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Pathways from Child Maltreatment to Juvenile Delinquency:

Sexualized Behaviors and Loneliness

A dissertation submitted in partial satisfaction of the requirements for the degree

Doctor of Philosophy

in

Clinical Psychology

by

Melissa Teresa Peláez Merrick

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2008

The dissertation of Melissa Teresa Peláez Merrick is approved, and

it is acceptable in quality and form for publication on microfilm:

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Chair

University of California, San Diego

San Diego State University

2008

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"You must be the change you want to see in the world."

-Mahatma Gandhi

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ABSTRACT OF THE DISSERTATION

Pathways from Child Maltreatment to Juvenile Delinquency:

Sexualized Behaviors and Loneliness

by

Melissa Teresa Peláez Merrick

Doctor of Philosophy in Clinical Psychology

University of California, San Diego, 2008

San Diego State University, 2008

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The link between child maltreatment and juvenile delinquency has been repeatedly documented. Empirical prospective research delineating the factors responsible for this relationship (i.e., mediators), however, is relatively sparse. Because many of the outcomes of child maltreatment (e.g., sexualized behaviors, loneliness) are risk factors for juvenile delinquency, this relationship could likely be mediated by these variables.

The present investigations utilized samples of children from the LONGSCAN Consortium, a prospective multi-site examination of the effects of early childhood maltreatment, to examine whether sexualized behaviors and loneliness partially mediate the effect of maltreatment timing and type on delinquent behaviors. Study 1 utilized a single-site sample of children who had been removed from their homes prior to age 4 for substantiated maltreatment to test the mediational roles of sexualized behaviors (N=202) and loneliness (N=152). Study 2 utilized a multi-site sample of children deemed high-risk for experiencing maltreatment to investigate the mediational role of sexualized behaviors (N=804).

The hypothesized mediation models were tested using structural equation modeling procedures in EQS 6.1. The results suggested that maltreatment timing and type were not related to delinquency in the early maltreated sample (Study 1). However, in the multi-site sample of children at risk for maltreatment (Study 2), not only was maltreatment related to delinquency (β = .308; p < .05), but sexualized behaviors partially mediated the relationship between maltreatment and delinquency (β = .298; p < .05). Children with more maltreatment reports before age 8 had increased sexualized behaviors at age 8, which in turn predicted greater delinquent behaviors at age 12. As hypothesized, children with late reports of maltreatment (reports between ages 4 and 8), particularly those with late physical and/or emotional abuse reports, exhibited greater sexualized behaviors, which resulted in more subsequent delinquent behaviors, when compared to children without maltreatment reports or to those children with only early maltreatment reports (reports before age 4).

The clinical implications of the present investigations are many. Abused and neglected children must have solid coping strategies in order to buffer the numerous associated negative effects, such as juvenile delinquency. Sexualized behaviors and loneliness likely represent two indicators of faulty coping strategies, both of which were found to predict delinquent behaviors in the current investigations. By better conceptualizing the maltreatment-related predictors of sexualized behaviors and loneliness, interventions can be specifically tailored for maltreated children before they become a part of the juvenile justice system.

Introduction

Nearly one million children are maltreated each year in the United States (U.S. Congress, 2003). The literature linking maltreatment to problematic behavioral and mental health outcomes is extensive (e.g., Bolger & Patterson, 2001; Knutson, 1995; Landsverk & Garland, 1999; Litrownik et al., 2005; Peláez, 2005b; Peláez, Everson, & Litrownik, 2004; Weiler & Widom, 1996; Widom, 1989, 1991; Widom & White, 1997), with the link between maltreatment and subsequent delinquent behavior being repeatedly well substantiated (e.g., Behl, 2003; Grisso, 2002; Hamilton, Falshaw, & Browne, 2002; Haugaard & Feerick, 2002; Loeber & Farrington, 2000; Preski & Shelton, 2001; Schwartz & Rendon, 1994). A leading public health concern in the United States, juvenile delinquency accounts for an estimated 2.3 million arrests each year (Loeber & Farrington, 2000). Juveniles accounted for 17% of all arrests and 15% of all violent crime arrests in 2002 (Snyder, 2004). Because many of the outcomes of child maltreatment (e.g., sexualized behaviors, loneliness) are risk factors for juvenile delinquency, the relationship between maltreatment and delinquency is likely mediated by these variables. However, empirical prospective research delineating possible mediators is relatively sparse, as are studies guided by a developmental framework that can identify the many domains of risk and protective factors at different periods in a child's life. As a result, there has been a call for longitudinal, theory-based research that will serve to inform the development, evaluation, and dissemination of effective prevention and intervention programs (U.S. Department of Health and Human Services [USDHHS], 1999). To address this need, the current

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investigations began to explain the relationship between child maltreatment and juvenile delinquency by examining sexualized behaviors and loneliness as two outcomes of the maltreatment experience that are likely linked to juvenile delinquent behavior. Two mediational models were posited to test the mediating roles of sexualized behaviors and loneliness in a sample of maltreated children (Study 1). Study 2 examined the mediating role of sexualized behaviors in a multi-site sample of children at high-risk for maltreatment.

Child Maltreatment

Child maltreatment is a key social problem in the United States, with more than 900,000 children experiencing some form of maltreatment each year and an estimated incidence of 12.4 per 1,000 children (U.S. Congress, 2003). Defining maltreatment, however, is a complicated endeavor and many researchers differ in how they operationalize this construct, often guided by theory but sometimes based on convenience (Johnson-Reid, 1998). In reality, maltreated children represent a largely heterogeneous population, with some children experiencing acts of commission by a perpetrator (i.e., physical, sexual, and emotional abuse), experiencing acts of omission by a parent or guardian (i.e., physical and emotional neglect), witnessing domestic violence, and still others experiencing multiple types of abuse and/or neglect (Claussen & Crittenden, 1991; Kingree, Phan, & Thompson, 2003; Knutson, 1995; Loos & Alexander, 1997). The National Research Council (1993) recommended specification of relevant maltreatment dimensions to better understand and explain the antecedents and outcomes of childhood maltreatment beyond the occurrence of

maltreatment alone. Essential to research on child maltreatment, therefore, is

information beyond maltreatment type; information regarding the severity, timing, age

of onset, resulting injury, recency, chronicity, substantiation, and frequency of

maltreatment exposure is necessary to fully capture maltreatment experiences (e.g.,

Bolger & Patterson, 2001; Gover & MacKenzie, 2003; Leiter & Myers, 1994;

Litrownik et al., 2005; Thompson et al., 2001; Thornberry, Ireland, & Smith, 2001).

Maltreatment has been linked to a wide range of adjustment problems. These

problems include, but are not limited to, difficulties in affect regulation (Ciccheti,

Ganiban, & Barnett, 1991; Shipman, Schneider, & Sims, 2005), formation of

attachment relationships (Lamb, Gaensbauer, Malkin, & Schultz, 1985), development

of an integrated self-concept (Fischer & Ayoub, 1994), language acquisition (Fox,

Long, & Langlois, 1988), formation of positive interactions with peers (McCloskey &

Stuewig, 2001; Salzinger, Feldman, Hammer, & Rosario, 1993), and adjustment to the

academic and social demands of school (Eckenrode, Laird, & Doris, 1993; Kendall-

Tackett & Eckenrode, 1996; Rowe & Eckenrode, 1999). Depending on the precise

definitions of child maltreatment, estimates of the prevalence of developmental and

mental health problems for abused and neglected children in foster care samples vary

from approximately 50 to over 80 percent, and these rates are significantly higher than

the prevalence of such problems in socio-economically comparable samples

(Landsverk & Garland, 1999; Pilowsky, 1995). The observed higher rates of mental

health problems, including anxiety disorders, depression, dissociation, and post-

traumatic stress disorder in maltreated children (Gover & MacKenzie, 2003; Lansford

et al., 2002) have been attributed to the experienced maltreatment in combination with exposure to multiple risk factors, including the life disruption associated with placement in out-of-home care (e.g., an emergency shelter, foster care; Claussen et al., 1998; McMahon & Clay-Warner, 2002). Further, the literature linking maltreatment to specific problem behaviors is extensive, with childhood maltreatment being strongly associated with physical and verbal aggressive, antisocial, conduct-disordered, avoidant, and delinquent problem behaviors (Bolger & Patterson, 2001; Cicchetti & Toth, 1995; Eckenrode et al., 2001; Kendall-Tackett & Eckenrode, 1996; Knutson, 1995; Newton, Litrownik, & Landsverk, 2000; Pithers & Gray, 1998; Pithers, Gray, Busconi, & Houchens, 1998). Perhaps it comes as no surprise that maltreated children demonstrate high rates of negative long-term outcomes, with many showing both internalizing and externalizing behaviors in the clinical range (Garland, Landsverk, & Lau, 2003); however, presently there is a limited literature regarding evidence-based interventions aimed at improving outcomes (like juvenile delinquency) for this vulnerable population of children (Dozier, Albus, Fisher, & Sepulveda, 2002).

Juvenile Delinquency

Juvenile delinquency is a leading public health concern in the United States (Loeber & Farrington, 2000; Snyder, 2004). An estimated 2.3 million arrests of individuals under the age of 18 were made by U.S. law enforcement agencies in 2002. Juveniles accounted for 17% of all arrests and 15% of all violent crime arrests in that same year, with 29% of arrested juveniles being female (Snyder, 2004). While these

arrest records do represent a decline in juvenile crime since the early 1980's, the precise acts which warrant arrest have changed over the years, with many minors being arrested for status offenses like truancy and runaway behavior twenty years ago (Loeber, Farrington, & Petechuk, 2003; Snyder, 2004). Still, official records are likely an underestimate of the scope of juvenile delinquency because arrests are made not when individuals violate any social norm, but rather only when those violations are severe enough to warrant arrest (Grogan-Kaylor & Otis, 2003). Thus, some researchers recommend the examination of self-reports of juvenile violence and delinquent behavior to capture the offenses that do not result in arrest or conviction and to use arrest records as only a proxy for identifying delinquent behavior (Farrington & Loeber, 2000; Grogan-Kaylor & Otis, 2003; Haapasalo & Moilanen, 2004). Irrespective of the precise methods used for operationally defining juvenile delinquency, there is ample evidence suggesting that both the monetary and social costs of the phenomenon are quite high (Horton, 1998; Loeber & Farrington, 2000).

Many precursors to juvenile delinquency have been identified and explored, as it is quite rare that delinquency occurs without warning. While some children may engage in delinquent acts for adventure or excitement, most offending behavior develops within a larger deviant context in which children and youth learn the difference between prosocial and antisocial behaviors by trial and error. In other words, many delinquent behaviors begin with disruptive nondelinquent behaviors (Stouthamer-Loeber, Loeber, Homish, & Wei, 2001). Further, impulsiveness, low intelligence, hyperactivity, risk-taking, and attention problems have been implicated in

the exhibition of subsequent delinquent behaviors (Farrington & Loeber, 2000;

Stevenson, 2001). While these represent some of the child risk factors, family, school,

neighborhood/situational, and social/peer risk factors have also been examined (e.g.,

Loeber, Farrington, & Petechuk, 2003; McMahon & Clay-Warner, 2002; Widom &

White, 1997). In general, childhood aggression and child maltreatment are two of the

most robust predictors of juvenile delinquency and adult criminality (Farrington &

Loeber, 2000; Stevenson, 2001; Widom, 1989, 1991; Widom & White, 1997).

The Link between Child Maltreatment and Juvenile Delinquency

Overall, the link between child maltreatment and juvenile delinquency has been

well-documented (e.g., Behl, 2003; Grisso, 2002; Hamilton et al., 2002; Haugaard &

Feerick, 2002; Loeber & Farrington, 2000; Preski & Shelton, 2001; Schwartz &

Rendon, 1994). Not only do abused and neglected children have a significantly

increased risk for becoming delinquent (i.e., engaging in delinquent behaviors), but

they are also likely to begin engaging in such behavior one year earlier than

nonmaltreated delinquents and to have approximately twice the number of offenses

(Widom, 1991). In studies where a relationship is not found between child

maltreatment and juvenile delinquency, often a relationship is found between

maltreatment and adult criminality (e.g., Siegal & Williams, 2003). Nevertheless, the

underlying mechanisms through which the relationship between maltreatment and

delinquency is explained and maintained are not very well understood (Preski &

Shelton, 2001; Quas, Bottoms, & Nuñez, 2002; Schwartz & Rendon, 1994). Victims

of maltreatment and those who engage in delinquent behaviors share many

characteristics (Stouthamer-Loeber et al., 2002). Because many of the outcomes of child maltreatment (e.g., sexualized behaviors, loneliness) are risk factors for juvenile delinquency, this relationship could likely be mediated by these variables. However, costly more informative prospective longitudinal research in this area is scarce. The majority of studies rely on retrospective reports of child maltreatment from incarcerated or institutionalized individuals or on cross-sectional designs. Further, not all research has been guided by a developmental framework conducive to identifying the many domains of risk and protective factors at various developmental periods in a child's life. One strength of the present investigations is the utilization of data from an ongoing study (i.e., LONGSCAN) that has been informed by ecological-developmental theory and has collected data prospectively from maltreated children. Thus, many risk and protective factors on each of the child, family, school, community, and peer levels can be explored to better understand and conceptualize the relationship between early childhood maltreatment and juvenile delinquency.

Sexualized Behavior

Although our understanding of normative child psychosexual development is rather limited, the display of certain sexual behaviors is expected and appropriate (Larsson & Svedin, 2002; Sandfort & Cohen-Kettenis, 2000). Sexual behaviors begin to emerge in infancy (Friedrich, Grambsch, Broughton, Kuiper, & Beilke, 1991), with overt genital interest and play being most often observed in two- to six-year-old boys and girls (Friedrich et al., 1991; Friedrich, 1997; Friedrich, Fisher, Broughton, Houston, & Shafran, 1998; Friedrich & Trane, 2002; Kendall-Tackett & Watson,

1991; Larsson & Svedin, 2002; Lindblad, Gustafsson, Larsson, & Lundin, 1995). In addition, Friedrich and colleagues (1991) have noted that some voyeuristic and exhibitionistic behaviors are also a normal part of child development during this age period. Such overt behaviors decline with age, in part because of the socialization process whereby children tend to adopt cultural and societal morés as they enter middle childhood (Friedrich et al., 1991; Friedrich, 1998; Friedrich et al., 1998; Lindblad et al., 1995; Sandnabba, Santtila, Wannas, & Krook, 2003).

