.0 | _____e | | | |
| - Murder | 1.9 | 2.1 | 0.9 | 1.2 | n.s. | 0.0 | 0.0 | 0.0 | 0.0 | _____f | | | |

^a Each cell is weighted to reflect the population characteristics of the Cook County Juvenile Temporary Detention Center.

^b AA = African American, W = non-Hispanic White, H = Hispanic.

^c Two male participants and one female participant who self-identified as "other" were excluded from analyses of race/ethnicity.

^d M = Males, F = Females.

^e Tests of significance for rape could not be computed for females because of small cell sizes.

^f Tests of significance for murder could not be computed for females because cell sizes are zero.

Table 11. Prevalence of Violence by Gender and Age (N=1612)^a

| Type of Violence | MALES | | | | | FEMALES | | | | |
|----------------------|-------------------|------------------|------------------|------------------|---------------------------------------|------------------|-----------------|------------------|------------------|---------------------------------------|
| | Total (n=1007) | Age | | | Overall Test of Age Differences | Total (n=605) | Age | | | Overall Test of Age Differences |
| | | 10-13 (n=263) | 14-15 (n=322) | 16-17 (n=422) | | | 10-13 (n=53) | 14-15 (n=320) | 16-17 (n=232) | |
| Any Violence | 54.2 | 61.5 | 58.2 | 49.5 | n.s. | 39.1 | 53.2 | 37.5 | 38.1 | n.s. |
| - Robbery | 21.1 | 25.6 | 21.7 | 19.7 | n.s. | 7.4 | 11.9 | 7.4 | 6.4 | n.s. |
| - Aggravated Assault | 47.5 | 50.3 | 50.7 | 44.2 | n.s. | 36.4 | 48.2 | 34.5 | 36.2 | n.s. |
| - Rape | 1.6 | 2.2 | 2.2 | 0.9 | n.s. | 0.8 | 0.0 | 1.3 | 0.5 | _____b |
| - Murder | 1.9 | 5.0 | 1.3 | 1.9 | n.s. | 0.0 | 0.0 | 0.0 | 0.0 | _____c |

^a Each cell is weighted to reflect the population characteristics of the Cook County Juvenile Temporary Detention Center.

^b Tests of significance for rape could not be computed for females because of small cell sizes.

^c Tests of significance for murder could not be computed for females because cell sizes are zero.

As Table 10 shows, 54.2% of males and 39.1% of females self-reported *any violence* during the follow-up period. The type of violence that was most prevalent among males and among females was *aggravated assault* (47.5% and

36.4%, respectively).

We assessed whether there were significant gender, racial/ethnic, and age differences in the prevalence of violence using the adjusted Wald test.

Gender Differences

As Table 10 shows, males were more likely than females to commit:

- *Any violence*, $F(1, 1614) = 16.82, p < .001$
- *Robbery*, $F(1, 1612) = 35.92, p < .001$
- *Aggravated assault*, $F(1, 1613) = 9.17, p < .01$.

Racial/Ethnic Differences within Gender

There were no statistically significant racial/ethnic differences among males in committing violence (see Table 10). Among females:

- White females (14.6%) were more likely than African American females (4.7%) to commit *robbery*, $F(1, 603) = 9.91, p < .001$
- Hispanic females (15.5%) were also more likely than African American females (4.7%) to commit *robbery*, $F(1, 603) = 13.97, p < .001$
- African American females (37.4%) were more likely than Hispanic females (25.3%) to commit *aggravated assault*, $F(1, 603) = 5.75, p < .05$.

Age Differences within Gender

Table 11 shows that there were no statistically significant age differences among males or females in committing violence.

3) Is a history of maltreatment a significant predictor of violent behavior?

Table 12 presents rates of violence among maltreated and nonmaltreated youth by gender, controlling for race/ethnicity, age, maltreatment after the baseline interview, violence prior to the baseline interview, and incarceration during follow-up.

Table 12. Rates (%) of Violence among Maltreated versus Nonmaltreated Youth
(N=1612)^{ab}

| Outcome | Males (n=1005) | | | Females (n=599) | | |
|----------------------|-------------------------------|--------------------------------|--|-------------------------------|--------------------------------|--|
| | No Maltreatment (n=677) | Any Maltreatment (n=328) | Overall Test of Maltreatment ^c | No Maltreatment (n=203) | Any Maltreatment (n=396) | Overall Test of Maltreatment ^c |
| Any Violence | 54.2 | 54.1 | n.s. | 35.8 | 41.2 | n.s. |
| - Robbery | 18.4 | 26.7 | n.s. | 5.7 | 8.3 | n.s. |
| - Aggravated Assault | 48.1 | 46.0 | n.s. | 34.3 | 37.7 | n.s. |
| - Rape | 1.3 | 2.0 | n.s. | 1.6 | 0.5 | n.s. |
| - Murder | 2.0 | 1.6 | n.s. | 0.0 | 0.0 | _____ ^d |

^a Each cell is weighted to reflect the population characteristics of the Cook County Juvenile Temporary Detention Center.

^b Analyses do not include 8 participants for whom it was unclear whether they had been neglected or not.

^c Controlling for race/ethnicity, age, maltreatment experienced after the baseline interview, violence committed prior to the baseline interview, and time spent incarcerated during follow-up.

^d Tests of significance for murder could not be computed for females because cell sizes are zero.

Our findings show that there was no significant difference between maltreated males (with a history of *any maltreatment*) and nonmaltreated males in terms of committing violence. Similarly, we found no significant difference between maltreated females (with a history of *any maltreatment*) and nonmaltreated females in terms of committing violence.

4) Is a history of a specific type of maltreatment a significant predictor of violent behavior?

Table 13 presents rates of violence by type of maltreatment (neglect only, physical abuse only, sexual abuse only, multiple types of maltreatment) by gender, controlling for race/ethnicity, age, maltreatment after the baseline interview, violence prior to the baseline interview, and incarceration during follow-up.

Table 13. Rates (%) of Violence by Type of Maltreatment (N=1612)^{ab}

| Outcome | Males (n=1005) | | | | | | Females (n=599) | | | | | | | | | |
|----------------------|----------------------|----------------------|-----------------------------|--------------------------|---------------------------------------|---|--------------------------------------|----------------|---------------------|----------------|--|--------------|---------------------|----------------------------|--------------------------|---|
| | Type of Maltreatment | | | | | Overall Test of Type of Maltreatment ^c | OR (95% CI) for Outcome ⁱ | | | | Type of Maltreatment | | | | | Overall Test of Type of Maltreatment ^c |
| | None (n=677) | Neglect Only (n=100) | Physical Abuse Only (n=110) | Sexual Abuse Only (n=49) | Multiple Types of Maltreatment (n=69) | | N ^d | P ^e | S ^f | M ^g | Specific Tests of Type of Maltreatment | None (n=203) | Neglect Only (n=54) | Physical Abuse Only (n=65) | Sexual Abuse Only (n=95) | |
| Any Violence | 54.2 | 36.4 | 59.1 | 70.6 | 61.0 | n.s. | | | | | 35.8 | 36.1 | 39.1 | 36.5 | 46.1 | n.s. |
| - Robbery | 18.4 | 11.3 | 32.8 | 24.6 | 43.1 | p < .05 | | | 3.6 (1.4 - 9.1) | M > None | 5.7 | 7.6 | 9.8 | 7.8 | 8.4 | n.s. |
| | | | | | | | | | 6.2 (1.6 - 24.6) | M > N | | | | | | |
| - Aggravated Assault | 48.1 | 31.9 | 51.5 | 66.7 | 44.3 | n.s. | | | | | 34.3 | 32.3 | 36.4 | 33.8 | 42.0 | n.s. |
| - Rape | 1.3 | 3.8 | 0.6 | 0.9 | 1.9 | n.s. | | | | | 1.6 | 0.0 | 0.0 | 0.0 | 1.0 | n.s. |
| - Murder | 2.0 | 1.0 | 5.8 | 1.2 | 0.0 | n.s. | | | | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | _____h |

^a Each cell is weighted to reflect the population characteristics of the Cook County Juvenile Temporary Detention Center.

^b Analyses do not include 8 participants for whom it was unclear whether they had been neglected or not.

^c Controlling for race/ethnicity, age, maltreatment experienced after the baseline interview, violence committed prior to the baseline interview, and time spent incarcerated during follow-up.

^d N = Neglect Only.

^e P = Physical Abuse Only.

^f S = Sexual Abuse Only.

^g M = Multiple Types of Maltreatment.

^h Tests of significance for murder could not be computed for females because cell sizes are zero.

ⁱ OR (95% CI) for Outcome (in comparison with nonmaltreated group).

The results show that – for both males and females – there was no statistically significant relationship between a specific type of maltreatment and subsequent violent behavior, with one exception. Among males, there was a statistically significant relationship between the type of maltreatment and *robbery*, $F(4, 988) = 2.78, p < .05$. Specific tests of type of maltreatment show that males with a history of *multiple types of maltreatment* were three

times as likely as *nonmaltreated* males to commit *robbery* (43.1% vs. 18.4%), $OR = 3.6$, 95% $CI = 1.4 - 9.1$). Males with a history of *multiple types of maltreatment* were six times more likely than *neglected* males to commit *robbery* (43.1% vs. 11.3%), $OR = 6.2$, 95% $CI = 1.6 - 24.6$. These results remained significant even after controlling for race/ethnicity, age, maltreatment after the baseline interview, violence prior to the baseline interview, and incarceration during follow-up.

Since *multiple types of maltreatment* consists of four categories (neglect and physical abuse; neglect and sexual abuse; physical abuse and sexual abuse; neglect, physical abuse and sexual abuse), we examined the effect of these categories on robbery. The results show that only one category, *neglect and physical abuse*, had a statistically significant effect on robbery, $F(1, 985) = 20.58$, $p < .001$. This relationship remained significant even after controlling for race/ethnicity, age, maltreatment after the baseline interview, violence prior to the baseline interview, and incarceration during follow-up.

5) Are there gender, racial/ethnic, or age differences in the cycle of violence?

Since the relationship between any maltreatment and subsequent violent behavior was not statistically significant for males or females, the effects of gender, race/ethnicity, and age on the maltreatment-violence relationship were not explored. Although the relationship between a history of multiple types of maltreatment and robbery was statistically significant for males, this relationship did not exist for females. Controlling for race/ethnicity and age did not significantly affect the relationship between a history of multiple types of maltreatment and robbery for males. Therefore, specific tests of race/ethnicity and age were not conducted.

6) Does controlling for violent behavior that preceded the baseline interview (“past violence”) obfuscate important differences in the maltreatment-violence relationship?

We controlled for past violence in all of our analyses, because previous studies have shown that *past* violent behavior is the best predictor of *future* violent behavior. Our intention was to separate effects of prior violence from the effects of maltreatment. However, controlling for prior violence may have obfuscated important differences in the maltreatment-violence relationship. That is, while we knew the onset of participants’ violent behavior, we did not know at what age they were maltreated. Therefore, participants’ maltreatment may have preceded the violent behavior they reported at baseline, or vice-versa. As a result, those participants whose maltreatment preceded violence before the baseline interview were not taken into account when we controlled for past violence. This means we may have underestimated the effect of maltreatment on violence. Considering that almost half of our sample (44%) reported a history of violent behavior at the baseline interview, it is plausible that controlling for past violence may have obfuscated important differences in the maltreatment-violence relationship. To see if maltreatment would be a significant predictor of violent behavior if we did not control for past violence, we eliminated past violence as a control variable from all prior analyses. The results did not change.