Not all sexual behaviors are normative, however. Kendall-Tackett, Williams, and Finkelhor (1993) refer to the more problematic sexual behaviors as 'sexualized' behaviors, such as inserting objects into the anus or vagina, excessive and/or public masturbation, sexual play with anatomically correct dolls, requesting sexual stimulation from adults or other children, drawing of genitals, and age-inappropriate sexual knowledge. The link between sexual abuse and such sexualized behaviors is well-documented (e.g., Drach, Wientzen, & Ricci, 2001; Friedrich, 1993; Friedrich et al., 1992; Friedrich et al., 2001; Kendall-Tackett et al., 1993; Lindblad et al., 1995; Sandnabba et al., 2003; Wherry, Jolly, Feldman, Adam, & Manjanatha, 1995). The term 'sexualized' is likely an acknowledgement of the relationship between sexual abuse and overt sexual behavior or deviance. In fact, sexual behaviors and posttraumatic stress disorder are the two outcomes most reliably associated with a sexual abuse history (Kendall-Tackett et al., 1993). However, many of the studies that examine sexual (or sexualized) behavior have been conducted with sexually abused clinical populations alone and rely on nonclinical, nonabused comparison samples.

Thus, the most problematic sexualized behaviors are almost exclusively examined in sexually abused populations (Friedrich et al., 2001; Sandfort & Cohen-Kettenis, 2000).

While sexually abused children do show more precocious sexualized behavior than their normative or psychiatric counterparts, such behaviors may in fact be the result of factors and maltreatment experiences other than sexual abuse (Friedrich, 1997; Friedrich & Trane, 2002; Larsson & Svedin, 2002). Factors such as family sexuality (e.g., parental nudity), younger age, and total number of hours in daycare have all been found to contribute to increased sexual behavior (Friedrich, 1997; Friedrich et al., 1998; Kendall-Tackett & Watson, 1991). Also, Silovsky and Niec (2002) found that in preschool children with sexual behavior problems, rates of physical abuse and witnessing violence were greater than of sexual abuse. Similarly, sexual abuse was not the primary predictor of sexually intrusive behaviors in preteens when physical abuse and witnessing domestic violence, family adversity, and child behavior factors were taken into account (Friedrich, Davies, Feher, & Wright, 2004). These findings suggest the importance of evaluating contextual variables and other types of maltreatment experiences, as they may possibly provide a partial explanation of sexualized behavior beyond what can be explained by sexual abuse history alone (Friedrich, 1997; Friedrich & Trane, 2002; Larsson & Svedin, 2002). Recognizing a need to broaden the understanding of sexualized behaviors, Friedrich and Trane (2002) have appealed for moving beyond abuse type alone in better understanding the emergence of child sexualized behaviors. Additionally, much of the limited research

that has been conducted in this area has looked only at Child Sexual Behavior

Inventory (CSBI) total scores. If the goal is to broaden the conceptualization of what

predicts sexual behaviors overall, examining the CSBI domains that comprise the

CSBI total score is an important step (Friedrich, 1997). Each domain represents a

particular type of sexual behavior, with some behaviors being quite normative and

others being more problematic.

In an effort to do just this, Merrick, Litrownik, Everson, and Cox (2008)

examined the predictive utility of timing of maltreatment, in addition to type of

maltreatment, on the five most problematic domains of sexualized behaviors on

Friedrich's CSBI in children without a documented history of sexual abuse. Sexual

behavior is operationalized into nine distinct domains in the CSBI: gender role

behavior, self-stimulation, sexual anxiety, voyeuristic behavior, boundary problems,

exhibitionism, sexual interest, sexual intrusiveness, and sexual knowledge. The latter

five domains are the more "problematic, sexualized" behaviors noted by Kendall-

Tackett and colleagues (1993). Overall, the results suggested that, on a gross level,

maltreatment reports between the ages of 4 and 8 predicted problematic sexualized

behaviors. When type of abuse was investigated within the timing of these reports,

early and late reports of physical abuse and late reports of emotional abuse

consistently predicted increased sexualized behaviors. Early emotional abuse reports,

however, were generally associated with fewer sexualized behaviors.   Therefore,

maltreatment timing and type (other than sexual abuse), although not typically

associated with sexualized behaviors in the literature, were found to account for

significant, albeit small amounts of variance in sexualized behaviors. These findings

support Friedrich and others' plea for additional examination of nontraditional

antecedents (i.e., other than sexual abuse history) of sexualized behaviors.

In addition to the relationship between maltreatment and later exhibition of

problematic sexualized behaviors, the relationship between sexualized behaviors and

later juvenile delinquency needs to be elucidated. Pithers and colleagues (1998) have

suggested that children with certain subtypes of sexualized behavior problems are

likely at greater risk of engaging in delinquent behavior. Peláez (2005b) examined

whether certain domains of sexualized behaviors at age 8 predicted juvenile

delinquency and aggression at age 12 in a sample of maltreated children. Caregiver

reports on the CSBI at age 8 and caregiver, teacher, and youth reports of delinquent

and aggressive behavior at age 12 were collected and analyzed. Results suggested that

certain domains of sexualized behavior at age 8 do predict age 12 delinquent and

aggressive outcomes. While boys and girls exhibited different patterns of sexualized

behavior, such behaviors predicted delinquency and aggression for both genders.

In all, then, sexualized behaviors are likely representative of faulty coping

strategies resulting from the maltreatment experience. In this sense, they may also be

understudied markers of maladjustment in middle childhood that can make a child

vulnerable to subsequent delinquency. While sexual behaviors have been most

studied in the context of sexual abuse, increasing evidence suggests that a broader

conceptualization of the precursors and consequences of sexualized behaviors is

warranted. Therefore, the present studies tested sexualized behaviors as a mediator in the relation between child maltreatment and juvenile delinquency.

Loneliness

It is well accepted that loneliness is a normative experience; however, what exactly is meant by loneliness has been mostly elusive, and assessing this construct has been difficult. It is now generally understood that the experience of loneliness involves two distinct components: perceived deficiency in one's social network and a level of subjective affective distress accompanying such deficiency (Asher & Paquette, 2003; West, Kellner, & Moore-West, 1986). The majority of loneliness research with children has focused on only one component of loneliness at a time, in large part because of the measures available to assess loneliness (Asher & Paquette, 2003; Hay, Payne, & Chadwick, 2004; Qualter & Munn, 2002). Also, loneliness is often overlooked in children primarily because researchers and society tend to be most concerned with overt externalizing problems because such problem behaviors often have the most immediate consequences. Yet, both components of loneliness have been confirmed in children (Hay et al., 2004), sometimes being distinguished as "social loneliness" and "emotional loneliness," respectively (Qualter & Munn, 2002). In fact, children as young as three years old can experience loneliness, with such feelings reaching a peak in adolescence and decreasing with age (West et al., 1986). Asher and Paquette (2003) concur and add that children appreciate what it means to be lonely and can reliably report on their experiences of loneliness.

Lonely children have been found to be at great risk for subsequent maladjustment, including school drop out, substance abuse, and juvenile delinquency (Howe & Parke, 2001; McCloskey & Stuewig, 2001). They are also at risk for a host of mental health problems, particularly internalizing and eating disorders (West et al., 1986). It is crucial, then, that we understand the precursors to loneliness in children (Asher & Paquette, 2003). Child maltreatment has been implicated as a key predictor of loneliness and peer rejection in children (Bolger & Patterson, 2001; Howe & Parke, 2001; Kaufman & Cicchetti, 1989; McCloskey & Stuewig, 2001; Peláez, 2005a; Salzinger et al., 2002). However, similar to the study of sexualized behaviors, much of the research on loneliness in maltreated children has examined sexually abused populations almost exclusively (e.g., Grayston, De Luca, & Boyes, 1991; Quas, Goodman, & Jones, 2003; Turner, 1993). Also, much of the early work on the connection between maltreatment and loneliness was conducted from the perspective of maltreating caregivers' experiences of loneliness, rather than victims' experiences of loneliness (e.g., Mijuskovic, 1990; Polansky, Ammons, & Gaudin, Jr., 1985). That is, the focus was on the antecedents of maltreatment, or explanations for how caregivers come to abuse or neglect their children.

Maltreated children are also at a great risk for social maladjustment, including feelings of loneliness and withdrawal from peers, as early as the preschool years (McCloskey & Stuewig, 2001). The connection between child maltreatment and loneliness is likely maintained by the factors these two constructs have in common. One example is attachment. An insecure attachment during infancy is often associated

with loneliness in children (McGuire & Clifford, 2000) and has been repeatedly found in children who have been maltreated (see Crittenden & Claussen, 2003). Attachment theorists propose that children and adults use their attachments with primary caregivers as an internal working model of relationships in general (McCloskey & Stuewig, 2001). Thus, the abused child may have an internal model of others as threatening, untrustworthy, and emotionally and/or physically absent (Howe & Parke, 2001). As such, maltreated children are likely to hold expectations that social relationships can be hurtful, and may not be at all positively reinforcing (Salzinger et al., 2002). These children may then socially isolate themselves from peers and this social isolation and withdrawal may produce increased subjective affective distress, consistent with a state of loneliness.

Similarly, social information processing theorists have posited attribution bias as a key consequence of maltreatment and predictor of loneliness. A history of maltreatment may lead to making more hostile and self-blaming attributions (Howe & Parke, 2001; Quas et al., 2003). These same attribution biases have been implicated in chronically lonely children. McGuire and Clifford (2000) note that extreme loneliness can result in maladaptive attributions that the self is to blame for poor (or no) peer relationships and that the state of loneliness is permanent and uncontrollable. Often, these unhealthy attributions are accompanied by hopelessness and pessimism about the future, predisposing the person to later feelings of loneliness (Qualter & Munn, 2002). With such faulty attributions and negative appraisals of the social world, abused and neglected children may have fewer friends and therefore fewer

opportunities to test out their cynical biases and to acquire more appropriate, realistic

attributions and social interactions (Howe & Parke, 2001; Salzinger et al., 2002).

A third process that may underlie maltreated children's risk for loneliness and

peer dissatisfaction is emotion dysregulation. The ability to regulate one's emotion is

a key task in the development and maintenance of successful peer interactions (Hay et

al., 2004). However, in large part as a consequence of the maltreatment experience,

maltreated children may have impairments in emotion regulation and the formation of

social relationships (Bolger & Patterson, 2001). A leading hypothesis is that many

maltreating caregivers have difficulty managing their own emotions, thereby making it

less likely that they will have the skills necessary to assist their children in regulating

their emotions in an appropriate, effective, and adaptive manner (Shipman et al.,

2005). The parent-child dyad is a crucial one for garnering the necessary support to

identify and manage emotions, and for providing the necessary scaffolding for

learning these novel developmental tasks. Maltreating caregivers, unfortunately, often

fail to promote prosocial skills like emotional regulation (Bolger & Patterson, 2001;

Shipman et al., 2005).

Overall, maltreated children may be insecurely attached to their caretaker,

develop hostile attributions about the social world, and experience great difficulty in

identifying and regulating their emotions. These factors are key risk factors for

loneliness. Thus, a maltreated child may avoid and withdraw from social

connectedness with peers in an effort not to be revictimized or rejected. This social

maladjustment is then very likely to make the child vulnerable to delinquency and

other risky behaviors. One of the present investigations, therefore, tested loneliness as a mediator in the relation between child maltreatment and juvenile delinquency.

Present Investigations

Since the relationship between child maltreatment and juvenile delinquency has been repeatedly established, the present investigations focused on explaining this relationship by examining two outcomes of the maltreatment experience that have been implicated as predictors of juvenile delinquency: sexualized behaviors and loneliness. Study 1 utilized a sample of children with substantiated histories of childhood maltreatment prior to age 4 and had three primary aims: 1) to examine the direct path from maltreatment (timing and type) before age 8 and delinquency assessed at age 12; 2) to test the mediational role of sexualized behaviors at age 8; and 3) to test the mediational role of loneliness at age 10. It was hypothesized that children with physical abuse reports would engage in increased delinquent behaviors (Aim 1). Late reports of physical and sexual abuse were hypothesized to predict sexualized behaviors, which were expected to predict delinquent behaviors (Aim 2). Also, early and late reports of neglect were hypothesized to lead to greater feelings of loneliness, which were expected to be associated with increased delinquent behaviors (Aim 3). Unlike Study 1, the child participants in Study 2 were from a multi-site sample of children who were at high-risk for experiencing maltreatment. As such, some Study 2 participants hadchild maltreatment reports and others did not. Study 2 had two primary aims: 1) to examine the direct path from maltreatment (timing and type) before age 8 and delinquency assessed at age 12; and 2) to test the mediational

role of sexualized behaviors at age 8. Again, it was hypothesized that physical abuse reports would be associated with the greatest delinquent behaviors (Aim 1) and that late reports of physical and sexual abuse would result in increased sexualized behaviors, resulting in increased delinquent behaviors (Aim 2). Due to multi-site data collection and the unavailability of certain measures at certain time points at various sites, loneliness was not examined in Study 2.

Method: Study 1

Participants

Recruitment

The sample for this study was drawn from the Longitudinal Studies of Child Abuse and Neglect (LONGSCAN) Consortium, which was established in 1990 with grants from the National Center on Child Abuse and Neglect. LONGSCAN research is coordinated at the University of North Carolina, Chapel Hill with five satellite sites: East (EA), South (SO), Midwest (MW), Northwest (NW), and Southwest (SW). Sites utilize common protocols and procedures which are approved by local Institutional Review Boards. At each site, children who had been maltreated early in life, or who were at risk for early maltreatment, and their primary caregivers were interviewed in person every two years beginning when the children were approximately 4 years of age (mean age= 4.6 yrs old, standard deviation= 0.8). Maltreatment data are collected from Child Protective Services (CPS) record reviews at least every two years and telephone interviews allow the sites to track families and assess service utilization and salient life events on years when there is not a face-to-face interview (for a more complete description of LONGSCAN, see Runyan et al., 1998).

Subjects for Study 1 were drawn from 330 children who are participants in the SW site of the LONGSCAN Consortium. Initial recruitment for LONGSCAN's SW site was from an earlier longitudinal investigation of the relationship between child behavior problems and service utilization of children in San Diego county placed in out-of-home care (age range: birth to 16-years). Unique to the SW site of

LONGSCAN is that all participants have a substantiated history of childhood

maltreatment (unlike the other sites, which have a combination of maltreated and high-

risk children). In particular, participants in the current study are children who were

removed from their homes between May 1990 and October 1991 for substantiated

maltreatment. These children were made dependents of the court, placed in out-of-

home care, and remained in this type of placement for at least five months (n=1221).

The SW LONGSCAN site identified the children from this initial sample who were

under 3.5 years of age when they were first removed from their homes; 330 were

successfully recruited to participate in LONGSCAN. Therefore, these 330 children

and their caregivers have been followed prospectively every 2 years. Data collection

is complete through the age 14 interview in the SW site.

Sample Demographics

The 330 children that comprise the SW LONGSCAN site are 47.3% male;

37.6% African-American, 28.5% Caucasian, 16.7% Hispanic, 15.8% are racially

mixed, and 1.5% are another race. Forty-eight percent of the families received

governmental support upon recruitment into LONGSCAN. Thus, this represents an

ethnically diverse sample that is reflective of the demographic composition of

maltreated children in San Diego County in general.

Inclusion in the present study required that subjects had been interviewed at

the ages in which the mediator and outcome variables were assessed: ages 8 and 12 for

the sexualized behaviors mediating model (Aim 2), and ages 10 and 12 for the

loneliness mediation model (Aim 3). In addition, each participant had to have a

completed CPS record review through age 8 to ensure that data on the maltreatment experience was available (N= 202 for sexualized behaviors mediation model; N= 152 for loneliness mediation model). Demographic characteristics for participating children are presented in Table 1 for the sexualized behaviors model and in Table 2 for the loneliness model.

For the sexualized behaviors model, the sample was evenly distributed by gender: 46.7% of the participants are male (N= 113) and 53.3% are female (N= 129). The sample was ethnically diverse: 26.9% of caretakers identify their child as White (N= 65), 38.4% as Black (N= 93), 16.9% as Hispanic (N= 41), 16.9% as Mixed Race (N= 41), and 0.8% as Other (N= 2). The modal income category at this time was between $10,000 and $15,000, suggesting that the majority of families were below the poverty line. Similarly, for the loneliness model, the sample was evenly distributed by gender: 46.7% of the participants are male (N= 113) and 53.3% are female (N= 129). The sample was ethnically diverse: 26.9% of caretakers identify their child as White (N= 65), 38.4% as Black (N= 93), 16.9% as Hispanic (N= 41), 16.9% as Mixed Race (N= 41), and 0.8% as Other (N= 2). The modal income category at this time was also between $10,000 and $15,000, suggesting that the majority of families were below the poverty line.

Table 1. Demographic characteristics of the 202 participants in the sexualized behaviors model.

	N	%
Child Gender		
Male	97	48.0
Female	105	52.0
Ethnicity/Race		
White	53	26.2
Black	82	40.6
Hispanic	30	14.9
Mixed	35	17.3
Other	2	1.0
Early Maltreatment Report	202	100.0
Physical Abuse Report	55	27.2
Sexual Abuse Report	21	10.4
Emotional Abuse Report	63	31.2
Neglect Report	166	82.2
Late Maltreatment Report	75	37.1
Physical Abuse Report	40	19.8
Sexual Abuse Report	10	5.0
Emotional Abuse Report	36	17.8
Neglect Report	45	22.3

Table 2. Demographic characteristics of the 152 participants in the loneliness model.

	N	%
Child Gender		
Male	69	45.4
Female	83	54.6
Ethnicity/Race		
White	39	25.7
Black	58	38.2
Hispanic	29	19.1
Mixed	24	15.8
Other	2	1.4
Early Maltreatment Report	152	100.0
Physical Abuse Report	45	29.6
Sexual Abuse Report	17	11.2
Emotional Abuse Report	54	35.5
Neglect Report	125	82.2
Late Maltreatment Report	56	36.8
Physical Abuse Report	27	17.8
Sexual Abuse Report	7	4.6
Emotional Abuse Report	25	16.4
Neglect Report	33	21.7

Procedure

When the participants were approximately four years of age, baseline developmental assessments of the children were administered and the first standardized interviews were conducted with their caregivers. After this initial meeting, the children were tracked and interviewed at regularly scheduled intervals, with annual contact interviews (conducted over the phone with primary caretakers) at odd years of age, and face-to-face interviews at even years of age. Face-to-face

interviews were conducted separately with the children and their primary caretakers. All interviews were conducted by project trained interviewers after consent was obtained from the primary caregiver, and assent was obtained from minor children. Participants were informed that the purpose of the study was to examine the different ways in which children grow and develop and the challenges they may experience along the way. The interviews were approximately 2 hours in duration. After completion of the interview, caregivers were compensated monetarily for their time ($20 to $40 per interview depending on the site). The Institutional Review Boards (IRB) at each LONGSCAN site and the Coordinating Center have approved all procedures in the present study. In addition, the present investigations have the approval of the IRBs at San Diego State University and the University of California, San Diego.

Measures and Variables of Interest

Maltreatment Characteristics

The present study examined the predictive utility of maltreatment timing and type in directly predicting juvenile delinquency, and in indirectly predicting delinquency through sexualized behaviors and loneliness. These maltreatment characteristics were measured using the following:

Modified Maltreatment Classification System (MMCS; English & the LONGSCAN Investigators, 1997; as modified from Barnett, Manly & Cicchetti, 1993). A LONGSCAN modified version of Barnett, Manly, and Cicchetti's (1993) Maltreatment Classification System (MCS) was utilized to code official CPS records

of child maltreatment. Reports made to CPS in the form of narrative accounts for suspected maltreatment from birth to 8 years of age were reviewed, abstracted, and coded from county level files at each of the LONGSCAN sites. Each report was coded by type and severity of maltreatment; sexual abuse, physical abuse, neglect (failure to provide and/or lack of supervision), and emotional abuse. Within each type of maltreatment there are specific criteria for coding severity. For purposes of this study, maltreatment reports made prior to age 4 are regarded as 'early' and those made between ages 4 and 8 are considered 'late' reports. All CPS records included the dates of reports, with these reports assumed to be related to recently observed facts that led to a reasonable suspicion that the child had been maltreated. As such, 'early' reports correspond with maltreatment experiences before age 4 and 'late' reports indicate maltreatment experiences between the ages of 4 and 8. For the purposes of this study, *maltreatment timing* and *maltreatment type* were based upon these coded referrals to CPS for suspected child abuse and neglect. All children in Study 1 (SW site only) had a substantiated report of maltreatment prior to 3.5 years of age; thus, all children in Study 1 had an 'early' report of maltreatment. The MMCS has been used extensively in coding maltreatment data across studies and is accepted as a reliable classification of maltreatment experiences based on CPS records. LONGSCAN coders across sites were trained to 90% agreement with a gold standard coder, and a subsequent reliability assessment utilizing a sample of reports from all the sites indicated good overall agreement on the coding of type (all Cohen's kappa values > .7).

Sexualized Behaviors

Sexualized behaviors were treated as a latent mediating variable in the present study, being measured via the following:

Child Sexual Behavior Inventory-II (CSBI-II; Friedrich, 1997). A LONGSCAN modified version of the CSBI-II was used to assess the frequency of child sexual behaviors in the past six months. The 35-item CSBI-II was shortened in the interest of administration time by keeping the 25 best discriminating items (after consultation with Dr. William Friedrich). Some questions were rewritten to make them clearer for our low SES sample (e.g., "Talks in a flirtatious way" was changed to "Talks in a flirty way"), and items were rearranged to place the most sexually explicit items toward the end of the measure. This version of the CSBI did not include any items measuring aggressive sexual behaviors. Sexual behaviors are separated into nine distinct domains in the CSBI, as identified by Friedrich: boundary problems, exhibitionism, gender role behavior, self-stimulation, sexual anxiety, sexual intrusiveness, sexual knowledge, and voyeuristic behavior. For the present study, only the following domain scores were examined, as they parallel the more problematic sexualized behaviors described in the literature: *Boundary Problems* (four items; difficulties with the maintenance and acceptance of interpersonal distance or space), *Exhibitionism* (two items; revealing one's sexual parts to others), *Sexual Interest* (four items; one's curiosity in the opposite sex and generally in sex itself), *Sexual Intrusiveness* (seven items; violation of another person's sexual privacy and autonomy), and *Sexual Knowledge* (three items; age-inappropriate sexual awareness).

Overall, the internal consistency of the five domains used in Study 1 was low to moderate, with alpha coefficients ranging from .12 (Exhibitionism) to .58 (Sexual Interest). Alpha values were .38 for Sexual Knowledge, .42 for Boundary Problems, and .44 for Sexual Intrusiveness. Reliability is likely to have been affected by caregivers' comfort level in reporting and discussing sexually explicit behaviors. The number and percentage of participants who were reported to evidence any behavior in each of the five domains are presented in Table 3 for the sample, boys and girls. Approximately 88.7% of the children classified by their caregiver as White, 56.1% of children classified as Black, 56.7% of children classified as Hispanic, 82.9% of children classified as Mixed Race, and both of the children reported as Other Race were reported to exhibit any sexualized behavior in this sample. CSBI scores were obtained during the age 8 face-to-face interview.

Table 3. Number and percentage of study sample reporting any sexualized behaviors.

	N	%
Entire Study Sample (n=202)		
Boundary problems	38	18.90
Exhibitionism	13	6.44
Sexual interest	94	46.54
Sexual intrusiveness	17	8.42
Sexual knowledge	85	42.08
Boys (n=97)		
Boundary problems	20	20.62
Exhibitionism	8	8.25
Sexual interest	44	45.36
Sexual intrusiveness	11	11.34
Sexual knowledge	40	41.24
Girls (n=105)		
Boundary problems	18	17.14
Exhibitionism	5	4.76
Sexual interest	50	47.62
Sexual intrusiveness	6	5.71
Sexual knowledge	45	42.86

Loneliness

Loneliness was treated as a manifest mediating variable in the present study, being measured via the following:

Loneliness and Social Dissatisfaction Scale (Asher & Wheeler, 1985). The Loneliness and Social Dissatisfaction Scale is a 24-item child report questionnaire designed to measure the extent to which children feel lonely and socially dissatisfied in a school setting. The measure includes 16 items that measure loneliness and dissatisfaction with peer relationships and 8 filler items focused on children's hobbies and preferred activities. These items are included to help children feel open and relaxed. For all questions, children are provided with NO/ SOMETIMES/ YES

response options. The Loneliness and Social Dissatisfaction Scale has been well-

normed using standardized procedures and have been shown to have good validity and

reliability. The mean LSDA scores, standard deviations, and internal consistency

scores are presented in Table 4 for the sample, by race, and for boys and girls. LSDA

scores were obtained during the age 10 face-to-face interview.

Table 4. Mean Scores and Cronbach's Alpha Coefficients for LSDA

	Mean (SD)	α
Entire Study Sample (N=152)	8.05 (6.34)	.66
White (N=39)	6.33 (4.43)	.53
Black (N=58)	8.36 (6.67)	.71
Hispanic (N=29)	10.57 (7.85)	.70
Mixed Race (N=24)	6.76 (5.50)	.53
Other Race (N=2)	7.50 (4.20)	.69
Boys (N=69)	7.95 (6.18)	.68
Girls (N=83)	8.12 (6.50)	.65

Juvenile Delinquency

Juvenile delinquency was a purely endogenous latent variable in the present

study. The following measures were used to operationalize this construct:

Child Behavior Checklist (CBCL; Achenbach, 1991a). The Child Behavior

Checklist assesses behavior problems for children between the ages of 4 and 16. The

CBCL was completed by each subject's primary caregiver at each of the face-to-face

interviews (ages 4, 6, 8, 10, and 12). The CBCL asks the caregiver to rate the

frequency of engagement in the listed behaviors. Scoring of the CBCL results in nine

narrow-band syndrome scales, two broad-band behavior problems scales, and a total

behavior problem index. The CBCL has been well-normed using standardized

procedures and has been shown to have good validity and reliability. The 20 CBCL items that comprise the *Aggressive Behavior* subscale (e.g., argues, mean to others, fights, temper tantrums, threatens) and the 13 items that comprise the *Delinquent Behavior* subscale (e.g., lacks guilt, lies, sets fires, steals, truancy, alcohol/drugs) were used as indicators of juvenile delinquency at age 12.

The Youth Self Report (YSR; Achenbach, 1991b). The Youth Self Report is the child report form of the CBCL, collected during the age 12 face-to-face interview. The YSR has also been well-normed using standardized procedures and has been shown to have good validity and reliability.   Specifically, data on the *Aggressive Behavior* and *Delinquent Behavior* subscales were used as indicators of juvenile delinquency in the present study.

The Teacher Report Form (TRF; Achenbach, 1991c). The Teacher Report Form is the teacher analog to the CBCL. A teacher-report measure, the TRF assesses behavior problems for children between the ages of 5 and 18 by asking teachers to report on the frequency of child behaviors at school. The TRF has also been well-normed using standardized procedures and has been shown to have good validity and reliability. Only the 25 *Aggressive Behavior* subscale items and the 12 *Delinquent Behavior* subscale items collected during the age 12 face-to-face interview were used as indicators of juvenile delinquency in the present study.

Analytic Plan

Creation of Latent Variables

Before the direct path from child maltreatment to juvenile delinquency and the indirect paths through sexualized behaviors and loneliness could be examined, it was necessary to create latent variables for each of maltreatment, sexualized behaviors, and juvenile delinquency, since multiple indicators were used to define these constructs. A latent variable was not created for loneliness because it was defined by a single indicator, LSDA total score.

Maltreatment. Eight observed variables were initially examined to determine whether they indicated a single factor of the maltreatment experience well. That is, early and late reports of physical abuse (PA), sexual abuse (SA), emotional abuse (EA), and neglect (NEG; both failure to provide and lack of supervision) were the eight indicators of maltreatment. Figure 1 depicts this initial conceptualization of the maltreatment latent construct, with the oval representing the maltreatment experience and the rectangles representing observed or indicator variables.
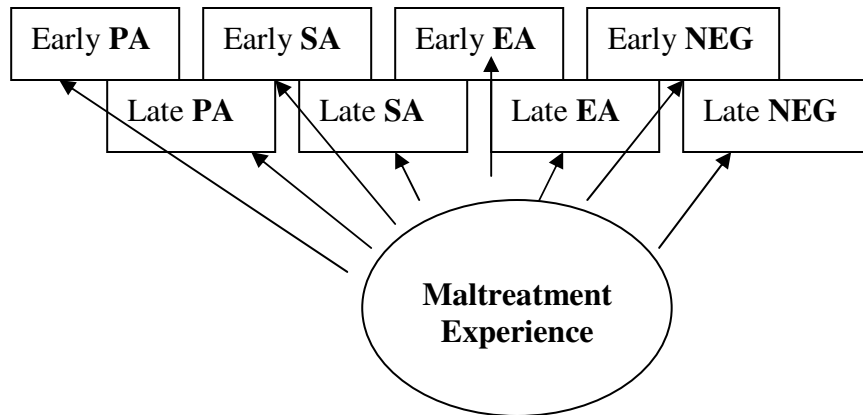
Figure 1. The maltreatment experience latent construct.