Chapter 6

Discussion

The present study of delinquent youth examined whether maltreatment is related to subsequent violent behavior, also referred to as the “cycle of violence” hypothesis. The first four sections of the discussion focus on our findings on (1) the prevalence of maltreatment, (2) the prevalence of violence, (3) the relationship between maltreatment and violent behavior, and (4) the relationship between specific types of maltreatment and violent behavior. The next three sections of the discussion review the limitations of this study, the implications for future research, and the implications for public policy and treatment.

I. Prevalence of Maltreatment

The findings from the present study indicate that many delinquent youth have a history of maltreatment. It is important to keep in mind that the current study used stringent criteria to define maltreatment: (1) official records of neglect, physical abuse, and sexual abuse, and/or (2) self-report data that clearly indicated physical abuse (resulting in injury) or sexual abuse (touched inappropriately or sexually pressured/coerced). Even with these stringent criteria, about *one-third* of males and *two-thirds* of females either reported or had an official record of maltreatment.

Females were significantly more likely than males to have experienced any maltreatment, including any neglect, physical abuse, sexual abuse, and multiple types of maltreatment.

Among males, Whites had a significantly higher prevalence of any maltreatment compared to African American and Hispanic males. Similarly, among females, Whites had the highest prevalence rate of any maltreatment, although this rate was not significantly different from

African American or Hispanic females.

Prevalence of maltreatment in our sample compared to previous studies of delinquent youth

Previous studies on the prevalence of maltreatment among delinquent youth used somewhat different definitions of maltreatment; most relied on self-report data (e.g., Dembo et al., 2000; Crimmins, Cleary, Brownstein, Spunt, & Warley, 2000). Despite these differences, the prevalence rates of maltreatment found in the present study are comparable to the rates found in previous studies of delinquent youth. Prior studies based on self-report found physical abuse rates ranging from 9% to 73% (e.g., Crimmins, Cleary, Brownstein, Spunt, & Warley, 2000; Dembo et al., 2000) and sexual abuse rates ranging from 10% to 46% (e.g., Crimmins, Cleary, Brownstein, Spunt, & Warley, 2000; Dembo, 2000). Our prevalence rates of any physical abuse (14% among males and 35% among females) and any sexual abuse (11% among males and 42% among females) fall in the range of prevalence rates found in prior studies. Since there are no existing data on the prevalence of neglect among delinquent youth, our prevalence rates of any neglect (16% among males and 25% among females) cannot be compared to previous studies.

Prevalence of maltreatment in our sample compared to previous studies of general population youth

Most estimates of maltreatment among general population youth are based on records of maltreatment. US DHHS reported that, in 2005, 1.2% of youth in the United States had a maltreatment record (US DHHS, 2007). In comparison, 18% of delinquent youth in our

sample had a record of maltreatment. It is clear that delinquent youth are much more likely to have a maltreatment record than youth in the general population.

II. Prevalence of Violent Behavior

The results of the current study show that delinquent youth are highly likely to engage in violent behavior (defined in this study as robbery, aggravated assault, rape, and murder). Even with this strict definition of violence, *over half* of males and *almost 40%* of females reported engaging in at least one violent act during the five-year follow-up period.

Males were significantly more likely than females to engage in violent behavior, including robbery and aggravated assault. With regard to racial/ethnic differences, our findings – which are based on self-report of violence – show no significant differences in violent behavior between African American, White, and Hispanic males. In contrast, prior studies of delinquent males in the community that relied on arrest records found that minority males were more violent than White males (Kelley, Loeber, Keenan, & DeLamatre, 1997). The disparity between our findings and findings of previous studies may be due to a difference in measurement: that is, self-report data on violence (regardless of whether it resulted in arrest) versus arrest records. It has been shown that minority youth are more likely to get *arrested* than White youth (Pope & Snyder, 2003; Wordes, Bynum, & Corley, 1994). Racial/ethnic differences found in previous studies may be artifact of the reliance on arrest records as a proxy for actual violence. Our study showed that, among females, African Americans were significantly less likely than Whites or Hispanics to commit robbery, while they were significantly more likely than Hispanics to commit aggravated assault.

Prevalence of violence in our sample compared to previous studies of delinquent youth

Prior studies that measured violent behavior in delinquent youth found that, by age 17, almost 45% of males and 35% of females reported that they had ever engaged in violent behavior (US DHHS, 2001). Since these studies measured lifetime violence up to age 17 rather than violence committed in a five-year period during adolescence/early adulthood, it is difficult to compare the prevalence rates of prior studies of delinquent youth with the prevalence rates of our study (i.e., 54% for males and 39% for females).

Prevalence of violence in our sample compared to previous studies of general population youth

Surveys of general population youth – including Monitoring the Future and the National Youth Survey – showed that, by age 17, 10-15% of youth in the general population reported ever engaging in serious violent behavior (Elliott, 1994; US DHHS, 2001). The prevalence rate of violent behavior reported by the youth in our sample was 48%. While the violent behaviors measured in the present study are of similar severity as the violent behaviors measured in the general population surveys, it is somewhat difficult to compare them for two reasons. (1) Prior studies provided *cumulative* prevalence rates of violence as opposed to the *five-year* prevalence rates presented in this study. (2) The youth in our sample were older at follow-up than the youth in general population studies (average age of 19.9 vs. 17 years). Despite these differences, it is clear that the delinquent youth in our sample committed more violence in the five years post detention than youth in the general population had committed in the first 17 years of their lives.

III. Relationship between Maltreatment and Violent Behavior

The findings of the present study show that, in general, a history of maltreatment does not predict self-reported violent behavior for delinquent youth in adolescence/early adulthood. This finding holds for both males and females. There may be two reasons why the present study did not find evidence for a relationship between maltreatment and subsequent violent behavior:

- 1) Delinquent youth with a history of maltreatment may not be at increased risk for violence compared to their nonmaltreated counterparts. The strongest evidence for this conclusion is that, even when we removed the strongest predictor of violence (prior violence) from our analyses, maltreatment did not predict subsequent violence.
- 2) If maltreatment is indeed a risk factor for subsequent violent behavior, it may be overshadowed by other risk factors that are stronger predictors of violence. This conclusion is supported by a longitudinal study of youth in the general population (Stouthamer-Loeber, Loeber, Wei, Farrington, & Wikström, 2002). This study showed that the strongest risk factors for violence are: (1) low motivation in school, (2) truancy, (3) cruelty to others, (4) aggressive personality, (5) impulsive behavior/lack of guilt feelings, (6) the family being on welfare, (7) depression, (8) low socio-economic status, and (9) low IQ. The same study showed that protective factors for violence include: (1) no physical punishment in the home, (2) agreement on discipline by the parents, (3) good supervision by parents, (4) youth's involvement in family activities, (5) low parental stress, and (6) parental reinforcement of pro-social behavior outside the home (Stouthamer-Loeber, Loeber, Wei, Farrington, & Wikström, 2002). It is noteworthy that *prior violence* or *maltreatment* were not measured in this study. The researchers

concluded that there is a cumulative effect of risk factors. That is, having three of the nine strongest risk factors increased the predictability of later violence. When all nine risk factors were present, without any protective factors, the probability of being involved in violence was 100%.

The cumulative effect of risk factors may explain the difference between the present study's findings and previous studies that found a relationship between maltreatment and violence. The main difference between our study and previous studies is that our sample consisted of *delinquent youth who had been detained* rather than youth from the general population or youth identified from maltreatment records. *Youth from the general population* most likely do not have as many risk factors for violence as the youth in our sample. They may also have more protective factors than the youth in our sample. *Youth identified from maltreatment records* most likely have a significant number of risk factors, but they may not have as many of the above-mentioned nine strongest risk factors for violence as delinquent youth (e.g., cruelty to others, aggressive personality, lack of guilt, low IQ). The risk factors present in the lives of youth identified from maltreatment records may lead to negative outcomes for these youth (e.g., risky behaviors, and mental and physical health problems), but not necessarily negative outcomes involving violent behavior.

IV. Relationship between Specific Types of Maltreatment and Violent Behavior

Although our findings show that, *in general*, a history of maltreatment does not predict violent behavior in delinquent youth, examination of *specific types of maltreatment* (neglect, physical abuse, sexual abuse, and multiple types of maltreatment) resulted in a significant

finding. That is, males with a history of *multiple types of maltreatment* were three times more likely than nonmaltreated males to commit *robbery*. They were also more likely than neglected males to commit robbery.

When examining the different combinations that make up *multiple types of maltreatment*, we found that it was the specific history of *neglect and physical abuse* that predicted robbery. It is interesting that, among the youth in our sample, a history of *both* neglect and physical abuse was related to a form of violence while a history of neglect *only* or physical abuse *only* did not predict this behavior. Experiencing both neglect and physical abuse clearly has different consequences than experiencing either of these types of maltreatment alone.

Only two previous studies on the cycle of violence examined the effect of multiple types of maltreatment on subsequent violent behavior (English, Widom, & Brandford, 2002; Maxfield & Widom, 1996). While one study found that a history of multiple types of maltreatment predicted violent behavior (English, Widom, & Brandford, 2002), the other study concluded that there was no relationship (Maxfield & Widom, 1996).

Why is a history of neglect and physical abuse among delinquent youth related to robbery but not to other types of violence?

It is not clear why a history of neglect and physical abuse increased the likelihood to commit *robbery*, but not aggravated assault, rape, or murder. The most obvious difference between robbery and other types of violence is material gain (as per our definition of robbery: “using a weapon, force, or strong arm methods *to get money or things from people*”). Why would delinquent youth try to get money or other things from people? Considering that delinquent youth have a high rate of substance use, they may try to get

money or other things from people to buy substances. Therefore, one possible explanation of the significant relationship between a history of neglect and physical abuse and subsequent robbery is that males with a history of neglect and physical abuse may be more likely than nonmaltreated males to use substances.

V. Limitations

The present study has the following limitations:

- 1) Although our findings imply causality (i.e., maltreatment as the cause of violent behavior), we cannot ascertain whether maltreatment causes violence. In an attempt to establish a temporal order, we measured maltreatment that took place *before* the baseline interview and violence committed *after* the baseline interview. Since we did not know the age of onset of participants' maltreatment, we could not determine whether violence perpetrated prior to the baseline interview preceded maltreatment. Therefore, we controlled for prior violence. While our findings were similar whether we controlled for prior violence or not, we could not determine whether maltreatment *caused* violent behavior. Therefore, rather than cause and effect, our study examined the *predictive* value of maltreatment in relation to violence.
- 2) The prevalence of two types of violence, rape and murder, was very low in our sample. This suggests that our findings involving rape and murder may be less reliable than our findings involving other types of violence. It is possible that we did not find a relationship between maltreatment and violence because our sample did not include enough youth who had committed rape or murder. Tests of significance related to murder could not be computed for *females* because females did not report committing murder.

- 3) All our data were drawn from one site: Cook County Juvenile Temporary Detention Center (CCJTDC) in Chicago, Illinois. Therefore, our findings may only generalize to detained youth in urban centers with a demographic composition similar to Chicago.
- 4) While we controlled for participants' time spent incarcerated during follow-up, at the time of the current analyses only incarceration data for the first three years of the follow-up period were available. Therefore, we were not able to control for time spent incarcerated during the last two years of the follow-up period. Since the context of violence differs markedly in jail and the community, it is difficult to estimate bias. Time spent incarcerated during the last two years of the follow-up period will be controlled for when data become available (prior to preparation of the manuscript for publication).

Despite these limitations, our study has implications for future research, public policy, and treatment.