Sexualized Behaviors. Five observed variables were initially examined to determine whether they indicated a single latent construct of sexualized behaviors. Specifically, the five problematic domains of the CSBI were used: boundary problems, exhibitionism, sexual interest, sexual intrusiveness, and sexual knowledge. Figure 2 depicts this initial conceptualization of the sexualized behaviors latent construct, with the oval representing the latent construct and the rectangles representing the observed or indicator variables.
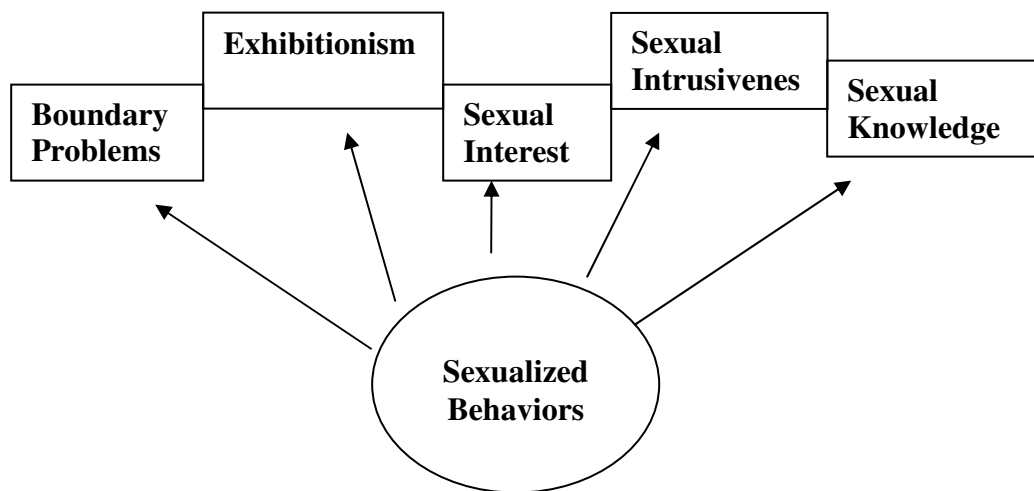
Figure 2. The sexualized behaviors latent construct.

  Juvenile Delinquency. Six indicator variables were initially examined to determine whether they represented a single latent construct of juvenile delinquency. That is, the CBCL, YSR, and TRF scores on the Aggressive and Delinquent subscales were used to operationalize juvenile delinquency. Figure 3 depicts this initial conceptualization of the juvenile delinquency latent construct, with the oval representing juvenile delinquency and the rectangles representing the six observed variables.
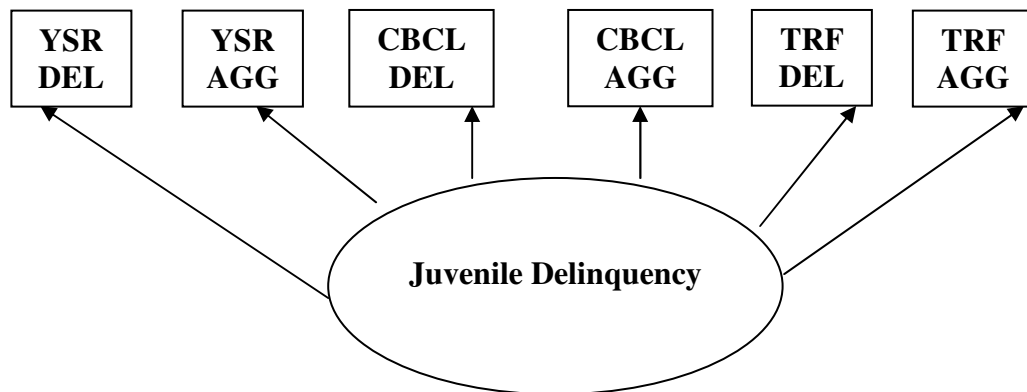
Figure 3. The juvenile delinquency latent construct.

Structural Equation Modeling

  In order to examine the direct path from child maltreatment to juvenile delinquency and the indirect paths through sexualized behaviors and loneliness, Structural Equation Modeling (SEM) was conducted. The SEM process centers around two steps: 1) validating the measurement model (thereby confirming an appropriately specified formation of latent variables); and 2) fitting the structural

model. Thus, for Study 1, descriptive statistics and zero-order correlations were run between each observed variable and then among latent variables to establish that the indicators appeared to sufficiently measure the corresponding latent variables, represented by the factors of maltreatment experience, sexualized behaviors, and juvenile delinquency.   Once the measurement models had been tested and accepted using Confirmatory Factor Analysis (CFA; see Figure 4 for an example of the CFA process on the Juvenile Delinquency latent variable), two structural models were specified and tested (see Figures 5 and 6).
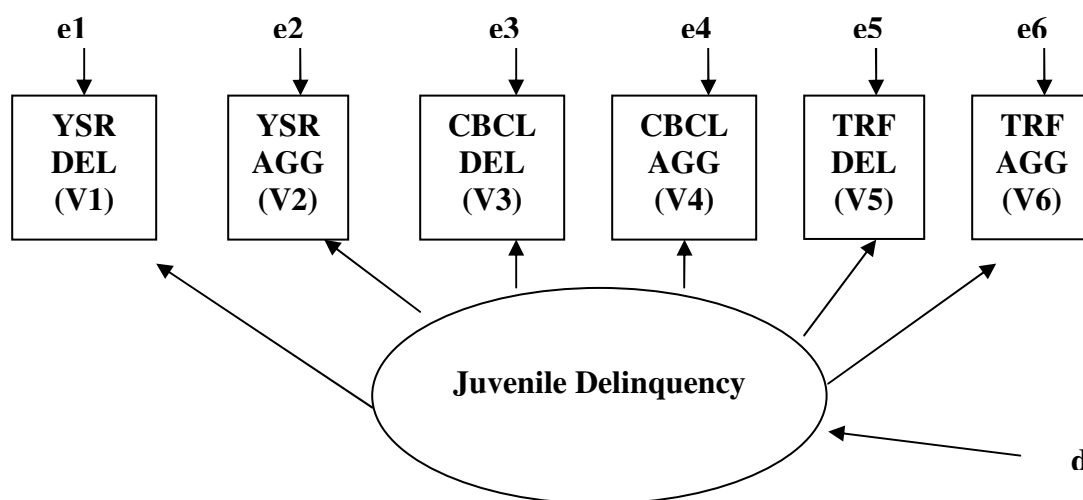
Figure 4. CFA on juvenile delinquency latent variable.

The first proposed structural model (Figure 5) specified the mediating variable of sexualized behaviors in the relation between maltreatment and delinquency. The exogenous variable of *maltreatment experience* represented a subset of the eight

separate observed variables (Early and Late Physical Abuse, Early and Late Sexual

Abuse, Early and Late Emotional Abuse, Early and Late Neglect) that were

determined to sufficiently indicate the factor after CFAs were conducted. *Sexualized*

behaviors represented a latent endogenous variable (mediator) comprised of a subset

of the five problematic domains of the CSBI that held together as a latent construct

after CFAs were conducted. *Juvenile delinquency* was a purely endogenous latent

variable comprised of a subset of the Aggressive and Delinquent Problems subscales

of the CBCL, YSR, and TRF that were determined to well-indicate the latent construct

after CFAs were conducted.
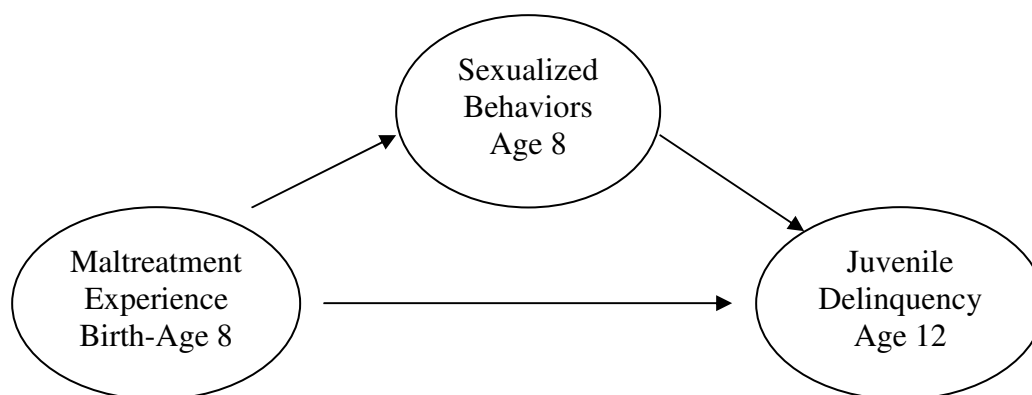
Figure 5. Proposed sexualized behaviors mediation model.

The second proposed structural model (Figure 6) specified the mediating variable of

loneliness in the relation between maltreatment and delinquency. The exogenous

variable of *maltreatment experience* represented a subset of the eight separate

observed variables (Early and Late Physical Abuse, Early and Late Sexual Abuse,

Early and Late Emotional Abuse, Early and Late Neglect) that were determined to

indicate the latent variable well after CFAs were conducted. *Loneliness* represents an

endogenous observed variable (mediator; i.e., Loneliness and Social Dissatisfaction

Scale [LSDA] total score). *Juvenile delinquency* is a purely endogenous latent

variable comprised of a subset of the Aggressive and Delinquent Problems subscales

of the CBCL, YSR, and TRF that held together as a latent construct after CFA was

conducted.
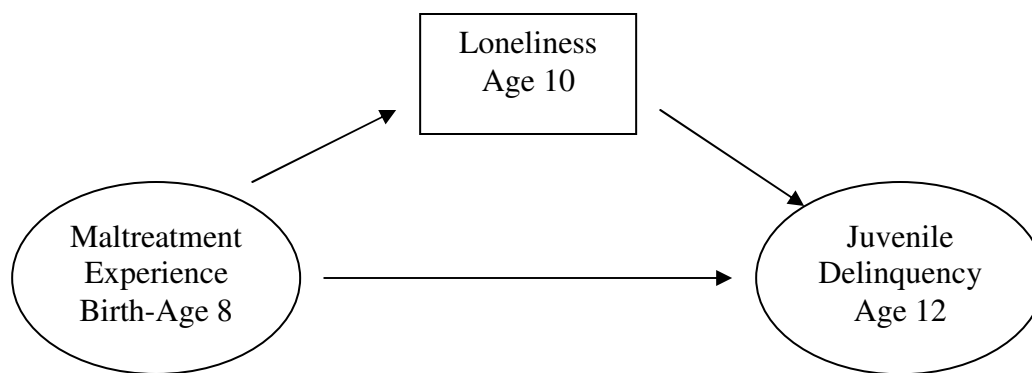
Figure 6. Proposed loneliness mediation model.

Determination of Model Fit

    Use of the chi-square likelihood ratio test has been deemed unsatisfactory as

the sole indicator of model fit (see Tanaka, 1993). Many researchers have suggested

using multiple measures of model fit because of these limitations (e.g., Hoyle, 2000;

Tanaka, 1993). In the present study, the following measures were employed, as

recommended by Hu and Bentler (1999): 1) the Comparative Fit Index (CFI; Bentler,

1990), with values greater than .90 suggesting reasonable model fit (indicating that

90% of the covariation in the data can be reproduced by the given model); and 2) the

Root Mean Square Error of Approximation (RMSEA; Steiger, 1990), with values less

than .08 indicating adequate model fit. A model was determined to fit well in the

current study if both criteria were met. In evaluating the statistical significance of

individual model parameters (e.g., factor loadings, structural [path] coefficients), a

statistical significance level of .05 was employed.

Missing Data

As in much prospective, longitudinal research, missing data are often

inevitable. One of the requisites for SEM, however, is a complete or near-complete

dataset. Given that SEM uses covariance matrices as input in order to model

measurement error, listwise deletion is recommended to handle missing data when the

sample is fairly large and the number of cases to be dropped is small. Further, listwise

deletion is warranted when cases are missing completely at random (MCAR). When

listwise deletion cannot be used, some form of data imputation is recommended.

Imputation means the missing values are estimated. There are various appropriate

data imputation methods for missing cases. The present study employed stringent

inclusion criteria that ensured that data were complete for the exogenous variable

(maltreatment experience) and that all subjects were interviewed at age 12, the time

point at which the purely endogenous variable (juvenile delinquency) was assessed. In

addition, for the 202 subjects involved in the sexualized behaviors model, all subjects

were interviewed at age 8, the age at which sexualized behaviors were assessed.

Similarly, for the 152 subjects involved in the loneliness model, all subjects were

interviewed at age 10, the age at which loneliness was assessed. Therefore, any

missing data in the present study are appropriately considered to be MCAR; thus, the

present study used listwise deletion only.

Results: Study 1

The hypothesized mediation models (i.e., sexualized behaviors and loneliness as mediators in the relation between child maltreatment and juvenile delinquency) were tested using EQS 6.1 (Bentler, 1995). SEM offers an advantage over regression analyses by using maximum likelihood estimation (MLE), which allows for the computation of model parameters as a whole rather than for separate outcome variables. Latent variables were therefore created for each of the maltreatment experience, sexualized behaviors, and juvenile delinquency, as these constructs were comprised of multiple indicators (please see "Methods: Study 1" section for details on the creation of latent variables). Loneliness was treated as a manifest variable, since there was only a single indicator (i.e., LSDA total score).

Structural Equation Modeling

Confirmatory Factor Analyses: Sexualized Behaviors Model

A first step in testing a structural mediation model is validating the measurement model. As such, CFAs were conducted to validate the proposed measurement of latent constructs (i.e., maltreatment experience, sexualized behaviors, and juvenile delinquency).