VI. Implications for Future Research

Further research is needed to advance our knowledge of the cycle of violence among high-risk populations. In particular, we must:

- 1) Examine the causal relationship between maltreatment and violence among high-risk populations. Since we did not completely address the temporal order of maltreatment and violent behavior in our sample, future studies should establish the ages at which maltreatment started and ended as well as the age of onset of violent behavior. This will provide more clarity regarding the question whether maltreatment *causes* violent behavior among high-risk youth.

- 2) Include a sufficiently large number of high-risk youth who committed rape and/or murder. This will provide more insight into the relationship between maltreatment and the most serious subcategories of violence: rape and murder.
- 3) Conduct *process* studies with youth in the general population and high-risk youth. Our study, like prior studies on the cycle of violence, examined a possible *outcome* of maltreatment: violent behavior. It is difficult to establish the independent effect of maltreatment on violence for two reasons:
 - a) Some risk factors for violence may carry more weight than others. Previous research has found that some youth experience a “podium effect” of risk factors, which means that exposure to a few more risk factors will substantially increase the risk for violence (Stouthamer-Loeber, Loeber, Wei, Farrington, & Wikström, 2002). Since our findings differed in terms of type of maltreatment (i.e., maltreatment in general did not predict violence, while multiple types of maltreatment did predict robbery for males), it may be that a history of multiple types of maltreatment carries more weight than other types of maltreatment in terms of risk for violence.
 - b) It is difficult to establish the effect of maltreatment on violence because the interaction between risk factors (including maltreatment) and protective factors for violence is complex. While previous research has established various risk and protective factors for violence, risk factors may have different effects depending on how many and what type of protective factors are present, if any. Since there are numerous combinations of risk and protective factors, it is difficult to study the effect of all these different combinations of risk and protective factors on violence. Therefore, rather than just focusing on violence as a possible *outcome* of

maltreatment, future studies should also examine the *process* or *mechanism* that may underlie the cycle of violence.

Process studies may include variables such as family history of mental health – including substance abuse and violent behavior – parenting style, family dynamics, attachment, perception of self and others, relationships with peers, coping style, and prior mental health treatment. Qualitative methods may be best suited to gather information on these variables because of the rich nature of this type of data. Qualitative data should be supplemented with quantitative data on parental criminal history, mental health of parents and youth, academic performance, IQ scores of youth, Child Protective Services records, and family income.

VII. Implications for Public Policy and Clinical Practice

1) Implications Related to Maltreatment

Our findings show that many delinquent youth have been abused and/or neglected, and that they are more likely than youth from the general population to have a history of maltreatment. Our findings also show that a history of multiple types of maltreatment increases the odds for delinquent males to commit robbery. To reduce the prevalence of maltreatment and break the cycle of violence for delinquent males with a history of multiple types of maltreatment, we should (a) implement maltreatment prevention programs nationwide, (b) improve efforts to detect maltreated children, and (c) provide appropriate interventions to maltreated children to reduce possible negative consequences of maltreatment.

a) *Implement Nationwide Maltreatment Prevention Programs*

Prevention of maltreatment, providing support and services before maltreatment occurs, is the surest way to reduce the number of children that are abused and/or neglected each year. Since most children are abused and/or neglected by their mother or father (Sedlak & Broadhurst, 1996), prevention efforts should focus on parents. Unfortunately, many parents have insufficient knowledge of parenting skills and an inadequate support system of friends, extended family, or professionals to help with the needs of their young children (Council on Child and Adolescent Health, 1998). This is where home visitation programs can be effective.

Home visitation programs offer an effective mechanism to ensure ongoing parental education, social support, and linkage with community services. The main component of these programs consists of regular home visits by nurses or trained paraprofessionals for families with infants and toddlers. Home visitation for parents is widespread in most industrialized nations other than the United States (e.g., Belgium, Denmark, Finland, France, Germany, Ireland, the Netherlands, Norway, Spain, Sweden, Switzerland, and the United Kingdom). In most of those countries, home visitations are free, voluntary, not related to income, and embedded in comprehensive maternal and child health systems. Although a causal link has not been demonstrated conclusively, countries with extensive home visitation programs generally have lower infant mortality rates than the US (Council on Child and Adolescent Health, 1998). Infant mortality rates represent the number of infants that die before age 1 per 1,000 live births. Infant mortality rates in countries that have extensive home visitation programs range from 2.77 to 4.76. The US has an infant mortality rate of 6.63.

In 1980, the American Academy of Pediatrics was unable to recommend home visitation as national policy because of a lack of sufficient research on its effectiveness. Since then, research has shown several benefits of home visitation programs, including increased birth weight (Chapman, Siegel, & Cross, 1990), increased spacing between pregnancies (Olds, 1992), fewer emergency department visits (Olds, Henderson, Chamberlin, & Tatelbaum, 1986), and less maternal alcohol and drug abuse (Olds, Eckenrode, Henderson, Kitzman, Powers, Cole, Sidora, Morris, Pettitt, & Luckey, 1997). Studies have also shown that home visitation programs are associated with a decrease in verified incidents of child abuse and neglect. A Centers for Disease Control and Prevention [CDC] task force reviewed 25 studies on home visitation programs and found an overall 39% reduction of child maltreatment in high-risk families (Hahn, Bilukha, Crosby, Fullilove, Liberman, Moscicki, Snyder, Tuma, Schofield, Corso, & Briss, 2003).

Although it is difficult to attach a dollar value to the reduction of human suffering, cost-effectiveness is an important factor. According to Olds (1992), home visitation programs cost between \$300 and \$1750 per family per year, depending on the level and frequency of services provided. However, even the most expensive programs pay for themselves by the time the children are four years old. The majority of the cost savings comes from a reduction in welfare payments and food stamps, with one third of the savings coming from a reduction in unintended subsequent pregnancies (Olds, 1992). Based on data from a variety of sources, including the US Department of Health and Human Services, US Department of Justice, and the US Census, the costs of child maltreatment in the US has been estimated to be \$24,384,347,302 annually in *direct* costs (hospitalization, chronic health problems, mental health care system, child welfare

system, law enforcement, judicial system) and \$69,692,535,227 in *indirect* costs (special education, mental health and health care, juvenile delinquency, lost productivity to society, and adult criminality). Combining these figures, the estimated annual cost of child maltreatment is \$94,076,882,529 (Prevent Child Abuse America, 2001). The annual cost of \$94 billion is considered a conservative estimate since it is based on stringent criteria for child abuse and neglect, and does not include all indirect costs that may be associated with child maltreatment. If we consider only the *known* victims of child maltreatment per year (approximately 899,000 children), the cost of maltreatment per child is about \$104,560 per year. This amount is a sharp contrast with the \$300 to \$1750 annual cost of a home visitation program for a family.

Since research has shown that home visitation programs have many benefits – including a decrease in incidents of child abuse and neglect – and these programs are cost-effective, home visitation services should be part of national policy in the US.

b) Improve Efforts to Detect Maltreated Children

Even though the number of confirmed cases of child maltreatment in the US is extremely high – 899,000 in the year 2005 – this number is generally considered an underestimate of the true number of child maltreatment cases (US DHHS, 2007). To receive intervention services, maltreated children first need to be identified. Therefore, every effort should be made to detect as many of the maltreated children as possible. This can be accomplished in three ways:

i) Raise public awareness about child maltreatment through national

campaigns. Since children who have not yet reached school-age have the highest

rates of victimization (US DHHS, 2007), friends, neighbors, and relatives are the most likely reporters of abuse and neglect for young children. In order for these individuals to recognize child abuse and/or neglect, campaigns should include education about the signs of maltreatment. National campaigns should also address people's beliefs and attitudes associated with child maltreatment. Research has indicated that, besides lack of knowledge about maltreatment, many individuals do not report suspected cases of child abuse and neglect because of negative attitudes towards child abuse (especially sexual abuse), beliefs in parental autonomy to discipline children, beliefs in the privacy of the family, beliefs that welfare or legal intervention is harmful to the child and family or will not result in the protection of the child, and fear of retaliation for making a report (Abrahams, 1992; Beck, Ogloff, & Corbishley, 1994; Manning & Cheers, 1995).

- ii) **Have standards in place for individuals who work with children.** Although professionals such as educators, law enforcement and legal personnel, social services personnel, medical personnel, mental health personnel, and child daycare providers are legally obligated to report suspected child maltreatment they may not have had appropriate training to recognize signs of abuse and/or neglect. A study involving a large sample of teachers found that many teachers lacked experience and appropriate training to be able to recognize child maltreatment (Baginsky, 2000).
- iii) **Ensure child welfare agencies are sufficiently funded so that every maltreatment complaint that comes in can be properly investigated.** Findings from the Third National Incidence Study of Child Abuse and Neglect [NIS-3] showed that only slightly over one fourth of children who were abused and/or neglected received Child

Protective Services [CPS] attention for their maltreatment (Sedlak & Broadhurst, 1996). The NIS-3 study also found that CPS investigation rates have not kept up with the rise in the incidence of child maltreatment; therefore, the percentage of children who receive a CPS investigation of their maltreatment has fallen significantly. These findings emphasize the need for better targeting, whether by reporters in referring children to CPS, by CPS in screening reports, or both.

c) *Provide Appropriate Interventions to Maltreated Children*

Once children are identified as maltreated they should receive proper interventions. This involves two steps: (1) The children's safety should be ensured and their situation should be monitored. (2) Maltreated children should be offered psychotherapy to help them cope with the psychological consequences of the abuse and/or neglect. Child maltreatment experiences may cause delays or deficits in a child's ability to achieve age-appropriate behavioral, cognitive, and emotional regulation (DeBellis, 1999). Traumatic consequences include symptoms of Posttraumatic Stress Disorder (PTSD; Widom, 1999), such as intrusive re-experiencing of the trauma, persistent avoidance of traumatic triggers, numbing of responsiveness, and persistent symptoms of increased arousal (American Psychiatric Association, 1994). Since parents are often the perpetrators of the maltreatment, they should also receive appropriate therapeutic interventions.

A recent meta-analysis that tested the effectiveness of psychological interventions for child maltreatment found that psychological treatments yielded improvements among maltreated children, compared to wait-list, placebo, or community case management control groups (Skowron & Reinemann, 2005). Specifically, after intervention, children

who had received psychological treatment appeared to be functioning better than the maltreated children who did not receive psychological treatment. Treatment outcomes did not vary on the basis of modality of treatments used (that is, individual, group, family, milieu, or multiple forms of treatment).

Considering our finding that delinquent males with a history of neglect and physical abuse have greater odds than their nonmaltreated counterparts to commit robbery, it is especially important that *delinquent males who were neglected and physically abused* receive appropriate interventions. Juvenile detention centers should provide therapeutic services once they identify these youth that are most at risk for violence.

2) Implications Related to Violence

a) Modification of Risk Assessments

Our findings have implications for professionals who assess the likelihood that an individual will engage in violent behavior. These types of evaluations are referred to as risk assessments or assessments of dangerousness. Common measures used in risk assessments include the following: Psychopathy Checklist–Revised (PCL–R; Hare, 1991), the Historical, Clinical, Risk-20, (HCR-20; Webster, Douglas, Eaves, & Hart, 1997), and the Violence Risk Appraisal Guide (VRAG; Harris, Rice, & Quinsey, 1993). The degree to which a history of maltreatment is considered a predictor of violence varies depending on which measure is used. Since we found that delinquent males who were neglected and physically abused in childhood were more likely than their nonmaltreated counterparts to commit robbery, risk assessments of delinquent males should treat a history of neglect and physical abuse as a risk factor for violence. For male delinquents

with a different type of maltreatment history and for maltreated female delinquents, it may be more important to focus on established risk factors for violence such as a history of violence, impulsivity, low SES, gang membership, etc.

b) Nationwide Implementation of Effective Violence Prevention Programs

The present study found that delinquent youth are highly likely to engage in violent behavior. We also found that delinquent youth are more likely to commit violence than youth from the general population. These findings support the conclusion by the Surgeon General (US DHHS, 2001) that there is a need for effective violence prevention programs. Therefore, violence prevention programs that have been proven to work should be implemented nationwide.

i) What kind of violence prevention programs do we need?