Maltreatment Experience

Maltreatment experience was first conceptualized as a latent variable with eight likely indicators (i.e., early and late reports of physical abuse, sexual abuse, emotional abuse, and neglect). Higher scores on this latent variable indicate more reports of maltreatment. The means for individual sample items ranged from .05 (late

39

sexual abuse reports) to .82 (early reports of neglect), with *SD*s ranging from .22 to .46. The univariate distributions for the individual items resulted in a slight negative or positive skew depending on the item. Zero-order correlations among the observed variables are presented in Table 5. In addition, preliminary data analysis revealed significant multivariate kurtosis (normalized Mardia's coefficient = 33.46). Because the assumption of multivariate normality was violated, the Satorra-Bentler scaled chi-square test (S-Bχ^2) was employed to correct for overall model fit in the CFI and in the standard errors of model parameters.

Table 5. Zero-order correlations for the eight indicators of maltreatment experience (Sexualized Behaviors Model).

	Early Physical Abuse	Early Sexual Abuse	Early Emotional Abuse	Early Neglect	Late Physical Abuse	Late Sexual Abuse	Late Emotional Abuse	Late Neglect
Early Physical Abuse	1	.047	.356**	-.093	.226**	.014	.093	.047
Early Sexual Abuse	.047	1	.191**	.031	-.006	.072	.053	-.026
Early Emotional Abuse	.356**	.191**	1	.006	.148*	-.055	.133	-.001
Early Neglect	-.093	.031	.006	1	.069	-.132	-.054	.032
Late Physical Abuse	.226**	-.006	.148*	.069	1	.116	.385**	.271**
Late Sexual Abuse	.014	.072	-.055	-.132	.116	1	.073	.152*
Late Emotional Abuse	.093	.053	.133	-.054	.385**	.073	1	.528**
Late Neglect	.047	-.026	-.001	.032	.271**	.152*	.528**	1

 * Correlation is significant at the 0.05 level.

** Correlation is significant at the 0.01 level.

The latent variable of maltreatment experience, as indicated by eight observed variables, was tested using CFA procedures in EQS 6.1. The hypothesized model did not fit well statistically (S-B χ^2 [20, $N = 202$] = 49.660, p < .001), nor did it fit well descriptively (CFI = .727, RMSEA = .086). In light of this poor fitting overall model, individual model parameters were not interpreted.

In an effort to respecify the latent construct of maltreatment experience, thereby creating a better fitting model, the standardized residual matrix was reexamined. Early reports of emotional abuse had large residuals compared to the other variables (values ranging from .01 to more than .30). A modified model of maltreatment experience, as indicated by the seven remaining indicators, was thus tested using CFA procedures in EQS 6.1. This modified model fit well both statistically (S-B χ^2 [14, $N = 202$] = 19.388, p = .151) and descriptively (CFI = .932, RMSEA = .044). As such, individual model parameters could be interpreted. Standardized factor loadings were statistically significant (p < .05) and generally large for late reports of maltreatment (values ranging from .470 to .819), except for late reports of sexual abuse. Standardized factor loadings for late reports of sexual abuse and early reports of any type of maltreatment were not statistically significant.

Sexualized Behaviors

The sexualized behaviors construct was first conceptualized as a latent variable with five indicators (i.e., boundary problems, exhibitionism, sexual interest, sexual intrusiveness, sexual knowledge). Higher scores on this latent variable indicate more sexualized behaviors. The means for individual sample items (CSBI domain scores)

ranged from .11 (exhibitionism) to 1.27 (sexual interest), with *SD*s ranging from .49 to

1.84. Zero-order correlations among the observed variables are presented in Table 6.

Because the assumption of multivariate normality was violated (normalized Mardia's

coefficient = 116.03), we again employed the S-Bχ^2, which corrects for overall model

fit in the CFI and the standard errors of model parameters.

Table 6. Zero-order correlations for the five indicators of sexualized behaviors.

	Boundary Problems	Exhibitionism	Sexual Interest	Sexual Intrusiveness	Sexual Knowledge
Boundary Problems	1	.461**	.366**	.381**	.437**
Exhibitionism	.461**	1	.438**	.473**	.479**
Sexual Interest	.366**	.438**	1	.305**	.762**
Sexual Intrusiveness	.381**	.473**	.305**	1	.326**
Sexual Knowledge	.437**	.479**	.762**	.326**	1

** Correlation is significant at the 0.01 level.

The latent variable of sexualized behaviors, as indicated by five observed

variables, was tested using CFA procedures in EQS 6.1. The hypothesized model fit

well statistically (S-B χ^2 [5, $N = 202$] = 9.241, p = .099), but only one of the two

descriptive indices indicated adequate model fit (CFI = .883, RMSEA = .065).

Because this study set out to accept a model as fitting well only if both criteria were

met, individual model parameters were not interpreted.

In order to respecify the latent construct of sexualized behaviors and to create a better fitting model, the standardized residual matrix was reexamined. The CSBI domains of exhibitionism and sexual intrusiveness had large residuals compared to the other variables (values ranging from .03 to more than .20). A modified model of sexualized behaviors, as indicated by the three remaining indicators, was thus accepted as fitting well and individual parameters were interpreted. Statistical and descriptive fit indices are unavailable, however, because the model was just identified. All standardized factor loadings were statistically significant ($p < .05$) and large, with values of .462 for boundary problems, .797 for sexual interest, and .954 for sexual knowledge.

Juvenile Delinquency

The juvenile delinquency construct was first conceptualized as a latent variable with six indicators (i.e., CBCL, YSR, and TRF scores on the Aggressive and Delinquent subscales). Higher scores on this latent variable indicate more delinquent behaviors. The means for individual sample items ranged from 1.20 (TRF delinquency score) to 7.23 (CBCL aggression score), with *SD*s ranging from 2.35 to 9.12. The univariate distributions for the individual items resulted in a slight negative or positive skew depending upon the item. Zero-order correlations among the observed variables are presented in Table 7. Significant multivariate kurtosis (normalized Mardia's coefficient = 64.03) was found in preliminary analyses, so the S-Bχ^2 was again employed to correct for overall model fit in the CFI and in the standard errors of model parameters.

Table 7. Zero-order correlations for the six indicators of juvenile delinquency (Sexualized Behaviors Model).

	CBCL Delinquent Subscale	YSR Delinquent Subscale	TRF Delinquent Subscale	CBCL Aggressive Subscale	YSR Aggressive Subscale	TRF Aggressive Subscale
CBCL Delinquent Subscale	1	.322**	.401**	.782**	.214*	.502**
YSR Delinquent Subscale	.322**	1	.325**	.278**	.677**	.383**
TRF Delinquent Subscale	.401**	.325**	1	.402**	.156	.739**
CBCL Aggressive Subscale	.782**	.278**	.402**	1	.259**	.509**
YSR Aggressive Subscale	.214*	.677**	.156	.259**	1	.341**
TRF Aggressive Subscale	.502**	.383**	.739**	.509**	.341**	1

* Correlation is significant at the 0.05 level.

** Correlation is significant at the 0.01 level.

The latent variable of juvenile delinquency, as indicated by six observed variables, was tested using CFA procedures in EQS 6.1. The hypothesized model did not fit well statistically (S-B χ^2 [9, $N = 202$] = 125.048, $\underline{p} < .001$), nor did it fit well descriptively (CFI = .568, RMSEA = .253). In light of this poor fitting overall model, individual model parameters were not interpreted.

The standardized residual matrix was reexamined in an effort to respecify the latent construct of juvenile delinquency and to develop a better fitting model. Aggressive subscale scores on each of the three measures had consistently large

residuals compared to the delinquency subscale scores (values ranging from .03 to more than .55). A modified model of juvenile delinquency, as indicated by three indicators (delinquency subscale scores on each of the CBCL, the YSR, and the TRF), was thus presumed to fit well and individual parameters were interpreted. Because that model was just identified, statistical and descriptive fit indices are unavailable. All three standardized factor loadings were statistically significant ($p < .05$) and large, with values of .497 for YSR delinquency, .889 for TRF delinquency, and .933 for CBCL delinquency.

Mediation Model Testing: Sexualized Behaviors

Using EQS 6.1, the relationships were examined between maltreatment experience, a latent variable composed of seven indicators measured from birth to age 8 (early and late reports of physical abuse, sexual abuse, and neglect, and late reports of emotional abuse), sexualized behaviors, a latent variable composed of three indicators measured at age 8 (boundary problems, sexual interest, and sexual knowledge CSBI domains), and juvenile delinquency, a latent variable composed of three indicators measured at age 12 (CBCL, TRF, and YSR delinquency subscale scores). The hypothesized model is presented in Figure 5. Direct effects of maltreatment experience on juvenile delinquency and on sexualized behaviors were anticipated. Also, an indirect effect of maltreatment experience on juvenile delinquency through sexualized behaviors was hypothesized.

Significant multivariate kurtosis (normalized Mardia's coefficient = 96.63) was found; therefore the S-Bχ^2 was employed to correct for overall model fit in the CFI

and in the standard errors of model parameters. The hypothesized model fit well both statistically (S-B χ^2 [61, N = 202] = 78.770, p = .062) and descriptively (CFI = .957, RMSEA = .038). However, the direct effects from maltreatment experience to juvenile delinquency (β = .029) and to sexualized behaviors (β = .190) were not significant, nor was the indirect effect of maltreatment experience on juvenile delinquency through sexualized behaviors (β = .029). In view of these insignificant effects (ps > .05), there was no noted relationship between maltreatment experience and juvenile delinquency in this sample, nor was there a relationship between maltreatment and sexualized behaviors or between sexualized behaviors and juvenile delinquency.

Confirmatory Factor Analyses: Loneliness Model

CFAs were also conducted to validate the proposed measurement of latent constructs in the second proposed model in Study 1 (i.e., maltreatment experience and juvenile delinquency). CFAs were conducted separately from the first proposed model because the loneliness model employed a different and reduced sample (N=152).

Maltreatment Experience

Maltreatment experience was again first conceptualized as a latent variable with eight likely indicators (i.e., early and late reports of physical abuse, sexual abuse, emotional abuse, and neglect), with higher scores on this latent variable indicating more reports of maltreatment. The means for individual sample items ranged from .05 (late sexual abuse reports) to .82 (early reports of neglect), with *SD*s ranging from .21

to .48. The univariate distributions for the individual items resulted in a slight negative

or positive skew depending upon the item. Zero-order correlations among the

observed variables are presented in Table 8. In addition, preliminary data analysis

revealed significant multivariate kurtosis (normalized Mardia's coefficient = 33.11).

Because the assumption of multivariate normality was violated, the S-Bχ^2 was

employed to correct for overall model fit in the CFI and in the standard errors of

model parameters.

Table 8. Zero-order correlations for the eight indicators of maltreatment experience (Loneliness Model).

	Early Physical Abuse	Early Sexual Abuse	Early Emotional Abuse	Early Neglect	Late Physical Abuse	Late Sexual Abuse	Late Emotional Abuse	Late Neglect
Early Physical Abuse	1	-.047	.302**	-.076	.113	.064	-.016	.043
Early Sexual Abuse	-.047	1	.129	.056	-.001	.121	.068	.016
Early Emotional Abuse	.302**	.129	1	.057	.123	.034	.116	.009
Early Neglect	-.076	.056	.057	1	.081	-.144	-.072	.036
Late Physical Abuse	.113	-.001	.123	.081	1	.144	.305**	.256**
Late Sexual Abuse	.064	.121	.034	-.144	.144	1	.157	.113
Late Emotional Abuse	-.016	.068	.116	-.072	.305**	.157	1	.455**
Late Neglect	.043	.016	.009	.036	.256**	.113	.455**	1

** Correlation is significant at the 0.01 level.

The latent variable of maltreatment experience, as indicated by eight observed variables, was tested using CFA procedures in EQS 6.1. The hypothesized model fit well statistically (S-B χ^2 [20, N = 152] = 25.951, p = .071), but only one of the two descriptive indices indicated adequate model fit (CFI = .787, RMSEA = .057). Because this study set out to accept a model as fitting well only if both criteria were met, individual model parameters were not interpreted.

In an effort to respecify the latent construct of maltreatment experience, thereby creating a better fitting model, the standardized residual matrix was reexamined. Early reports of emotional abuse had large residuals compared to the other variables (values as much as .25). A modified model of maltreatment experience, as indicated by the seven remaining indicators, was thus tested using CFA procedures in EQS 6.1. This modified model fit well both statistically (S-B χ^2 [14, N = 152] = 11.734, p = .628) and descriptively (CFI = .998, RMSEA = .002). As such, individual model parameters could be interpreted. Standardized factor loadings were statistically significant (p < .05) and generally large for late reports of maltreatment (values ranging from .421 to .739), except for late reports of sexual abuse. Standardized factor loadings for late reports of sexual abuse and early reports of any type of maltreatment were not statistically significant.

Juvenile Delinquency

The juvenile delinquency construct was again first conceptualized as a latent variable with six indicators (i.e., CBCL, YSR, and TRF scores on the Aggressive and Delinquent subscales). Higher scores on this latent variable indicate more delinquent

behaviors. The means for individual sample items ranged from 1.57 (TRF delinquency

score) to 7.55 (CBCL aggression score), with *SD*s ranging from 2.31 to 8.58. The

univariate distributions for the individual items resulted in a slight negative or positive

skew depending upon the item. Zero-order correlations among the observed variables

are presented in Table 9. Significant multivariate kurtosis (normalized Mardia's

coefficient = 69.42) was found in preliminary analyses, so the S-Bχ^2 was again

employed to correct for overall model fit in the CFI and in the standard errors of

model parameters.

Table 9. Zero-order correlations for the six indicators of juvenile delinquency
(Loneliness Model).

	CBCL Delinquent Subscale	YSR Delinquent Subscale	TRF Delinquent Subscale	CBCL Aggressive Subscale	YSR Aggressive Subscale	TRF Aggressive Subscale
CBCL Delinquent Subscale	1	.329**	.364**	.763**	.150	.508**
YSR Delinquent Subscale	.329**	1	.381**	.223*	.663**	.342**
TRF Delinquent Subscale	.364**	.381**	1	.412**	.121	.713**
CBCL Aggressive Subscale	.763**	.223*	.412**	1	.148	.494**
YSR Aggressive Subscale	.150	.663**	.121	.148	1	.259*
TRF Aggressive Subscale	.508**	.342**	.713**	.494**	.259*	1

 * Correlation is significant at the 0.05 level.

** Correlation is significant at the 0.01 level.

The latent variable of juvenile delinquency, as indicated by six observed variables, was tested using CFA procedures in EQS 6.1. The hypothesized model did not fit well statistically (S-B χ^2 [9, N = 152] = 85.389, p < .001), nor did it fit well descriptively (CFI = .606, RMSEA = .237). In light of this poor fitting overall model, individual model parameters were not interpreted.

The standardized residual matrix was reexamined in an effort to respecify the latent construct of juvenile delinquency and to develop a better fitting model. Aggressive subscale scores on each of the three measures had consistently large residuals compared to the delinquency subscale scores (with some values greater than .50). A modified model of juvenile delinquency, as indicated by three indicators (delinquency subscale scores on each of the CBCL, the YSR, and the TRF), was thus presumed to fit well and individual parameters were interpreted. Because that model was just identified, statistical and descriptive fit indices are unavailable. All three standardized factor loadings were statistically significant (p < .05) and large, with values of .435 for TRF delinquency, .614 for CBCL delinquency, and .745 for YSR delinquency.

Mediation Model Testing: Loneliness

Using EQS 6.1, the relationships were examined between maltreatment experience, a latent variable composed of seven indicators measured from birth to age 8 (early and late reports of physical abuse, sexual abuse, and neglect, and late reports of emotional abuse), loneliness, a manifest variable measured at age 10 (LSDA total score), and juvenile delinquency, a latent variable composed of three indicators

measured at age 12 (CBCL, TRF, and YSR delinquency subscale scores). The

hypothesized model is presented in Figure 6. Direct effects of maltreatment

experience on juvenile delinquency and on loneliness were expected. Also, an indirect

effect of maltreatment experience on juvenile delinquency through loneliness was

hypothesized.

Preliminary data analysis revealed significant multivariate kurtosis (normalized

Mardia's coefficient = 66.91). Because the assumption of multivariate normality was

violated, the S-Bχ^2 was employed to correct for overall model fit in the CFI and in the

standard errors of model parameters. The hypothesized model fit well both

statistically (S-B χ^2 [42, N = 152] = 30.992, p = .895) and descriptively (CFI = .999,

RMSEA < .001). However, the only statistically significant path was from loneliness

to juvenile delinquency (β = .171, p < .05). The direct effects of maltreatment

experience on loneliness (β = -.045) and on juvenile delinquency (β = .197) were not

statistically significant (ps > .05). Therefore, there was no relationship between

maltreatment experience and juvenile delinquency found in this sample.

Method: Study 2

Participants

Recruitment

The sample for this study was again drawn from the LONGSCAN consortium. Unlike Study 1, however, the sample for Study 2 was drawn from a multi-site sample of 1354 LONGSCAN participants, from each of the five LONGSCAN sites: East (EA), South (SO), Midwest (MW), Northwest (NW), and Southwest (SW). Recruitment strategies and target children/families varied among LONGSCAN site, in the following ways:

EA- This cohort of children (n=282) was drawn from each of three pediatric clinics serving children with non-organic failure to thrive, children of drug-abusing or HIV-positive mothers, and low-income, inner-city children. Thus, participants from this site of LONGSCAN were not recruited based on having a substantiated history of child maltreatment, but do represent a population that is at-risk for maltreatment.

SO- This cohort of children (n=243) was drawn from participants in a larger previous study; 4/5 were high-risk and the 5th was a "normal" infant. At the time of recruitment for LONGSCAN (age 5), this sample was divided into "reported for maltreatment" and "not reported" and for every child selected from the reported group, two matched controls were selected from the non-reported group. Thus, there were four strata: high-risk/reported, high-risk/not reported, non-high-risk/reported, non-high-risk/not reported. As such, these children constitute a birth cohort, recruited not for maltreatment history, but identified because of extreme poverty, young maternal

age, single parenthood, and low birth weight. Children from this original cohort who had been reported for neglect or abuse were selected for study in LONGSCAN, along with a control group of unreported children matched for gender, race, social class, and family composition.

MW- This cohort of children (n=245) was drawn from infants whose families were receiving comprehensive services after a report of child maltreatment and infants of similarly-reported families who had only received follow-up by the state welfare agency, along with a control group of unreported children matched for gender, race, social class, and family composition.

NW- This cohort (n=254) contains children who were consecutively classified from ages 1 to 4 as "moderate risk" by Child Protective Services offices following a report of child maltreatment. The NW site is therefore akin to the SW site in that all children were recruited based on having an early, documented maltreatment history.

SW- This cohort (n=330) is comprised of maltreated children who were placed in foster care in the first 18 months of life and followed until age 4 with a National Institute of Mental Health grant examining factors predicting family re-unification and child developmental outcomes. This sample was recruited into LONGSCAN at Age 4. All of the children from the SW site of LONGSCAN, thus, had experienced substantiated maltreatment by three and a half years of age and were subsequently placed in out-of-home care for at least five months.

Sample Demographics

The 1354 children that comprise the five sites of the LONGSCAN consortium are 48.5% male; 53.2% African-American, 26.1% Caucasian, 7.2% Hispanic, 11.9% are racially mixed, and 1.6% are another race; and 62.3% of the families received governmental support upon recruitment into LONGSCAN. Overall, then, this multi-site sample represents a diverse ethnic, cultural, and sociodemographic population of children who were identified as having experienced maltreatment before three and a half years of age or as being at-risk for maltreatment. Inclusion in the present study required that subjects (both children and primary caregivers) had completed the age 8 and 12 face-to-face interviews, since those are the ages at which the mediator and outcome variables were assessed, respectively. In addition, each participant had to have a completed CPS record review through age 8 (N=866). Demographic characteristics for participating children are presented in Table 10. The modal income category at age 8 was between $10,000 and $15,000, suggesting that the majority of families were below the poverty line. The sample for Study 2 represented the ethnic diversity of each of the sites represented in the study: EA (20.6% of the Study 2 sample), SO (18.5%), MW (14.2%), NW (21.5%), and SW (25.2%). However, the sample also reflects the overrepresentation of children from ethnic minority backgrounds, which is common in child welfare and at-risk populations.

Table 10. Demographic characteristics of the 804 Study 2 participants.

	N	%
Child Gender		
Male	392	48.8
Female	412	51.2
Ethnicity/Race		
White	216	26.9
Black	440	54.7
Hispanic	45	5.6
Mixed	93	11.6
Other	10	1.2
Early Maltreatment Report	422	52.5
Physical Abuse Report	150	18.7
Sexual Abuse Report	54	6.7
Emotional Abuse Report	169	21.0
Neglect Report	362	45.0
Late Maltreatment Report	236	29.4
Physical Abuse Report	110	13.7
Sexual Abuse Report	45	5.6
Emotional Abuse Report	99	12.3
Neglect Report	172	21.4
LONGSCAN Site		
EA	166	20.6
SO	149	18.5
MW	114	14.2
NW	173	21.5
SW	202	25.2

Procedures, Measures, and Variables of Interest

The same procedures, measures, and variables of interest were used in this study as in Study 1, with one major exception. The present study examined the predictive utility of maltreatment timing and type in directly predicting juvenile delinquency, and in indirectly predicting delinquency through sexualized behaviors

alone, not through loneliness. Therefore, the loneliness measure and variable of interest were not measured and tested in this study. The main reason for a lack of interest in loneliness in this multi-site investigation was that the loneliness measure was not administered at all sites at age 10.

As such, reports made to CPS in the form of narrative accounts for suspected maltreatment from birth to 8 years of age were reviewed, abstracted, and coded using the MMCS (English & the LONGSCAN Investigators, 1997; as modified from Barnett, Manly & Cicchetti, 1993) from county level files at each of the LONGSCAN sites. Each report was coded by type and severity of maltreatment; sexual abuse, physical abuse, neglect (failure to provide and/or lack of supervision), and emotional abuse. For purposes of this study, maltreatment reports made prior to age 4 are regarded as 'early' and those made between ages 4 and 8 are considered 'late' reports.

Sexualized behaviors were assessed using five of the domain scores from the CSBI-II (Friedrich, 1997): *Boundary Problems* (four items; difficulties with the maintenance and acceptance of interpersonal distance or space), *Exhibitionism* (two items; revealing one's sexual parts to others), *Sexual Interest* (four items; one's curiosity in the opposite sex and generally in sex itself), *Sexual Intrusiveness* (seven items; violation of another person's sexual privacy and autonomy), and *Sexual Knowledge* (three items; age-inappropriate sexual awareness). Overall, the internal consistency of the five domains used in Study 2 was moderate, with alpha coefficients ranging from .31 (Exhibitionism) to .67 (Sexual Intrusiveness). Alpha values were .42 for Sexual Knowledge, and .51 for both Boundary Problems and Sexual Interest.

Again, reliability is likely to be affected by caregivers' comfort level in reporting and discussing sexually explicit behaviors. The number and percentage of participants who were reported to evidence any behavior in each of the five domains are presented in Table 11 for the entire study sample, boys and girls, and by LONGSCAN site. Approximately 64.4% of children classified by their caregiver as White, 50.5% of children classified as Black, 55.6% of children classified as Hispanic, 62.7% of children classified as Mixed Race, and 50% of the children classified as Other Race were reported to exhibit any sexualized behavior.

Table 11. Number and percentage of sample reporting any sexualized behaviors.

	N	%
Entire Sample (N=804)		
Boundary problems	116	14.43
Exhibitionism	32	3.98
Sexual interest	356	44.28
Sexual intrusiveness	82	10.20
Sexual knowledge	272	33.83
Boys (n=392)		
Boundary problems	57	14.54
Exhibitionism	24	6.12
Sexual interest	190	48.47
Sexual intrusiveness	43	10.97
Sexual knowledge	141	35.97
Girls (n=412)		
Boundary problems	61	14.81
Exhibitionism	8	1.94

Table 11 Continued.

Sexual interest	166	40.29
Sexual intrusiveness	39	9.47
Sexual knowledge	131	31.80
EA (n=166)		
Boundary problems	15	9.04
Exhibitionism	1	.60
Sexual interest	62	37.35
Sexual intrusiveness	12	7.23
Sexual knowledge	50	30.12
SO (n=149)		
Boundary problems	13	8.73
Exhibitionism	4	2.68
Sexual interest	72	48.32
Sexual intrusiveness	8	5.37
Sexual knowledge	39	26.17
MW (n=114)		
Boundary problems	12	10.53
Exhibitionism	1	.88
Sexual interest	36	31.58
Sexual intrusiveness	9	7.90
Sexual knowledge	30	26.32
NW (n=173)		
Boundary problems	35	20.23
Exhibitionism	16	9.25
Sexual interest	94	54.33
Sexual intrusiveness	27	15.61
Sexual knowledge	74	42.77

Table 11 Continued.

SW (n=202)		
Boundary problems	38	18.90
Exhibitionism	13	6.44
Sexual interest	94	46.54
Sexual intrusiveness	17	8.42
Sexual knowledge	85	42.08

Finally, juvenile delinquency was considered a purely endogenous variable in the present study, comprised of the Aggressive and Delinquent subscales of the <u>CBCL</u> (Achenbach, 1991a), the <u>YSR</u> (Achenbach, 1991b), and the <u>TRF</u> (Achenbach, 1991c).

Analytic Plan

The analytic plan for Study 2 was identical to that of Study 1, with the exception of loneliness no longer being tested or examined in the present study. Therefore, latent variables were again created for each of the maltreatment experience (eight observed variables, timing and type of maltreatment; see Figure 1), sexualized behaviors (five CSBI domain scores; see Figure 2), and juvenile delinquency (Aggressive and Delinquent subscale scores from each of the CBCL, YSR, and TRF; see Figure 3). In order to examine the direct path from child maltreatment to juvenile delinquency and the indirect path through sexualized behaviors, SEM was again conducted. Once the measurement models had been tested and accepted using CFA procedures (see Figure 4 for an example of the CFA process on the Juvenile Delinquency latent variable), one structural model was specified and tested (see Figure 5). Determination of model fit was handled in the same way as in Study 1. CFI

values greater than .90 (Bentler, 1990) and RMSEA values less than .08 (Steiger, 1990) indicated reasonable model fit. A model was determined to fit well only if both criteria were met. In evaluating the statistical significance of individual model parameters (e.g., factor loadings, structural [path] coefficients), a statistical significance level of .05 was employed. Missing data were also handled the same way in Study 2 as in Study 1, with stringent inclusion criteria being set and listwise deletion being employed.

Results: Study 2

The hypothesized mediation model (i.e., sexualized behaviors as mediating the relation between maltreatment experience and juvenile delinquency) was tested using EQS 6.1 (Bentler, 1995). SEM offers an advantage over regression analyses by using maximum likelihood estimation (MLE), which allows for the computation of model parameters as a whole rather than for separate outcome variables. Latent variables were therefore created for each of the maltreatment experience, sexualized behaviors, and juvenile delinquency, as these constructs were comprised of multiple indicators.

Structural Equation Modeling

Confirmatory Factor Analyses

A first step in testing a structural mediation model is validating the measurement model. As such, CFAs were conducted to validate that the proposed latent constructs (i.e., maltreatment, sexualized behaviors, and juvenile delinquency) appeared to measure a single construct of interest.

 Maltreatment Experience

Maltreatment experience was first conceptualized as a latent variable with eight likely indicators (i.e., early and late reports of physical abuse, sexual abuse, emotional abuse, and neglect). Higher scores on this latent variable indicate more reports of maltreatment. The means for individual sample items ranged from .06 (late sexual abuse reports) to .45 (early reports of neglect), with *SD*s ranging from .23 to .50. The univariate distributions for the individual items resulted in a slight negative or positive skew depending upon the item. Zero-order correlations among the observed

variables are presented in Table 12. Significant multivariate kurtosis was revealed

(normalized Mardia's coefficient = 65.30). Because the assumption of multivariate

normality was violated, the Satorra-Bentler scaled chi-square test $(S-B\chi^2)$ was

employed to correct for overall model fit in the CFI and in the standard errors of

model parameters.

Table 12. Zero-order correlations for the eight indicators of maltreatment experience.