While the present study examined one particular risk factor for violence – a history of maltreatment – prior studies have found that most violence results from an accumulation of risk factors, not just one factor (Stouthamer-Loeber, Loeber, Wei, Farrington, & Wikström 2002). Therefore, programs and interventions that address multiple risk factors have the best chance of success with delinquent youth. Interventions need to be developmentally-appropriate and address the many “contexts” in which children live. From infancy to late childhood, there is one dominant context for the child: the family. Early interventions are quite successful because they can be highly focused on the child’s one, dominant context. Once the child enters adolescence, the social context of interactions with peers emerges and

becomes dominant, as well as the school context. Therefore, interventions targeted at adolescents must address these multiple contexts. For a successful transition to adulthood, peer groups must cease to be a young person's dominant context, as work and intimate relationships become the dominant contexts (Stouthamer-Loeber, Loeber, Wei, Farrington, & Wikström 2002).

ii) Do effective violence prevention programs exist?

In 1996, the Center for the Study and Prevention of Violence initiated a project to identify violence prevention programs that met a very high scientific standard of program effectiveness. The objective was to identify outstanding programs and describe these interventions in a series of "blueprints" that communities could use to replicate the model programs. Eleven "Blueprint" programs were found to be very effective violence prevention programs.

Three of these Blueprint programs were specifically designed for youth in the juvenile justice system:

1) Multisystemic Therapy (MST; Henggeler, Mihalic, Rone, Thomas, & Timmons-Mitchell, 1998) has received the most empirical support as an effective treatment of violent behavior among high-risk youth (Borduin & Schaeffer, 1998; Mihalic, Irwin, Elliott, Fagan, & Hansen, 2001). MST is a pragmatic and goal-oriented treatment that specifically targets those factors in each youth's social network that are contributing to his or her delinquent behavior. Thus, MST interventions typically aim to improve the caregivers' discipline practices, enhance family affective relations, decrease youth association with deviant peers, increase youth association with prosocial peers,

improve youth school or vocational performance, engage youth in prosocial recreational outlets, and develop a support network of extended family, neighbors, and friends to help caregivers achieve and maintain such changes.

Specific treatment techniques used to facilitate these gains are integrated from those therapies that have the most empirical support, including cognitive behavioral, behavioral, and the pragmatic family therapies. MST services are delivered in the natural environment (e.g., home, school, community). The treatment plan is designed in collaboration with family members and is therefore family driven rather than therapist driven. The ultimate goal of MST is to empower families to build an environment – through the mobilization of child, family, and community resources – that promotes health. The typical duration of home-based MST services is approximately four months, with multiple therapist-family contacts occurring each week. The strongest and most consistent support for the effectiveness of MST comes from controlled studies that focused on violent and chronic juvenile offenders (Borduin & Schaeffer, 1998; Mihalic, Irwin, Elliott, Fagan, & Hansen, 2001).

MST is cost-effective in comparison with usual juvenile justice services, such as incarceration (Mihalic, Irwin, Elliott, Fagan, & Hansen, 2001). A cost-benefit analysis has shown that the benefits per dollar of cost (i.e., taxpayer and crime victim cost savings per participant divided by the cost per participant) for MST are \$13.45 (Aos, Phipps, Baroski, & Lieb, 1999).

2) **Multidimensional Treatment Foster Care** (MTFC; Moore & Chamberlain, 1994) has also been effective in reducing violent behavior in high-risk youth (Mihalic, Irwin, Elliott, Fagan, & Hansen, 2001). MTFC emphasizes behavior

management methods to provide high-risk youth with a structured and therapeutic living environment. After completing a pre-service training and placement of the youth, MTFC parents attend a weekly group meeting where ongoing support and supervision are provided. Foster parents are contacted daily during telephone calls to check on youth progress and problems. MTFC staff are available for consultation and crisis intervention 24/7. Services to the youth's family occur throughout the placement. Family therapy is provided for the biological (or adoptive) family, with the goal of returning the youth back to the home. The parents are supported and taught to use behavior management methods that are used in the MTFC foster home. Closely supervised home visits are conducted throughout the youth's placement in MTFC. Parents are encouraged to have frequent contact with the MTFC program supervisor to get information about their child's progress in the program. Frequent contact is maintained between the MTFC program supervisor and the youth's case workers, parole/probation officer, teachers, work supervisors, and other involved adults.

MTFC is less expensive than placement in institutional settings, including jail (Mihalic, Irwin, Elliott, Fagan, & Hansen, 2001). A cost-benefit analysis has shown that the benefits per dollar of cost (i.e., taxpayer and crime victim cost savings per participant divided by the cost per participant) for MTFC are \$22.58 (Aos, Phipps, Baroski, & Lieb, 1999).

3) Functional Family Therapy (FFT; Alexander, Barton, Gordon, Grotspeter, Hansen, Harrison, Mears, Mihalic, Parsons, Pugh, Schulman, Waldron, & Sexton, 1998) has been shown to reduce violence by increasing protective factors and

decreasing risk factors (Mihalic, Irwin, Elliott, Fagan, & Hansen, 2001). FFT is a short-term program that has been applied successfully to a wide range of high-risk youth and their families in various contexts (e.g., rural, urban, multicultural, international) and treatment systems (e.g., clinics, home-based programs, juvenile courts, independent providers). On average, participating youth attend twelve 1-hour sessions spread over three months; more difficult cases require 26 to 30 hours of direct service. FFT clearly identifies three treatment phases: (1) engagement and motivation, (2) behavior change, and (3) generalization. To ensure long-term support of changes, FFT links families with available community resources.

FFT is a cost-effective alternative to incarceration (Mihalic, Irwin, Elliott, Fagan, & Hansen, 2001). A cost-benefit analysis has shown that the benefits per dollar of cost (i.e., taxpayer and crime victim cost savings per participant divided by the cost per participant) for FFT are \$11.00 (Aos, Phipps, Baroski, & Lieb, 1999).

While all three programs have been proven to prevent violence in juvenile delinquents, Multisystemic Therapy (MST) has received the most empirical support (Borduin & Schaeffer, 1998; Mihalic, Irwin, Elliott, Fagan, & Hansen, 2001). Unless youth are in foster care, at which point they may benefit more from Multidimensional Treatment Foster Care (MTFC), MST may be the preferred violence prevention program for delinquent youth.

iii) How do we implement effective violence prevention programs for high-risk youth nationwide?

Thus far, much time and attention have been devoted to discovering what kind of

violence prevention programs are effective for youth at high risk for violence. By outlining high standards of program effectiveness, reviewing outcome evaluation results for numerous programs, and identifying successful programs for high-risk youth, the Center for the Study and Prevention of Violence has helped answer some of the questions about what does and does not work in violence prevention. However, answering such questions is only the first step in meeting the greater challenge of preventing violence. The next step is implementation of effective violence prevention programs in communities around the country, including juvenile justice facilities, community mental health agencies for youth, substance abuse programs for youth, the foster care system, and group homes for youth. States should:

- 1) invest in empirically-supported Blueprint programs such as Multisystemic Therapy, Multidimensional Treatment Foster Care, or Functional Family Therapy,
- 2) avoid spending money on programs that have not been proven to be effective, and
- 3) ensure quality control and adherence to original program designs.

Only then will violence prevention programs have their maximum effect on our nation's high rates of violence.

VIII. Conclusion

Since the 1960s, studies have investigated the relationship between a history of maltreatment and violence, also referred to as the "cycle of violence." While the early studies were plagued by serious methodological limitations, studies in the last two decades have improved their research designs. In general, prior research has confirmed the cycle of violence among general population youth and youth identified from maltreatment records

(Ehrensaft, Cohen, Brown, Smailes, Chen, & Johnson, 2003; English, Widom, & Brandford, 2002; Herrera & McCloskey, 2001; Kwong, Bartholomew, Henderson, & Trinke, 2003; Maxfield & Widom, 1996; Smith & Thornberry, 1995; Stouthamer-Loeber, Loeber, Homish, & Wei, 2001; White & Widom, 2003; Zingraff, Leiter, Myers, & Johnsen, 1993). However, prior studies have not examined whether maltreatment predicts subsequent violence for a group already at high risk for violent behavior: delinquent youth. The findings from our study show that (1) many delinquent youth have a history of maltreatment, (2) delinquent youth are very likely to engage in violent behavior, (3) in general, maltreatment does not predict subsequent violent behavior in delinquent youth, and (4) delinquent males who were neglected and physically abused are at greater risk than their nonmaltreated counterparts to commit robbery.

Given the high prevalence rates of maltreatment and violence in delinquent youth, and the violent behavior associated with a history of neglect and physical abuse for delinquent males, every effort should be made to (a) prevent child maltreatment, (b) detect child maltreatment, (c) provide appropriate interventions to victims of child maltreatment, (d) modify risk assessments, and (e) implement effective violence prevention programs for high-risk youth throughout the country.

As a society, we owe it to our youngest members to provide them with a safe environment. Yet, the United States, the world's superpower, is a country with almost one million *known* cases of child maltreatment. Our abused and/or neglected children are a national exigency. No child left behind? No child should be maltreated.

References

- Abrahams, N. (1992). Teachers' knowledge, attitudes and beliefs about child abuse and its prevention. *Child Abuse and Neglect, 16*, 229-238.
- Abused and Neglected Child Reporting Act (1975). 325 ILCS 5/1 et seq., P.A. 79-65.
- Ainsworth, M. S. (1989). Attachments beyond infancy. *American Psychologist, 44*, 709-716.
- Alexander, J., Barton, C., Gordon, D., Grotmeter, J., Hansen, K., Harrison, R., Mears, S., Mihalic S., Parsons, B., Pugh, C., Schulman, S., Waldron, H., & Sexton, T. (1998). *Blueprints for violence prevention, book three: Functional family therapy*. Boulder, CO: Center for the Study and Prevention of Violence, Institute of Behavioral Science, University of Colorado.
- American Psychiatric Association (1994). *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition*. Washington, DC: American Psychiatric Press Inc.
- Aos, S., Phipps, P, Baroski, R., & Lieb, R. (1999). *The comparative costs and benefits of programs to reduce crime: A review of national research with implications for Washington State*. Olympia, WA: Washington State Institute for Public Policy.
- Baginsky, M. (2000). Training teachers in child protection. *Child Abuse Review, 9*, 74-81.
- Bandura, A. (1973). *Aggression: A social learning analysis*. Englewood Cliffs, NJ: Prentice-Hall.
- Bandura, A. (1977). *Social learning theory*. Englewood Cliffs, NJ: Prentice-Hall.
- Beck, K., Ogloff, J., & Corbishley, A. (1994). Knowledge, compliance and attitude of teachers toward mandatory child abuse reporting in British Columbia. *Canadian Journal of Education, 19*, 15-29.
- Bennett, E. M., & Kemper, K. J. (1994). Is abuse during childhood a risk factor for developing substance abuse problems as an adult? *Developmental and Behavioral Pediatrics, 15*, 426-429.
- Borduin, C. M., & Schaeffer, C. M. (1998). *Violent offending in adolescence: Epidemiology, correlates, outcomes, and treatment*. In T. Gullota et al. (Eds.), *Delinquent violent youth: Theory and interventions*. London: Sage Publications.
- Bowlby, J. (1969). *Attachment and loss: Vol. I. Attachment*. London: Hogarth.
- Briere, J. (1992). Child Maltreatment Schedule. In: J. Briere. *Child Abuse Trauma* (pp. 165-177). Newbury Park, CA: Sage Publications.