	Early Physical Abuse	Early Sexual Abuse	Early Emotional Abuse	Early Neglect	Late Physical Abuse	Late Sexual Abuse	Late Emotional Abuse	Late Neglect
Early Physical Abuse	1	.208**	.407**	.269**	.253**	.126**	.208**	.130**
Early Sexual Abuse	.208**	1	.170**	.153**	.088*	.146**	.119**	.043
Early Emotional Abuse	.407**	.170**	1	.397**	.253**	.118**	.203**	.175**
Early Neglect	.269**	.153**	.397**	1	.209**	.058	.149**	.200**
Late Physical Abuse	.253**	.088*	.253**	.209**	1	.260**	.417**	.356**
Late Sexual Abuse	.126**	.146**	.118**	.058	.260**	1	.216**	.209**
Late Emotional Abuse	.208**	.119**	.203**	.149**	.417**	.216**	1	.424**
Late Neglect	.130**	.043	.175**	.200**	.356**	.209**	.424**	1

 * Correlation is significant at the 0.05 level.

** Correlation is significant at the 0.01 level.

The latent variable of maltreatment experience, as indicated by eight observed

variables, was tested using CFA procedures in EQS 6.1. The hypothesized model did

not fit well statistically (S-B χ^2 [20, $N = 804$] = 124.220, $\underline{p}$ < .001), nor did it fit well

descriptively (CFI = .801, RMSEA = .081). In light of this poor fitting overall model,

individual model parameters were not interpreted.

In order to achieve a better fitting model, the standardized residual matrix was

reexamined. Early reports of emotional abuse and early reports of neglect had large

residuals compared to the other variables, with most values being greater than .05. A

modified model of maltreatment experience, as indicated by the six remaining

indicators, was thus tested using CFA procedures in EQS 6.1. This modified model

did not fit well statistically (S-B χ^2 [9, $N = 804$] = 24.335, $\underline{p}$ = .003), but did fit well

according to both descriptive indices employed (CFI = .940, RMSEA = .046). As

such, individual model parameters could be interpreted. All standardized factor

loadings were statistically significant ($\underline{p}$ < .05) and ranged from small (.196 for early

reports of sexual abuse) to large (.674 for late reports of emotional abuse), with

consistently larger standardized factor loadings for late reports of maltreatment.

Sexualized Behaviors

The sexualized behaviors construct was first conceptualized as a latent variable

with five indicators (i.e., boundary problems, exhibitionism, sexual interest, sexual

intrusiveness, sexual knowledge). Higher scores on this latent variable indicate more

sexualized behaviors. The means for individual sample items (CSBI domain scores)

ranged from .06 (exhibitionism) to 1.11 (sexual interest), with *SD*s ranging from .32 to

1.65. Zero-order correlations among the observed variables are presented in Table 13.

Because the assumption of multivariate normality was violated (normalized Mardia's

coefficient = 198.87), we again employed the S-Bχ^2, which corrects for overall model

fit in the CFI and the standard errors of model parameters.

Table 13. Zero-order correlations for the five indicators of sexualized behaviors.

	Boundary Problems	Exhibitionism	Sexual Interest	Sexual Intrusiveness	Sexual Knowledge
Boundary Problems	1	.330**	.313**	.703**	.375**
Exhibitionism	.330**	1	.283**	.440**	.302**
Sexual Interest	.366**	.283**	1	.355**	.691**
Sexual Intrusiveness	.703**	.440**	.355**	1	.397**
Sexual Knowledge	.375**	.302**	.691**	.397**	1

** Correlation is significant at the 0.01 level.

The latent variable of sexualized behaviors, as indicated by five observed

variables, was tested using CFA procedures in EQS 6.1. The hypothesized model did

not fit well statistically (S-B χ^2 [5, $N = 242$] = 74.351, $p < .001$) or descriptively (CFI

= .579, RMSEA = .131). In light of this poor fitting overall model, individual model

parameters were not interpreted.

The latent construct of sexualized behaviors was respecified by reexamining

the standardized residual matrix. The CSBI domain of sexual intrusiveness had large

residuals overall and compared to the other variables (most values above .50). A

modified model of sexualized behaviors, as indicated by the four remaining indicators,

was thus tested using CFA procedures in EQS 6.1. This modified model did not fit

well statistically (S-B χ^2 [2, N = 804] = 8.600, $\underline{p}$ = .014), but did fit well according to both descriptive indices employed (CFI = .944, RMSEA = .064). As such, individual model parameters could be interpreted. All standardized factor loadings were statistically significant ($\underline{p}$ < .05) and generally large (values ranging from .373 to .875).

Juvenile Delinquency

The juvenile delinquency construct was first conceptualized as a latent variable with six indicators (i.e., CBCL, YSR, and TRF scores on the Aggressive and Delinquent subscales). Higher scores on this latent variable indicate more delinquent behaviors. The means for individual sample items ranged from 1.19 (TRF delinquency score) to 8.72 (CBCL aggression score), with *SD*s ranging from 2.22 to 9.42. The univariate distributions for the individual items resulted in a slight negative or positive skew depending upon the item. Zero-order correlations among the observed variables are presented in Table 14. Significant multivariate kurtosis (normalized Mardia's coefficient = 36.07) was found in preliminary analyses; thus, the S-Bχ^2 was used to correct for overall model fit in the CFI and in the standard errors of model parameters.

Table 14. Zero-order correlations for the six indicators of juvenile delinquency.

	CBCL Delinquent Subscale	YSR Delinquent Subscale	TRF Delinquent Subscale	CBCL Aggressive Subscale	YSR Aggressive Subscale	TRF Aggressive Subscale
CBCL Delinquent Subscale	1	.338**	.299**	.733**	.256**	.327**
YSR Delinquent Subscale	.338**	1	.228**	.277**	.634**	.252**
TRF Delinquent Subscale	.299**	.228**	1	.259**	.219**	.733**
CBCL Aggressive Subscale	.733**	.277**	.259**	1	.331**	.320**
YSR Aggressive Subscale	.256*	.634**	.219**	.331**	1	.305**
TRF Aggressive Subscale	.327**	.252**	.733**	.320**	.305**	1

** Correlation is significant at the 0.01 level.

The latent variable of juvenile delinquency, as indicated by six observed variables, was tested using CFA procedures in EQS 6.1. The hypothesized model did not fit well statistically (S-B χ^2 [9, $N = 804$] = 641.513, $\underline{p} < .001$), nor did it fit well descriptively (CFI = .425, RMSEA = .296). As such, individual model parameters were not interpreted.

The standardized residual matrix was reexamined in an effort to respecify the latent construct of juvenile delinquency, thereby creating a better fitting model. Aggressive subscale scores on each of the three measures had consistently large residuals compared to the delinquency subscale scores (with many values greater than .05). A modified model of juvenile delinquency, as indicated by three indicators

(delinquency subscale scores on each of the CBCL, the YSR, and the TRF), was thus presumed to fit well and individual parameters were interpreted. Because that model was just identified, statistical and descriptive fit indices are unavailable. All three standardized factor loadings were statistically significant and ranged from small (.264 for TRF delinquency) to large (.504 for YSR delinquency and .746 for CBCL delinquency).

Mediation Model Testing

Using EQS 6.1, the relationships were examined between maltreatment experience, a latent variable composed of six indicators measured from birth to age 8 (early and late reports of physical and sexual abuse, and late reports of emotional abuse and neglect), sexualized behaviors, a latent variable composed of four indicators measured at age 8 (boundary problems, exhibitionism, sexual interest, and sexual knowledge CSBI domains), and juvenile delinquency, a latent variable composed of three indicators measured at age 12 (CBCL, TRF, and YSR delinquency subscale scores). The hypothesized model is presented in Figure 5. Direct effects of maltreatment experience on juvenile delinquency and on sexualized behaviors were expected. Also, an indirect effect of maltreatment experience on juvenile delinquency through sexualized behaviors was hypothesized.

Mardia's coefficient (value of 207.80) revealed significant multivariate kurtosis. Thus, the S-Bχ^2 was employed to correct for overall model fit in the CFI and in the standard errors of model parameters. While the hypothesized model did not fit well statistically (S-B χ^2 [62, $N = 804$] = 111.773, p < .001), both descriptive indices

of interest revealed good model fit (CFI = .937, RMSEA = .032). The direct effects of

maltreatment experience on juvenile delinquency (β = .308) and on sexualized

behaviors (β = .277) were statistically significant (ps < .05). In addition, the indirect

effect of maltreatment experience on juvenile delinquency through sexualized

behaviors (β = .298) was also significant at an alpha of .05. As such, sexualized

behaviors did partially mediate the relationship between child maltreatment and

juvenile delinquency. Children who had more reports of maltreatment from birth to

age 8 were reported to exhibit more sexualized behaviors at age 8, which in turn were

related to increased reports of delinquent behaviors at age 12.

Discussion

The relationship between child maltreatment and juvenile delinquency has been repeatedly established (e.g., Hamilton et al., 2002; Haugaard & Feerick, 2002; Loeber & Farrington, 2000; Preski & Shelton, 2001). However, research on likely mediators and moderators of this relationship is relatively sparse (Quas et al., 2002; Schwartz & Rendon, 1994). Therefore, the overarching goals of the current investigations were to examine whether sexualized behaviors and loneliness partially mediate the relationship between timing and type of child maltreatment reports and child, parent, and teacher reports of juvenile delinquency. Study 1 utilized an early maltreated sample of children from a single LONGSCAN site to examine sexualized behaviors and loneliness as possible mediators. Study 2 utilized a multi-site LONGSCAN sample of children who were deemed high-risk for maltreatment to investigate the mediational role of sexualized behaviors. Overall, the results suggested that maltreatment timing and type were not related to delinquency in the early maltreated sample (Study 1). However, in the multi-site sample of children at risk for maltreatment (some actually having been reported for suspected maltreatment), not only was reported maltreatment related to delinquency, but sexualized behaviors partially mediated the relationship between child maltreatment and juvenile delinquency (Study 2). Specifically, children with more maltreatment reports before age 8 had increased sexualized behaviors at age 8, which in turn predicted greater delinquent behaviors at age 12. Further, as hypothesized, children with late reports of maltreatment (reports between ages 4 and 8), particularly those with late physical

and/or emotional abuse reports, exhibited greater sexualized behaviors at age 8, which resulted in more delinquent behaviors at age 12, when compared to children without maltreatment reports or to those children with only early maltreatment reports (reports before age 4).

Each of maltreatment experience, sexualized behaviors, and juvenile delinquency were considered latent variables in the present investigations. As such, CFAs were first conducted to ensure that the observed indicators loaded appropriately on each of the latent constructs. The latent structure for maltreatment experience was the same for both models in Study 1 (i.e., sexualized behaviors and loneliness models). Early emotional abuse reports did not indicate the latent construct well and were therefore excluded as an indicator, leaving maltreatment experience being indicated by the 7 remaining manifest variables (i.e., early and late reports of physical abuse, sexual abuse, and neglect, and late reports of emotional abuse). In Study 2, a slightly different latent structure was identified for maltreatment experience. In addition to early reports of emotional abuse being excluded as an indicator of maltreatment experience, so too were early reports of neglect. This resulted in maltreatment experience being indicated by the remaining 6 manifest variables in Study 2 (i.e., early and late reports of physical and sexual abuse, and late reports of emotional abuse and neglect). These differences in latent structure make good theoretical sense in light of the differences between the samples of children used for each study. Study 1 employed a maltreated sample of children who had all been removed from their homes for substantiated maltreatment (mostly neglect) early in life, whereas Study 2 utilized

a cross-site sample of children who were at high-risk for maltreatment, but did not necessarily experience maltreatment nor were they necessarily ever removed from their homes. As such, early reports of neglect were an important characterization of the sample of children in Study 1. The fact that early reports of emotional abuse did not indicate the maltreatment latent variable well in either sample of children is of interest and supports the idea that emotional abuse experiences are qualitatively different from other forms of child maltreatment (e.g., Hamarman, Pope, & Czaja, 2002) and might represent a separate construct altogether. Further, as Hamarman and colleagues (2002) explain, definitions of emotional abuse are vague at best but generally involve the attack of a child's psyche, without external signs or proof, making it very difficult to detect and confirm. Thus, the finding that early emotional abuse reports did not load well together with the other indicators in the present studies could be largely due to the sheer paucity of such abuse reports before age 4.

The sexualized behaviors latent structure also differed slightly between the two studies. In Study 1 (the maltreated sample), sexualized behaviors was well indicated by only three of the five problematic CSBI domains (i.e., boundary problems, sexual interest, and sexual knowledge). The domains of exhibitionism and sexual intrusiveness did not indicate the latent construct of sexualized behaviors well and were, thus, excluded. Similarly, in Study 2 (multi-site high-risk sample) sexual intrusiveness was also excluded for not sufficiently representing the latent construct. However, the remaining four manifest variables did indicate the latent variable of sexualized behaviors well (i.e., boundary problems, sexual interest, sexual knowledge,

and exhibitionism). Of note, the sexual intrusiveness domain represents the most

sexually aggressive of all sexualized behaviors included in the CSBI. These behaviors

were reported by caregivers to be infrequent, and, therefore, unrelated to the other

forms of problematic sexualized behaviors due to the rare nature of sexually

aggressive behaviors overall (Friedrich et al., 1991). While CSBI scores were

obtained from caregivers when their children were only eight years of age and it is

possible that these same samples of children may develop more sexually intrusive

behaviors as they get older, sexually aggressive behaviors are some of the least

frequent of all sexualized behaviors across normative, sexually abused, and psychiatric

populations (Friedrich et al., 2001).

Finally, a latent variable was also created for juvenile delinquency. Initially,

each of the CBCL (parent-report), TRF (teacher-report), and YSR (youth-report)

Aggressive and Delinquent subscale scores were thought to indicate the latent variable

of juvenile delinquency. However, all three Aggressive subscale scores were excluded

after CFA procedures were conducted because they did not statistically represent the

construct well. This same latent structure was found for both models in Study 1 and

for Study 2. This confirms the notion that aggressive and delinquent behaviors are

qualitatively different, even though they are often described in tandem (see Merrick,

2006, for a review). A related hypothesis is that the constructs of aggression and

delinquency might be manifestations of the same underlying problem, with different

progressions over time on developmental pathways to serious delinquent behaviors

(Loeber & Farrington, 2000). Importantly, just as the children investigated in the

present studies were not demonstrating sexually aggressive behaviors, it appears that they were also not exhibiting aggressive behaviors overall as much as they were acting out in a delinquent manner.

After latent structures were tested and confirmed, SEM procedures were employed to test the mediational models hypothesized. In Study 1, two mediational models were posited to explain the relationship between maltreatment and juvenile delinquency (i.e., sexualized behaviors and loneliness). However, no relationship was found between maltreatment and delinquency in Study 1 at all and so mediators could not be tested. Further, no relationship was found between maltreatment and sexualized behaviors, between sexualized behaviors and juvenile delinquency, or between maltreatment and loneliness. While at first glance these findings are curious, particularly in light of the many studies that have confirmed a robust relationship between maltreatment and delinquency (e.g., Farrington & Loeber, 2000; Stevenson, 2001; Widom, 1989, 1991; Widom & White, 1997), there are a number of potential explanations. First, because Study 1 employed a maltreated sample of children, all of whom were removed from their homes early in life for substantiated maltreatment, the sample of children investigated represent quite a homogeneous sample of maltreated children. As such, it is possible that there was not sufficient variability within this sample of children to detect effects (see Tabachnick & Fidell, 2001). Second, because each of the children had been involved in the child welfare system, it is likely that many of them had benefited from mental health and other services early in life. Service utilization, particularly mental health, medical, and childcare services, may

partially explain why maltreatment timing and type were not related to either proposed

mediator or to juvenile delinquency in Study 1. Also, for many of the children's

caregivers in this study, service utilization was likely a requisite for reunification with

their children.

The only significant relationship that was found in Study 1 was that loneliness

was predictive of juvenile delinquency. This supports findings that lonely children are

at great risk for subsequent maladjustment, including juvenile delinquency (Howe &

Parke, 2001; McCloskey & Stuewig, 2001). While maltreatment was not found to be

related to loneliness in the present study, research has repeatedly confirmed that

maltreatment is a key predictor of loneliness and peer rejection in children (e.g.,

Bolger & Patterson, 2001; Kaufman & Cicchetti, 1989; Peláez, 2005a; Salzinger et al.,

2001), and that maltreated children as young as three years old can and do experience

feelings of loneliness (McCloskey & Stuewig, 2001; West et al., 1986). A lonely

child may be less likely to seek support from others and may be unequipped with

appropriate social conventions and pleasantries. Further, the resultant discomfort from

social interactions and often avoidance and withdrawal from social situations

altogether causes peers not to want to engage with their lonely counterparts. Such

rejection can cause the lonely child to be hostile and to appraise the situation and the

rejecting peers negatively. Such negativity can result in a host of delinquent behaviors

(Asher & Wheeler, 1985). Specifically, in studies that distinguish between withdrawn

rejected kids and aggressive rejected kids, it is found that both of these groups of

children report more loneliness than children with average levels of peer acceptance

(Asher & Paquette, 2003). Thus, opportunities for targeting loneliness in interventions for maltreated children should not be overlooked. Without the appropriate emotional processing skills, self-esteem, and educational experiences with friends, the lonely child is likely to engage in delinquent behaviors (Grayston et al., 1992), in part because they are socially naïve and immature.   Middle childhood represents a key time when interventions can occur to combat loneliness, thereby changing one's trajectory toward delinquency (Loeber & Farrington, 2000).

SEM procedures were also conducted to test the mediational role of sexualized behaviors in Study 2. Each of the relationships between maltreatment, sexualized behaviors, and juvenile delinquency were significant and sexualized behaviors were found to partially mediate the relationship between maltreatment and delinquency. That is, children with more reports of child maltreatment before age 8 exhibited greater sexualized behaviors at age 8, which in turn led them to display increased delinquent behaviors at age 12. In particular, late reports (reports between the ages of 4 and 8) of physical and emotional abuse predicted greater sexualized behaviors, which predicted greater subsequent delinquent behaviors. Late emotional abuse reports accounted for 45.5% of the variance in the maltreatment experience latent variable, while late reports of physical abuse accounted for 41.3% of such variance. Early and late sexual abuse reports only accounted for 3.9% and 14.2% of the variance in the maltreatment experience latent variable, respectively. Thus, the finding that the maltreatment experience latent construct predicted sexualized behaviors at all is quite telling because it provides additional support for the fact that different types of

maltreatment (beyond sexual abuse type alone) and the developmental time periods in which they occur are important, yet nontraditional and understudied predictors of sexualized behaviors (see Merrick et al., 2008; Silovsky & Niec, 2002).

One hypothesis for the predictive utility of physical abuse reports (and possibly of any maltreatment type) is that such experiences may increase child anxiety and emotional dysregulation, resulting in various self-soothing behaviors, including sexualized behaviors. In addition, sexualized behaviors may represent an effort to gain physical closeness and intimacy. Exhibiting sexualized behaviors in this sense may be somewhat adaptive for children, helping them to cope with trauma (Gilgun, 2006). Of course, sexualized behaviors that are aggressive in nature or that include others are considered maladaptive.

Late reports (reports between the ages of 4 and 8) of emotional abuse were also predictive of sexualized behaviors in this study. It could be the case that early emotional abuse leads to an inhibition of problem behaviors initially, perhaps due to a fear of criticism or because of strict and rigid discipline. However, later emotional abuse may be more likely to be internalized due to increased comprehension with age. Thus, later emotional abuse may lead to various self-soothing behaviors. As for many maltreated children and those at high risk for maltreatment, sometimes these self-soothing behaviors are not normative and are instead manifested as maladaptive behaviors, such as certain sexualized behaviors. In this respect, sexualized behaviors are likely a marker for affective dysregulation, providing temporary relief from the subjective distress of dysregulation itself (Gilgun, 2006). As described by Cicchetti

and colleagues (1991), many maltreated children exhibit disturbances in emotional regulation and development. Perhaps children who engage in many of the atypical sexualized behaviors are doing so because they lack more normative mechanisms of affect regulation.

Of course, it is also important to note that the sociodemographic composition of the LONGSCAN sites and the multiple risk factors for children at these sites could be contributing to the display of sexualized behaviors. Maltreatment is often a marker of family characteristics related to increased exposure to sexuality (e.g., family nudity, poor boundaries), and a marker of less effective socialization of children regarding a number of societal rules (Friedrich, 1997). Also, many of the contextual factors often associated with the display of sexualized behaviors were likely present in the high-risk sample of children investigated, some having experienced maltreatment and others not. Factors such as younger age, total number of hours in daycare, witnessing domestic violence, and family adversity have all been implicated as predictors of sexualized behaviors (Friedrich, 1997; Friedrich et al., 2004; Kendall-Tackett & Watson, 1991). Finally, the display of sexualized behaviors may represent the presence of undetected sexual abuse in these high-risk samples (Wherry et al., 1995).

The relationship between sexualized behaviors and juvenile delinquency found in this study is consistent with past research (Peláez, 2005b; Pithers et al., 1998). The CSBI domain of sexual knowledge accounted for 76.6% of the variance in the sexualized behaviors latent variable, while the sexual interest domain accounted for 63.0% of such variance. Age-inappropriate sexual knowledge is one of the most

problematic sexualized behaviors, and is consequently one of the most consistent outcomes of a maltreatment history (Kendall-Tackett et al., 1993). Of course, until recently, sexualized behaviors were examined almost exclusively in sexually abused populations alone (Friedrich et al., 2001; Sandfort & Cohen-Kettenis, 2000). However, Peláez (2005b) found that certain problematic subtypes of sexualized behaviors (e.g., sexual knowledge and sexual interest) were predictive of both delinquent and aggressive behaviors for maltreated boys and girls without a documented sexual abuse history. In general, childhood aggression and child maltreatment of any type are two of the most robust predictors of juvenile delinquency and adult criminality (Farrington & Loeber, 2000; Stevenson, 2001; Widom, 1989, 1991). While certain sexual behaviors are normative, perhaps the development, display, and increased frequency of many of the more atypical sexualized behaviors are maladaptive. Thus, it is likely that the absence of these maladaptive behaviors allows for the display of normative, more appropriate and effective coping behaviors and strategies to buffer the effects of maltreatment. Because sexualized behaviors may be an inappropriate and less effective coping mechanism for children, they are likely an indication of affective dysregulation, and such dysregulation may in turn cause the maltreated child to engage in delinquent behaviors.

Strengths and Limitations

The results of the present study are particularly compelling given the advantages of the prospective design, large sample of maltreated and high-risk children, creation of latent constructs, and utilization of advanced analytical

procedures, all of which are particular strengths of these investigations. In attempting to explain the relationship between maltreatment and juvenile delinquency, two nontraditional mediators were explored (i.e., sexualized behaviors and loneliness) and sexualized behaviors were, in fact, found to partially mediate this relationship.   As such, the present investigations demonstrated that both timing and type of maltreatment report were significant predictors of sexualized behaviors, which in turn predicted subsequent juvenile delinquency. The results, therefore, indicate that certain maltreatment characteristics seemingly unrelated to sexual displays have significant predictive utility, and that some sexualized displays and behaviors are predictive of subsequent delinquent behaviors. Thus, a main strength of the study was the overarching aim itself.

The fact that the timing of a particular maltreatment report was coded within the maltreatment type variable was another strength of these investigations. This approach to operationalizing official reports may better capture the actual maltreatment experiences of children in that it describes two dimensions of maltreatment simultaneously. Such an approach has the potential to better elucidate the effects of maltreatment experiences, which are heterogeneous in nature (NRC, 1993). Importantly, the present study was one of very few studies to examine sexualized behaviors in a population of children with and without documented sexual abuse histories. This is a major strength because it is essential to consider alternate explanations for sexualized behaviors rather than simply assuming a sexual abuse history if effective intervention programming for maltreated children is to be

implemented. Of course, due to the heterogeneity of the maltreatment experience and

the known overlap between abuse types (NRC, 1993), it is certainly possible that the

display of sexualized behaviors may, in some cases, represent the presence of

undetected sexual abuse in these high-risk samples (Wherry et al., 1995).

　　Just as the present study had many strengths, there were also limitations.

First, this study was limited to the examination of CPS reports of child maltreatment,

which likely underestimates the actual incidence of maltreatment in the sample. While

using allegations of abuse and neglect instead of only substantiated ones may be

questioned as potentially overestimating maltreatment among reported children, others

have argued that allegations of abuse and neglect are more likely to represent

children's actual maltreatment experiences (e.g., Drake, 1996; Leiter & Myers, 1994).

Also, Hussey and colleagues (2005) found that child functioning does not seem to

differ based on whether a maltreatment report was alleged or substantiated. To

combat this limitation, a latent variable was created for the maltreatment experience

and only those reports that loaded well with the other indicators were included in the

latent structure of the maltreatment experience. A second limitation of the present

study was the likelihood that some primary caregivers that reported on child

sexualized behaviors and loneliness could have been the perpetrators of the

maltreatment itself. This is particularly true in instances of neglect and emotional

abuse. Perpetrator status could thus result in the caregiver underreporting these

behaviors in an effort to appear more socially desirable, or simply because they fail to

notice such behaviors when they occur (e.g., in the case of neglect). Similarly, the fact

that the CSBI was completed during a face-to-face interview with the primary

caregiver could have led to underreporting of sexualized behaviors due to discomfort

or wanting to present the child (and, in so doing, also the parent) in a favorable light.

Given that the sexualized behaviors in this study were likely to be underreported, the

predictive utility of maltreatment timing and type is quite compelling, as is the

relationship between sexualized behaviors and juvenile delinquency. A third

limitation was the fact that official records of juvenile delinquency (i.e., arrest records)

were unavailable for these investigations. It is important to highlight that the term

'juvenile delinquency' is itself a legal term. That is, in the strictest sense, if youth are

not arraigned in court, adjudicated, and incarcerated, they are not legally juvenile

delinquents. Rather, they have only engaged in delinquent behavior and because of

their age, they are referred to as juvenile delinquents among social scientists (Calhoun

& Jurgens, 1993). As such, multiple reporters (i.e., parent, child, and teacher) were

utilized to gather information about child delinquent behaviors in the present

investigations and such reports were used as proxies for the delinquent behaviors

themselves.

Implications and Future Directions

The clinical implications of the present investigations are many. Depending

on the precise characteristics or dimensions of child maltreatment that are examined,

estimates of the prevalence of developmental and mental health problems for abused

children vary from approximately 50 to over 80 percent, and these rates are

significantly higher than the prevalence of such problems in socio-economically

comparable samples (Landsverk & Garland, 1999; Pilowsky, 1995). The observed

higher rates of mental health problems, including anxiety disorders, depression,

dissociation, eating disorders, and post-traumatic stress disorder in maltreated children

(Gover & MacKenzie, 2003; Lansford et al., 2002) have been attributed to the

experienced maltreatment in combination with exposure to multiple risk factors.

Children must, therefore, have solid coping strategies in order to buffer these effects,

like juvenile delinquency.

Sexualized behaviors and loneliness likely represent two indicators of faulty

coping strategies, both of which were found to predict delinquent behaviors in the

current investigations. By better understanding and conceptualizing the maltreatment-

related predictors of sexualized behaviors and loneliness, and by taking into account

how affective dysregulation may present differently in boys and girls, interventions

can be specifically tailored for maltreated children before they become a part of the

juvenile justice system. Child maltreatment itself remains one of the key predictors of

juvenile delinquency and adult criminality (Farrington & Loeber, 2000; Widom &

White, 1997).

Future research should include data collected from multiple informants of the

maltreatment experience, as well as additional maltreatment dimensions (e.g.,

maltreatment severity) in order to more fully explore the predictors of sexualized

behaviors, loneliness, and juvenile delinquency. Further, hypotheses regarding which

particular sociodemographic and contextual variables might be associated with

sexualized behaviors and loneliness should be posited in an effort to appropriately

control for non-maltreatment related variables associated with the expression of such

behaviors among maltreated children.

Also, because of the multifaceted nature of juvenile delinquency and its related

behavioral presentations, it is recommended that multiple measures and assessment

tools be employed whenever possible, and that data be collected from multiple sources

(e.g., self and official reports). Official reports (most commonly arrest records),

though legal in nature, will provide useful information to help conceptualize the

particular delinquent behaviors of interest. Defining juvenile delinquency from a

social sciences perspective is a complicated endeavor, mainly because the term is used

to index both legal and behavioral processing (e.g., Farrington & Loeber, 2000;

Jonson-Reid, 2004; Olczak, Parcell, & Stott, 1983), and as such the construct is often

left undefined altogether in the social sciences. However, in large part because of the

extreme societal and monetary costs of juvenile delinquency, it is essential to

appropriately characterize delinquency and to understand the many predictors and

mediators of the relationship between maltreatment and delinquency in order to

appropriately inform prevention, intervention, and treatment programming.

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