- Brown, J., Cohen, P., Johnson, J. G., & Salzinger, S. (1998). A longitudinal analysis of risk factors for child maltreatment: Findings of a 17-year prospective study of officially recorded and self-reported child abuse and neglect. *Child Abuse and Neglect*, 22, 1065-1078.
- Child Abuse Prevention and Treatment Act (1974). 42 U.S.C.A, §5101 et seq. Public Law 93-247.
- Chaiken, J. M., & Chaiken, M. R. (1990). Drugs and predatory crime. In M. Tonry & J. Q. Wilson (Eds.), *Crime and justice* (Drugs and Crime ed., Vol. 13). Chicago: University of Chicago Press.
- Chapman, J., Siegel, E., & Cross, A. (1990). Home visitors and child health: Analysis of selected programs. *Pediatrics*, 85, 1059-1068.
- Cochran, W. G. (1997). *Sampling Techniques*. 3rd Ed. New York, NY: John Wiley & Sons, Inc.
- Cocozza, J. J. (1992). *Responding to the Mental Health Needs of Youth in the Juvenile Justice System*. Seattle, WA: National Coalition for the Mentally Ill in the Criminal Justice System.
- Cohen, J. (1988). *Statistical Power Analysis for the Behavioral Sciences*. 2nd Ed. Hillsdale, NJ: Lawrence Earlbaum Associates.
- Cole, P. M., & Putnam, F. W. (1992). Effect of incest on self and social functioning: A developmental psychopathology perspective. *Journal of Consulting and Clinical Psychology*, 60, 174-184.
- Cook, P. J., & Laub, J. H. (1998). The unprecedented epidemic in youth violence. *Crime and Justice*, 24, 27-64.
- Council on Child and Adolescent Health (1998). The role of home-visitation programs in improving health outcomes for children and families. *Pediatrics*, 101, 486-489.
- Crimmins, S. M., Cleary, S. D., Brownstein, H. H., Spunt, B. J., & Warley, R. M. (2000). Trauma, drugs, and violence among juvenile offenders. *Journal of Psychoactive Drugs*, 32, 43-54.
- Curtis, G. C. (1963). Violence breeds violence – perhaps? *American Journal of Psychiatry*, 120, 386-387.
- DeBellis, M. D. (1999). Developmental traumatology: Neurobiological development in maltreated children with PTSD. *Psychiatric Times*, 9, 1-4.
- Dembo, R., Williams, L., La Voie, L., Schmeidler, J., Kern, J., Getreu, A., Barry, E., Genung, L., & Wish, E. (1990). A longitudinal study of the relationship among alcohol use, marijuana/hashish use, cocaine use, and emotional/psychological functioning problems in a cohort of

high risk youths. *International Journal of the Addictions*, 25, 1341-1382.

Dembo, R., Wothke, W., Shemwell, M., Pacheco, K., Seeberger, W., Rollie, M., Schmeidler, J., & Livingston, L. (2000). A structural model of the influence of family problems and child abuse factors on serious delinquency among youths processed at a juvenile assessment center. *Journal of Child and Adolescent Substance Abuse*, 10, 17-31.

Department of Children & Family Services (2005). *Manual for Mandated Reporters*. Obtained on March 10, 2006 from www.state.il.us/DCFS/docs/mandated2002.pdf.

DiLalla, L. F., & Gottesman, I. I. (1991). Biological and genetic contributions to violence: Widom's untold tale. *Psychological Bulletin*, 109, 125-129.

Dodge, K. A., Bates, J. E., & Pettit, G. S. (1990). Mechanisms in the cycle of violence. *Science*, 250, 1678-1683.

Donnellan, M. B., Trzesniewski, K. H., Robins, R. W., Moffitt, T. E., & Caspi, A. (2005). Low self-esteem is related to aggression, antisocial behavior, and delinquency. *Psychological Science*, 16, 328-335.

Downs, W. R., Miller, B. A., & Testa, M. (1991, November). *The impact of childhood victimization experiences on women's drug use*. Paper presented to the annual meeting of the American Society of Criminology, San Francisco, CA.

Downs, W. R., Smyth, N. J., & Miller, B. A. (1996). The relationship between childhood violence and alcohol problems among men who batter: An empirical review and synthesis. *Aggression & Violent Behavior*, 1, 327-344.

Dykes, L. (1986). The whiplash shaken infant syndrome: What has been learned? *Child Abuse and Neglect*, 10, 211-221.

Egeland, B., Jacobvitz, D., & Papatola, K. (1987). Intergenerational continuity of abuse. In R. J. Gelles, & J. B. Lancaster (Eds.), *Child abuse and neglect: Biosocial dimensions* (pp. 255-276). New York: Aldine de Gruyter.

Eichelman, B. (1990). Neurochemical and psychopharmacologic aspects of aggressive behavior. *Annual Review of Medicine*, 41, 149-158.

Ehrensaft, M. K., Cohen, P., Brown, J., Smailes, E., Chen, H., & Johnson, J. G. (2003). Intergenerational transmission of partner violence: A 20-year prospective study. *Journal of Consulting and Clinical Psychology*, 71, 741-753.

Elliott, D. S. (1994). Serious violent offenders: Onset, developmental course, and termination. *Criminology*, 32, 1-21.

- Elliott, D. S., Huizinga, D., & Menard, S. (1989). *Multiple problem youth: Delinquency, substance use and mental health problems*. New York: Springer-Verlag.
- English, D. J., Widom, C. S., & Brandford, C. (2002). *Childhood victimization and delinquency, adult criminality, and violent criminal behavior: A replication and extension*. Available from National Institute of Justice, Publication No. NCJ 192291.
- Farrington, D. P. (1986). Age and crime. In M. Tonry & N. Morris (Eds.), *Crime and Justice: An annual review of research* (Vol. 7, pp. 189-250). Chicago, IL: University of Chicago Press.
- Farrington, D. P., & Loeber, R. (2000). Epidemiology of juvenile violence. *Child and Adolescent Psychiatric Clinics of North America*, 9, 733-748.
- Federal Policy for the Protection of Human Subjects: Notices and Rules (1991). *56 Federal Register*. Part 2, No. 117: 28002-32 (56 FR §28002).
- Felitti, V. J., Anda, R. F., Nordenberg, D., Williamson, D. F., Spitz, A. M., Edwards, V., Koss, M. P., & Marks, J. S. (1998). Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults. The Adverse Childhood Experiences (ACE) Study. *American Journal of Preventive Medicine*, 14, 245-258.
- Fergusson, D. M., & Horwood, L. J. (2002). Male and female offending trajectories. *Development and Psychopathology*, 14, 159-177.
- Finkelhor, D., Cross, T. P., & Cantor, E. N. (2005). *How the justice system responds to juvenile victims: A comprehensive model*. US Department of Justice, Office of Justice Programs, Office of Juvenile Justice and Delinquency Prevention. Washington, DC: US Government Printing Office.
- Fisher, C. B. (1993). Integrating science and ethics in research with high-risk children and youth. *Social Research in Child Development*, 7, 1-27.
- Freud, A. (1936). *The ego and the mechanisms of defence*. New York: International University Press.
- Galler, J. R., Ramsey, F., Solimano, G., & Lowell, W. E. (1983). The influence of malnutrition on subsequent behavioral development. II. Classroom behavior. *Journal of the American Academy of Child Psychiatry*, 24, 16-22.
- Goldstein, P. J. (1985). The drugs/violence nexus: A tripartite conceptual framework. *Journal of Drug Issues*, 15, 493-506.
- Grisso, T., Tomkins, A., & Casey, P. (1988). Psychological concepts in juvenile law. *Law and Human Behavior*, 12, 403-437.

- Hahn, R. A., Bilukha, O. O., Crosby, A., Fullilove, M. T., Liberman, A., Moscicki, E. K., Snyder, S., Tuma, F., Schofield, A., Corso, P. S., & Briss, P. (2003). First reports evaluating the effectiveness of strategies for preventing violence: Early childhood home visitation. Findings from the Task Force on Community Preventive Services. *MMWR Recommendations and Reports*, *52*, 1-9.
- Hardt, J., & Rutter, M. (2004). Validity of retrospective reports of adverse childhood experiences: Review of the evidence. *Journal of Child Psychology and Psychiatry*, *45*, 260-273.
- Hare, R. D., (1991). *The Hare Psychopathy Checklist – Revised*. Multi-Health Systems, New York.
- Harris, G. T., Rice, M.E., & Quinsey, V.L. (1993). Violent recidivism of mentally disordered offenders: The development of a statistical prediction instrument. *Criminal Justice and Behavior*, *20*, 315-335.
- Hawkins, J. D., Herrenkohl, T. I., Farrington, D. P., Brewer, R., Catalano, R. F., Harachi, T. W., et al. (2000). *Predictors of youth violence*. US Department of Justice, Office of Justice Programs, Office of Juvenile Justice and Delinquency Prevention, NCJ 179065. Washington, DC: US Government Printing Office.
- Henggeler, S. W., Mihalic, S. F., Rone, L., Thomas, C., & Timmons-Mitchell, J. (1998). *Blueprints for violence prevention, book six: Multisystemic therapy*. Boulder, CO: Center for the Study and Prevention of Violence.
- Herman, D. B., Susser, E. S., Struening, E. L., & Link, B. L. (1997). Adverse childhood experiences: Are they risk factors for adult homelessness? *American Journal of Public Health*, *87*, 249-255.
- Herrenkohl, E., Herrenkohl, R., & Toedtler, L. (1983). Perspectives on the intergenerational transmission of abuse. In D. Finkelhor, R. Gelles, G. Hotaling, & M. Straus (Eds.), *The dark side of families: Current family violence research*. Beverly Hills, CA: Sage Publications.
- Herrenkohl, T. I., Maguin, E., Hill, K. G., Hawkins, J. D., Abbott, R. D., & Catalano, R. F. (2000). Developmental risk factors for youth violence. *Journal of Adolescent Health*, *26*, 176-186.
- Herrera, V. M., & McCloskey, L. A. (2001). Gender differences in the risk for delinquency among youth exposed to family violence. *Child Abuse & Neglect*, *25*, 1037-1051.
- Higley, J. D., Melman, P., & Taub, D. (1991). CSF monoamine and adrenal correlates of aggression in feral living rhesus monkeys. *Biological Psychiatry*, *29*, 16.
- Horwitz, A. V., Widom, C. S., McLaughlin, J., & White, H. R. (2001). The impact of childhood

abuse and neglect on adult mental health: A prospective study. *Journal of Health and Social Behavior*, 42, 1184-1201.

- Huizinga, D., Loeber, R., & Thornberry, T. P. (1995). *Recent findings from the program of research on the causes and correlates of delinquency* (US Department of Justice, Office of Justice Programs, Office of Juvenile Justice and Delinquency Prevention, NCJ 159042). Washington, DC: US Government Printing Office.
- Illinois Criminal Justice Information Authority (1997). *Trends and Issues 1997* (pp. 151-176). Chicago, IL: Illinois Criminal Justice Information Authority.
- Institute of Behavioral Science (1991). *Denver Youth Survey Youth Interview Schedule*. Boulder, CO: University of Colorado.
- Johnson, J. G., Cohen, P., Brown, J., Smailes, E. M., & Bernstein, D. P. (1999). Childhood maltreatment increases risk for personality disorders during early adulthood. *Archives of General Psychiatry*, 56, 600-606.
- Kelley, B., Loeber, R., Keenan, K., & DeLamatre, M. (1997, December). *Developmental Pathway in Boys' Disruptive and Delinquent Behavior*. Juvenile Justice Bulletin (NCJ No. 165692). Washington, DC: US Department of Justice, Office of Juvenile Justice and Delinquency Prevention.
- Klein, M. (1932). *The psycho-analysis of children*. London: Hogarth.
- Kwong, M. J., Bartholomew, K., Henderson, A. J., & Trinke, S. J. (2003). The intergenerational transmission of relationship violence. *Journal of Family Psychology*, 17, 288-301.
- Lau, A. S., McCabe, K. M., Yeh, M., Garland, A. F., Hough, R. L., & Landsverk, J. (2003). Race/ethnicity and rates of self-reported maltreatment among high-risk youth in public sectors of care. *Child Maltreatment*, 8, 183-194.
- Levy, P. S., & Lemeshow, S. (1999). *Sampling of Populations: Methods and Applications*. 3rd Ed. New York, NY: John Wiley & Sons, Inc.
- Lewis, D. O. (1992). From abuse to violence: Psychophysiological consequences of maltreatment. *Journal of the American Academy of Child and Adolescent Psychiatry*, 31, 383-391.
- Lindberg, F. H., & Distad, L. J. (1985). Survival responses to incest: Adolescents in crisis. *Child Abuse & Neglect*, 9, 521-526.
- Lipovsky, J. A., Saunders, B. E., & Murphy, S. M. (1989). Depression, anxiety, and behavior

problems among victims of father-child sexual assault and nonabused siblings. *Journal of Interpersonal Violence*, 4, 452-468.

- Loeber, R., Farrington, D. P., & Waschbusch, D. A. (1998). Serious and violent juvenile offenders. In R. Loeber & D. P. Farrington (Eds.), *Serious and violent juvenile offenders: Risk factors and successful interventions* (pp. 13-29). Thousand Oaks, CA: Sage Publications.
- Loeber, R., & Hay, D. (1997). Key issues in the development of aggression and violence from childhood to early adulthood. *Annual Review of Psychology*, 48, 371-410.
- Luntz, B. K., & Widom, C. S. (1994). Antisocial Personality Disorder in abused and neglected children grown up. *American Journal of Psychiatry*, 151, 670-674.
- Main, M., & Solomon, J. (1986). Discovery of an insecure-disorganized/disoriented attachment pattern: Procedure, findings, and implications for the classification of behavior. In M. Yogman & T. B. Brazelton (Eds.), *Affective development in infancy* (pp. 95-124). Norwood, NJ: Ablex.
- Manning, C., & Cheers, B. (1995). Child abuse notification in a country town. *Child Abuse and Neglect*, 19, 387-397.
- Mannuzza, S., Gittelman-Klein, R., Konig, P. H., & Giampino, T. L. (1989). Hyperactive boys almost grown up: IV. Criminality and its relationship to psychiatric status. *Archives of General Psychiatry*, 46, 1073-1079.
- Maxfield, M. G., Weiler, B. L., & Widom, C. S. (2000). Comparing self-reports and official records of arrests. *Journal of Quantitative Criminology*, 16, 87-110.
- Maxfield, M. G., & Widom, C. S. (1996). The cycle of violence: revisited six years later. *Archives of Pediatrics and Adolescent Medicine*, 150, 390-395.
- McCauley, J., Kern, D. E., Kolodner, K., Dill, L., Schroeder, A. D., DeChant, H. K., Ryden, J., Derogatis, L. R., & Bass, E. B. (1997). Clinical characteristics of women with a history of childhood abuse: Unhealed wounds. *Journal of the American Medical Association*, 277, 1362-1368.
- Mihalic, S., Irwin, K., Elliott, D., Fagan, A., & Hansen, D. (2001). *Blueprints for violence prevention*. Office of Juvenile Justice and Delinquency Prevention. Juvenile Justice Bulletin, Washington, DC: US Government Printing Office.
- Miller, B. (1993). Investigating links between childhood victimization and alcohol problems. In S. E. Martin (Ed.), *Alcohol and interpersonal violence: fostering multidisciplinary perspectives* (NIH Publication No. 93-3496). Rockville, MD: US Government Printing Office. (NIAAA Research Monograph No. 24)

- Miller, T. R., Fisher, D. A., & Cohen, M. A. (2001). Cost of juvenile violence: Policy implications. *Pediatrics, 107*, 1-7.
- Moffitt, T. E. (1993). Adolescence-limited and life-course persistent antisocial behavior: A developmental taxonomy. *Psychological Review, 100*, 674-701.
- Moffitt, T. E., Caspi, A., Harrington, H., & Milne, B. J. (2002). Males on the lifecourse-persistent and adolescence-limited antisocial pathways: Follow-up at age 26 years. *Development & Psychopathology, 14*, 179-207.
- Moore, K. J., & Chamberlain, P. (1994). Treatment foster care: Toward development of community-based models for adolescents with severe emotional and behavioral disorders. *Journal of Emotional and Behavioral Disorders, 2*, 22-30.
- Mullen, P. E., Martin, J. L., Anderson, J. C., Romans, S. E., & Herbison, G. P. (1993). Childhood sexual abuse and mental health in adult life. *British Journal of Psychiatry, 163*, 721-732.
- Ogawa, J. R., Sroufe, L. A., Weinfield, N. S., Carlson, E. A., & Egeland, B. (1997). Development and the fragmented self: Longitudinal study of dissociative symptomatology in a nonclinical sample. *Development and Psychopathology, 9*, 855-879.
- Olds, D. (1992). Home visitation for pregnant women and parents of young children. *American Journal of Diseases of Children, 146*, 704-708.
- Olds, D., Eckenrode, J., Henderson, C. Jr., Kitzman, H., Powers, J., Cole, R., Sidora, K., Morris, P., Pettitt, L., & Luckey, D. (1997). Long-term effects of home visitation on maternal life course and child abuse and neglect: 15-Year follow-up of a randomized trial. *Journal of the American Medical Association, 278*, 637-643.
- Olds, D., Henderson, C. Jr., Chamberlin, R., & Tatelbaum, R. (1986). Preventing child abuse and neglect: A randomized trial of nurse home visitation. *Pediatrics, 78*, 65-78.
- Pastore, A. L., & Maguire, K. (2000). *Sourcebook of Criminal Justice Statistics-1999*. Washington, DC: US Department of Justice.
- Perry, B. D. (1997). Incubated in terror: neurodevelopmental factors in the "cycle of violence." In J. D. Osofsky (Ed.), *Children in a violent society* (pp. 124-149). New York: Guilford.
- Plomin, R., DeFries, J. C., & Loehlin, J. C. (1977). Genotype-environment interaction and correlation in the analysis of human behavior. *Psychological Bulletin, 84*, 309-322.

- Pollock, P. H. (1999). When the killer suffers: Post-traumatic stress reactions following homicide. *Legal and Criminological Psychology, 4* (Part 2), 158-202.
- Pope, C. E., & Snyder, H. N. (2003). *Race as a factor in juvenile arrests*. US Department of Justice, Office of Justice Programs, Office of Juvenile Justice and Delinquency Prevention. Washington, DC: US Government Printing Office.
- Prevent Child Abuse America (2001). Calculating the costs of child maltreatment. *Children's Bureau Express, 2*. Available at: www.preventchildabuse.org/learn_more/research_docs/cost_analysis.pdf.
- Rhee, S. H., & Waldman, I. D. (2002). Genetic and environmental influences on antisocial behavior: A meta-analysis of twin and adoption studies. *Psychological Bulletin, 29*, 490-529.
- Sedlak, A., & Broadhurst, D. (1996). *Executive summary of the third National Incidence Study of child abuse and neglect*. US Department of Health and Human Services, National Center on Child Abuse and Neglect. Available at: <http://www.calib.com/nccanch/data/nis3.txt>.
- Singer, M., Petchers, M., & Hussey, D. (1989). The relationship between sexual abuse and substance abuse among psychiatrically hospitalized adolescents. *Child Abuse and Neglect, 13*, 319-325.
- Skowron, E., & Reinemann, D. H. (2005). Effectiveness of psychological interventions for child maltreatment: A meta-analysis. *Psychotherapy: Theory, Research, Practice, Training, 42*, 52-71.
- Smith, C., & Thornberry, T. P. (1995). The relationship between childhood maltreatment and adolescent involvement in delinquency. *Criminology, 33*, 451-481.
- Snyder, H. N., & Sickmund, M. (1999). *Juvenile offenders and victims: 1999 National report*. National Center for Juvenile Justice, Office of Juvenile Justice and Delinquency Prevention. Available at: <http://www.ncjrs.org/html/ojjdp/nationalreport99>.
- Spaccarelli, S. (1994). Stress, appraisal, and coping in child sexual abuse: A theoretical and empirical review. *Psychological Bulletin, 116*, 340-362.
- Spinetta, J. J., & Rigler, D. (1972). The child-abusing parent: A psychological review. *Psychological Bulletin, 77*, 296-304.
- Squire, L. (1989). On the course of forgetting in very long-term memory. *Journal of Experimental Psychology: Learning, Memory, and Cognition, 15*, 241-245.
- Stattin, H., & Magnusson, D. (1989). The role of early aggressive behavior in the frequency, seriousness, and types of later crime. *Journal of Consulting and Clinical Psychology, 57*, 710-718.

- Steel, B. J., & Pollack, C. B. (1968). A psychiatric study of parents who abuse infants and small children. In R. E. Helfer & C. H. Kempe (Eds.), *The battered child* (pp. 103-147). Chicago, IL: University of Chicago Press.
- Stouthamer-Loeber, M., Loeber, R., Wei, E., Farrington, D.P., & Wikström, P-O.H. (2002). Risk and promotive effects in the explanation of persistent serious delinquency in boys. *Journal of Consulting and Clinical Psychology* 70:111–123.
- Stouthamer-Loeber, M., Loeber, R., Homish, D. L., & Wei, E. (2001). Maltreatment of boys and the development of disruptive and delinquent behavior. *Development and Psychopathology*, 13, 941-955.
- Straus, M. A., Hamby, S. L., Finkelhor, D., Moore, D. W., & Runyan, D. (1997). *Identification of child maltreatment with the Parent-Child Conflict Tactics Scales: Development and psychometric data from a national sample of American parents*. Durham, NH: University of New Hampshire, Family Research Laboratory.
- Swahn, M. H., Whitaker, D. J., Phippen, C. B., Leeb, R. T., Teplin, L. A., Abram, K. M., & McClelland, G. M. (2006). Concordance between self-reported maltreatment and court records of abuse or neglect among high-risk youths. *American Journal of Public Health*, 96, 1849-1853.
- Teplin, L. A., Abram, K. M., McClelland, G. M., Dulcan, M. K., & Mericle, A. A. (2002). Psychiatric disorders in youth in juvenile detention. *Archives of General Psychiatry*, 59, 1133-1143.
- US Bureau of the Census (2001a). *Population by Race and Hispanic or Latino Origin for the United States: 1990 and 2000*. Washington, DC: US Department of Commerce.
- US Bureau of the Census (2001b). *The Hispanic Populations*. Washington, DC: US Department of Commerce.
- US Department of Health and Human Services (2001). *Youth violence: A report of the Surgeon General*. Rockville, MD: Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Injury Prevention and Control; Substance Abuse and Mental Health Services Administration, Center for Mental Health Services; and National Institutes of Health, National Institute of Mental Health.
- US Department of Health and Human Services, Administration on Children, Youth and Families (2000). *Child abuse and neglect State statutes elements: Reporting laws, number 1, definitions of child abuse and neglect*. Washington, DC: US Government Printing Office.
- US Department of Health and Human Services, Administration on Children, Youth and Families (2007). *Child Maltreatment 2005*. Washington, DC: US Government Printing Office.

- US Department of Justice, Federal Bureau of Investigation (2006). *Crime in the United States 2004*. Washington, DC: US Government Printing Office.
- Walker, E. A., Gelfand, A., Katon, W. J., Koss, M. P., Von Korff, M., Bernstein, D., & Russo, J. (1999). Adult health status of women with histories of childhood abuse and neglect. *American Journal of Medicine, 107*, 332-339.
- Webster, C. D., Douglas, K. S., Eaves, D., & Hart, S. D. (1997). HCR-20: Assessing the risk for violence (Version 2). Vancouver: Mental Health, Law, and Policy Institute, Simon Fraser University.
- Weeks, R., & Widom, C. S. (1998). Self-reports of early childhood victimization among incarcerated adult male felons. *Journal of Interpersonal Violence, 13*, 346-362.
- Weis, J. G. (1986). Issues in the measurement of criminal careers. In A. Blumstein, J. Cohen, J. A. Roth, & C. A. Visher (Eds.), *Criminal careers and "career criminals"* (pp. 1-51). Washington, DC: National Academy Press.
- White, H. R. (1990). The drug use delinquency connection in adolescence. In R. Weisheit (Ed.), *Drugs, crime, and the criminal justice system* (pp. 215-256). Cincinnati, OH: Anderson, Criminal Justice Division.
- White, H. R. (1997). Alcohol, illicit drugs, and violence. In D. Stoff, J. Brieling, & J. D. Maser (Eds.), *Handbook of antisocial behavior* (pp. 511-523). New York: John Wiley & Sons, Inc.
- White, J. L., Moffitt, T. E., Caspi, A., Bartusch, D. J., Needles, D., & Stouthamer-Loeber, M. (1994). Measuring impulsivity and examining its relation to delinquency. *Journal of Abnormal Psychology, 103*, 192-205.
- White, J. L., Moffitt, T. E., & Silva, P. A. (1989). A prospective replication of the protective effects of IQ in subjects at high risk for juvenile delinquency. *Journal of Consulting and Clinical Psychology, 57*, 719-724.
- White, H. R., & Widom, C. S. (2003). Intimate partner violence among abused and neglected children in young adulthood: The mediating effects of early aggression, antisocial personality, hostility, and alcohol problems. *Aggressive Behavior, 29*, 332-345.
- Wicks, J. (1991). Child Abuse Module of Columbia University Noncore SURF. New York State Psychiatric Institute.
- Widom, C. S. (1989). Does violence beget violence? A critical examination of the literature. *Psychological Bulletin, 106*, 3-28.
- Widom, C. S. (1997). Accuracy of adult recollections of early childhood abuse. In: D. J. Read &

- D. S. Lindsay (Eds.). *Recollections of trauma: Scientific evidence and clinical practice* (pp. 49-78). New York: Plenum Press.
- Widom, C. S. (1999). Posttraumatic stress disorder in abused and neglected children grown up. *American Journal of Psychiatry, 156*, 1223-1229.
- Widom, C. S., & Morris, S. (1997). Accuracy of adult recollections of childhood victimization: Part 2. Childhood sexual abuse. *Psychological Assessment, 9*, 34-46.
- Widom, C. S., & Shepard, R. L. (1996). Accuracy of adult recollections of childhood victimization: Part 1. Childhood physical abuse. *Psychological Assessment, 8*, 412-421.
- Widom, C. S., Weiler, B. L., & Cottler, L. B. (1999). Childhood victimization and drug abuse: A comparison of prospective and retrospective findings. *Journal of Consulting and Clinical Psychology, 67*, 867-880.
- Widom, C. S., & White, H. R. (1997). Problem behavior in abused and neglected children grown-up: Prevalence and co-occurrence of substance abuse, crime, and violence. *Criminal Behavior and Mental Health, 7*, 287-310.
- Wordes, M., Bynum, T. C., & Corley, C. J. (1994). Locking up youth: The impact of race on detention decisions. *Journal of Research in Crime and Delinquency, 31*, 149-165.
- Zingraff, M. T., Leiter, J., Myers, K. A., & Johnsen, M. C. (1993). Child maltreatment and youthful problem behavior. *Criminology, 31*, 173-202.

Appendix A. Review of recent empirical literature on relationship between neglect and violence

| Year | Author(s) Journal | Type of study | Sample | | | | Type of Maltreatment | Measures | | Main Findings |
|------|--|--|--|-----------|-------------------------|---|--|--|-----------------|---|
| | | | N | Sex | Age | Race/Ethn | | Victimization | Perpetration | |
| 2002 | English, Widom, & Brandford <i>Final report (NCJRS)</i> | Prospective design (18 yr follow-up). Replication and extension of Widom's 1989 study. | Non-random sample of 877 maltreated children (dependents of the State of Washington); 877 nonmaltreated controls identified from Dept. of Health birth records matched on age, sex, race, and SES. | 47% male | Mean at follow-up: 24 y | 70% W 22% AA 6% NA 2% Other | Physical abuse, sexual abuse, neglect. | Maltreatment records, plus dependent status (i.e., child was placed in care of the state). | Arrest records. | Experience of neglect predicted higher rates of arrest for violence than no maltreatment: 31.3% vs. 8.9%. |
| 1998 | Weeks & Widom <i>J Interpersonal Violence</i> | Retrospective design. | Random sample of 301 convicted felons from a New York State medium-correctional facility. | 100% male | 30 y | 56% AA 24% H 18% W 2% Other | Physical abuse, sexual abuse, neglect. | Self-report on history of maltreatment (Conflict Tactics Scale, Self-Report of Abuse). | Arrest records. | Neglect was the only form of childhood victimization that differentiated the violent (19.8%) and nonviolent (5.6%) groups. |
| 1996 | Maxfield & Widom <i>Arch Pediatr Adolesc Med</i> | Prospective cohorts design (26 yr follow-up). | Non-random sample of 908 maltreated children from a metropolitan area in the Midwest; 667 nonmaltreated controls matched on age, sex, race, and SES. | 49% male | Mean at follow-up: 32 y | 67% W 31% AA 0.5% H 1.5% Unknown | Physical abuse, sexual abuse, neglect. | Maltreatment records. | Arrest records. | Experience of neglect predicted higher rates of arrest for violence than no maltreatment: 20.2% vs. 13.9%. |
| 1993 | Zingraff, Leiter, Myers, & Johnsen <i>Criminology</i> | Prospective design (6 yr follow-up). | Random sample of 655 maltreated children from medium-size city in North Carolina; nonmaltreated controls: 281 students, 177 impoverished children. | 46% male | Mean at follow-up: 15 y | 45% W | Physical abuse, sexual abuse, neglect. | Maltreatment records. | Arrest records. | Neglect appeared to have no impact on violent arrest rates (for both the maltreatment-school and maltreatment-poverty comparisons). |

Appendix B. Review of recent empirical literature on relationship between physical abuse and violence

| Year | Author(s) Journal | Type of study | Sample | | | | Type of Maltreatment | Measures | | | Main Findings |
|------|--|--|--|-----------|-------------------------|---|--|--|---|---|---------------|
| | | | N | Sex | Age | Race/Ethn | | Victimization | Perpetration | | |
| 2003 | Ehrensaft, Cohen, Brown, Smailes, Chen, & Johnson <i>J Consult Clin Psychol</i> | Children in the Community (CIC) study. Prospective design (20 yr follow-up; 4 interviews). | Random sample of 543 school children from 2 upstate New York counties; 46 maltreated children, 497 nonmaltreated children. | 45% male | Mean at follow-up: 31 y | 91% W | Physical abuse, sexual abuse, neglect. | Maltreatment records. Self-report of child abuse or neglect. | Self-report on violence towards partner (Conflict Tactics Scale). | Overall: victims of childhood physical abuse were 6 times as likely as non-victims to commit violence towards a partner (18% vs. 3%). Gender: no differences. | |
| 2002 | English, Widom, & Brandford <i>Final report (NCJRS)</i> | Prospective design (18 yr follow-up). Replication and extension of Widom's 1989 study. | Non-random sample of 877 maltreated children (dependents of the State of Washington); 877 nonmaltreated controls identified from Dept. of Health birth records matched on age, sex, race, and SES. | 47% male | Mean at follow-up: 24 y | 70% W 22% AA 6% NA 2% Other | Physical abuse, sexual abuse, neglect. | Maltreatment records, plus dependent status (i.e., child was placed in care of the state). | Arrest records. | Experience of physical abuse only predicted higher rates of arrest for violence than no maltreatment: 30.3% vs. 8.9%. | |
| 2001 | Herrera & McCloskey <i>Child Abuse & Neglect</i> | Prospective design (5-yr follow-up). | Non-random sample of 299 families with a school-age child from a midsize city in Arizona; 129 families with family violence present, 170 families without family violence. | 51% male | Mean: 14 y | 56% W 34% H 4% AA 4% NA 2% A | Physical abuse. | Self-report (by youths and mothers) on physical abuse (Conflict Tactics Scale). | Arrest records. | Overall: 17% of physically abused children had a violent arrest vs. 5% of nonmaltreated children; significant. Males: physical abuse did not predict violent arrest for males. Females: physically abused females were over 7 times more likely to commit a violent crime. | |
| 1998 | Weeks & Widom <i>J Interpersonal Violence</i> | Retrospective design. | Random sample of 301 convicted felons from a New York State medium-correctional facility. | 100% male | 30 y | 56% AA 24% H 18% W 2% Other | Physical abuse, sexual abuse, neglect. | Self-report on history of maltreatment (Conflict Tactics Scale, Self-Report of Childhood Abuse). | Arrest records. | Violent and nonviolent adult male felons did not differ in the extent to which they reported childhood physical abuse. | |
| 1996 | Maxfield & Widom <i>Arch Pediatr Adolesc Med</i> | Prospective cohorts design (26 yr follow-up). | Non-random sample of 908 maltreated children from a metropolitan area in the Midwest; 667 nonmaltreated controls matched on age, sex, race, and SES. | 49% male | Mean at follow-up: 32 y | 67% W 31% AA 0.5% H 1.5% Unknown | Physical abuse, sexual abuse, neglect. | Maltreatment records. | Arrest records. | Experience of physical abuse only predicted higher rates of arrest for violence than no maltreatment: 21.1% vs. 13.9%. | |
| 1993 | Zingraff, Leiter, Myers, & Johnsen <i>Criminology</i> | Prospective design (6 yr follow-up). | Random sample of 655 maltreated children from medium-size city in North Carolina; nonmaltreated controls: 281 students, 177 impoverished children. | 46% male | Mean at follow-up: 15 y | 45% W | Physical abuse, sexual abuse, neglect. | Maltreatment records. | Arrest records. | Physical abuse appeared to have no impact on violent arrest rates (for both the maltreatment-school and maltreatment-poverty comparisons). | |

Appendix C. Review of recent empirical literature on relationship between sexual abuse and violence

| Year | Author(s) Journal | Type of study | Sample | | | Type of Maltreatment | Measures | | Main Findings | |
|------|--|---|--|-----------|-------------------------|---|--|--|-----------------|--|
| | | | N | Sex | Age | | Race/Ethn | Victimization | | Perpetration |
| 2002 | English, Widom, & Brandford <i>Final report (NCJRS)</i> | Prospective design (18 yr follow-up). Replication and extension of Widom's 1989 study. | Non-random sample of 877 maltreated children (dependents of the State of Washington); 877 nonmaltreated controls identified from Dept. of Health birth records matched on age, sex, race, and SES. | 47% male | Mean at follow-up: 24 y | 70% W 22% AA 6% NA 2% Other | Physical abuse, sexual abuse, neglect. | Maltreatment records, plus dependent status (i.e., child was placed in care of the state). | Arrest records. | Sexual abuse only predicted higher rates of arrest for violence than no maltreatment: 16.5% vs. 8.9%. |
| 1998 | Weeks & Widom <i>J Interpersonal Violence</i> | Retrospective design. | Random sample of 301 convicted felons from a New York State medium-correctional facility. | 100% male | 30 y | 56% AA 24% H 18% W 2% Other | Physical abuse, sexual abuse, neglect. | Self-report on history of maltreatment (Conflict Tactics Scale) | Arrest records. | Violent and nonviolent adult male felons did not differ in the extent to which they reported childhood sexual abuse. |
| 1996 | Maxfield & Widom <i>Arch Pediatr Adolesc Med</i> | Prospective cohorts design (26-yr follow-up). | Non-random sample of 908 maltreated children from a metropolitan area in the Midwest; 667 nonmaltreated controls matched on age, sex, race, and SES. | 49% male | Mean at follow-up: 32 y | 67% W 31% AA 0.5% H 1.5% Unknown | Physical abuse, sexual abuse, neglect. | Maltreatment records. | Arrest records. | Victims of sexual abuse only were not at greater risk of a violent arrest compared to controls (8.8% vs. 13.9%). |
| 1993 | Zingraff, Leiter, Myers, & Johnsen <i>Criminology</i> | Prospective design (6 yr follow-up). | Random sample of 655 maltreated children from medium-size city in North Carolina; nonmaltreated controls: 281 students, 177 impoverished children. | 46% male | Mean at follow-up: 15 y | 45% W | Physical abuse, sexual abuse, neglect. | Maltreatment records. | Arrest records. | Sexual abuse appeared to have no impact on violent arrest rates (for both the maltreatment-school and maltreatment-poverty comparisons). |

Appendix D. Review of recent empirical literature on relationship between multiple types of maltreatment and violence

| Year | Author(s) Journal | Type of study | Sample | | | | Type of Maltreatment | Measures | | Main Findings |
|------|--|---|--|----------|-------------------------|---|--|--|-----------------|---|
| | | | N | Sex | Age | Race/Ethn | | Victimization | Perpetration | |
| 2002 | English, Widom, & Brandford <i>Final report (NCJRS)</i> | Prospective design (18 yr follow-up). Replication and extension of Widom's 1989 study. | Non-random sample of 877 maltreated children (dependents of the State of Washington); 877 nonmaltreated controls identified from Dept. of Health birth records matched on age, sex, race, and SES. | 47% male | Mean at follow-up: 24 y | 70% W 22% AA 6% NA 2% Other | Physical abuse, sexual abuse, neglect. | Maltreatment records, plus dependent status (i.e., child was placed in care of the state). | Arrest records. | Experience of multiple types of abuse predicted higher rates of arrest for violence than no maltreatment: 23.9% vs. 8.9%. |
| 1996 | Maxfield & Widom <i>Arch Pediatr Adolesc Med</i> | Prospective cohorts design (26-yr follow-up). | Non-random sample of 908 maltreated children from a metropolitan area in the Midwest; 667 nonmaltreated controls matched on age, sex, race, and SES. | 49% male | Mean at follow-up: 32 y | 67% W 31% AA 0.5% H 1.5% Unknown | Physical abuse, sexual abuse, neglect. | Maltreatment records. | Arrest records. | Victims of multiple types of abuse/neglect were not at greater risk of a violent arrest compared to controls (14.3% vs. 13.9%). |

Appendix E. Review of recent empirical literature on relationship between any maltreatment and violence

| Year | Author(s) Journal | Type of study | Sample | | | | Type of Maltreatment | Measures | | Main Findings |
|------|--|--|--|----------|-------------------------|---|--|--|---|--|
| | | | N | Sex | Age | Race/Ethn | | Victimization | Perpetration | |
| 2003 | Ehrensaft, Cohen, Brown, Smailes, Chen, & Johnson <i>J Consult Clin Psychol</i> | Children in the Community (CIC) study. Prospective design (20 yr follow-up; 4 interviews). | Random sample of 543 school children from 2 upstate New York counties: 46 maltreated children, 497 nonmaltreated children. | 45% male | Mean at follow-up: 31 y | 91% W | Physical abuse, sexual abuse, neglect. | Maltreatment records. Self-report of child abuse or neglect. | Self-report on violence towards partner (Conflict Tactics Scale). | Overall: victims of childhood physical abuse were 6 times as likely as non-victims to commit violence towards a partner (18% vs. 3%). Gender: no differences. |
| 2003 | White & Widom, <i>Aggressive Behavior</i> | Prospective cohorts design (20-yr follow-up). | Non-random sample of 676 maltreated children from a metropolitan area in the Midwest; 520 nonmaltreated controls matched on age, sex, race, and SES. | 49% male | Mean at follow-up: 29 y | 67% W 31% AA 0.5% H 1.5% Unknown | Physical abuse, sexual abuse, neglect. | Maltreatment records. | Self-report on intimate partner violence (interview). | Overall: 53.0% of abused and/or neglected individuals vs. 41.1% of nonmaltreated individuals reported perpetration of partner violence: significant. Males: 37.8% (maltreated) vs. 27.8% (nonmaltreated): sign. Females: 65.5% (maltreated) vs. 54.6% (nonmaltreated): sign. Gender: maltreated females were almost twice as likely as maltreated males to perpetrate partner violence. |
| 2002 | English, Widom, & Brandford <i>Final report (NCJRS)</i> | Prospective design (18 yr follow-up). Replication and extension of Widom's 1989 study. | Non-random sample of 877 maltreated children (dependents of the State of Washington); 877 nonmaltreated controls identified from Dept. of Health birth records matched on age, sex, race, and SES. | 47% male | Mean at follow-up: 24 y | 70% W 22% AA 6% NA 2% Other | Physical abuse, sexual abuse, neglect. | Maltreatment records, plus dependent status (i.e., child was placed in care of the state). | Arrest records. | Overall: 27.1% of abused and/or neglected individuals vs. 8.9% of nonmaltreated individuals had ever been arrested for a violent crime: significant. Males: 40.2% (maltreated) vs. 16.4% (nonmaltreated): significant. Females: 15.4% (maltreated) vs. 2.2% (nonmaltreated): significant. Caucasians: 21.1% (maltreated) vs. 3.6% (nonmaltreated): significant. African Americans: 47.4% (maltreated) vs. 24.7% (nonmaltreated): significant. Native Americans: 29.4% (maltreated) vs. 15.7% (nonmaltreated): not significant. |

Appendix E. Review of recent empirical literature on relationship between any maltreatment and violence

| Year | Author(s) Journal | Type of study | Sample | | | | Type of Maltreatment | Measures | | Main Findings |
|------|---|--|---|-----------|---------------------------|---|--|--|--|--|
| | | | N | Sex | Age | Race/Ethn | | Victimization | Perpetration | |
| 2001 | Stouthamer-Loeber, Loeber, Homish, & Wei <i>Dev and Psycho pathology</i> | Pittsburgh Youth Study. Prospective design (10 waves). | Random sample of 506 7th grade public school students and their primary caretakers in Pittsburgh; 52 maltreated boys, 454 nonmaltreated boys matched on race, age, and SES. | 100% male | Mean at follow-up: 19.5 y | 58% AA 42% W | Physical abuse, sexual abuse, neglect. | Maltreatment records. | Arrest records. Self-report of delinquency (Self-Reported Delinquency Interview; Youth Self-Report). | Overall: 50.8% of abused and/or neglected males vs. 34.4% of nonmaltreated males reported having engaged in violent behavior: significant. Males: 32.8% of abused and/or neglected males vs. 16.2% of nonmaltreated males had a juvenile arrest record for a violent crime: significant. |
| 1998 | Weeks & Widom <i>J Interpersonal Violence</i> | Retrospective design. | Random sample of 301 convicted felons from a New York State medium-correctional facility. | 100% male | 30 y | 56% AA 24% H 18% W 2% Other | Physical abuse, sexual abuse, neglect. | Self-report on history of maltreatment (Conflict Tactics Scale, Self-Report of Childhood Abuse). | Arrest records. | The majority (68.4%) of incarcerated male felons reported some form of childhood victimization: 35% reported physical abuse, 16% reported neglect, and 14% reported sexual abuse. |
| 1996 | Maxfield & Widom <i>Arch Pediatr Adolesc Med</i> | Prospective cohorts design (26-yr follow-up). | Non-random sample of 908 maltreated children from a metropolitan area in the Midwest; 667 nonmaltreated controls matched on age, sex, race, and SES. | 49% male | Mean at follow-up: 32 y | 67% W 31% AA 0.5% H 1.5% Unknown | Physical abuse, sexual abuse, neglect. | Maltreatment records. | Arrest records. | Overall: 18.1% of abused and/or neglected individuals vs. 13.9% of nonmaltreated individuals had ever been arrested for a violent crime: significant. Males: 28.4% (maltreated) vs. 24.2% (nonmaltreated): not significant. Females: 8.2% (maltreated) vs. 3.6% (nonmaltreated): significant. Caucasians: 11.0% (maltreated) vs. 9.7% (nonmaltreated): not significant. African Americans: 34.2% (maltreated) vs. 21.8% (nonmaltreated): significant. |

Appendix E. Review of recent empirical literature on relationship between any maltreatment and violence

| Year | Author(s) Journal | Type of study | Sample | | | | Type of Maltreatment | Measures | | Main Findings |
|------|--|---|--|----------|-------------------------|--------------------------|--|-----------------------|------------------------------|--|
| | | | N | Sex | Age | Race/Ethn | | Victimization | Perpetration | |
| 1995 | Smith & Thornberry <i>Criminology</i> | Rochester Youth Development Study. Prospective design (4-yr follow-up). | Random sample of 1,000 7th and 8th grade public school students from Rochester, New York; 171 maltreated children and 829 nonmaltreated children. | 74% male | Mean at follow-up: 17 y | 68% AA 15% W 17% H | Physical abuse, sexual abuse, neglect. | Maltreatment records. | Arrest records. Self-report. | Maltreated children were more likely than nonmaltreated children to report violent perpetration (69.6% vs. 56.0%). |
| 1993 | Zingraff, Leiter, Myers, & Johnsen <i>Criminology</i> | Prospective design (6 yr follow-up). | Random sample of 655 maltreated children from medium-size city in North Carolina; nonmaltreated controls: 281 students, 177 impoverished children. | 46% male | Mean at follow-up: 15 y | 45% W | Physical abuse, sexual abuse, neglect. | Maltreatment records. | Arrest records. | Maltreatment appeared to have no impact on violent arrest rates (for both the maltreatment-school and maltreatment-poverty comparisons). |