

EXAMINING THE LINK BETWEEN TRAUMA AND DELINQUENCY FOR
JUVENILE DELINQUENT GIRLS: A LONGITUDINAL STUDY

by

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DISSERTATION ABSTRACT

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Doctor of Philosophy

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September 2013

Title: Examining the Link Between Trauma and Delinquency for Juvenile Delinquent Girls: A Longitudinal Study.

Recent research has postulated a correlation between childhood trauma and delinquency, but few empirical studies have examined the causal relationship between these constructs over time and, specifically, with juvenile delinquent girls. The purpose of this study, therefore, was to use an existing longitudinal data set to explore the relationship between childhood trauma experiences and the development of antisocial behavior over time.

The sample included juvenile delinquent girls (N = 166) who were part of two nationally funded research projects conducted by researchers at the Oregon Social Learning Center (OSLC) entitled OSLC Relationship Study I comparing Multidimensional Treatment Foster Care (MTFC) and group care. A cross-lagged model was used to examine the association between trauma and delinquency across three time points. Multiple group analyses were conducted based on the moderating effects of age, cumulative historical trauma experiences, sexual abuse and out-of-home placements.

Overall, study results showed that trauma and delinquency rates were not associated over time for the full sample. The moderating effect of age was partially

supported with younger and older girls exhibiting different pathways. Implications for future research and practice are discussed.

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CHAPTER I

INTRODUCTION

Childhood victimization and exposure to violence is a significant social problem with an estimated 25% of children being exposed to family, school and community violence around the world (Amar, 2006; Cohen & Mannarino, 2008). According to the United States Department of Health and Human Services (USDHHS, 2009), approximately 905,000 children living in the United States in 2006 were victims of abuse or neglect and 1,530 of these children suffered fatal injuries. More than half of children abused and neglected are under the age of seven years, with the highest rate of victimization experienced by children younger than one year old (USDHHS). Childhood victimization and exposure to violence are well known risk factors for the development of poor outcomes during adolescence and adulthood such as substance use, risky sexual behavior, poor academic performance, mental health problems and delinquent behavior (Brown et al., 1999; Lansford et al., 2002; Smith, Leve, & Chamberlain, 2006; Widom, 1989).

Adolescent delinquency and antisocial behavior are perhaps two of the most widely researched negative outcomes of childhood exposure to violence. It is well known that young children who are exposed to neglect and abuse at an early age are at an increased risk for missing important neurological and behavioral milestones that are essential building blocks to healthy development and functioning. For example, children who develop poor social and emotional regulation skills early on are at an increased risk for developing antisocial behavior during adolescence (Solomon & Heide, 2005; Teicher et

al., 2003). In addition to individual risk factors, the interpersonal environment (e.g., family, peer, community and school contexts) of children who are maltreated often adds additional risk factors for adolescent delinquency. For example, children's exposure to authoritarian, coercive and erratic parenting is a well documented risk factor for poor outcomes such as low academic achievement, risky sexual behavior, substance use and antisocial behavior (Caspi et al., 2002; Dishion & Stormshak, 2007). Several theories have also addressed the intergenerational transmission of criminal activity and behavior within families, with studies documenting this phenomenon in various countries (Bardone et al., 1996; Bijleveld & Farrington, 2009; Quinton & Rutter, 1988).

Although most children who have experienced traumatic events exhibit resiliency and do not develop significant behavior problems, many become vulnerable to serious developmental interruptions and negative long-term consequences. Youth in detention exhibit the most severe and pervasive maladaptation and are at the greatest risk for negative developmental outcomes (Atkins et al., 1999; DiFilippo et al., 2003; Todis et al., 2001). Juvenile delinquent youth are at substantially higher risk than youth in the community to have witnessed or been victimized by violence in their homes and communities with the typical delinquent youth experiencing an average of 14 distinct traumas during his/her short life span (Abram et al., 2004; Wood et al., 2002). The prevalence of PTSD symptoms for detained youth is up to eight times higher than those youth in a community sample and even higher for delinquent girls, with approximately 70% endorsing PTSD symptoms (Arzen Moeddel & Kerig, 2008).

Although important strides have been made to examine youth's trauma experiences as an important factor influencing the development of antisocial behavior,

delinquent youth are often not included in studies on adolescent development, trauma or antisocial behavior (Kerig et al., 2009). Even fewer studies incorporate the experiences of girls exhibiting antisocial behavior despite the growing number of girls in the juvenile justice system and the greater number of trauma related symptoms that girls report compared to boys (Smith et al., 2006; Wood et al., 2002). Moreover, the development and empirical testing of theories explaining antisocial behavior onset and classification for girls remains inconclusive (Leve & Chamberlain, 2004).

One potential explanation for why there is an inconclusive link between childhood abuse and delinquency, particularly for girls, is the confusion regarding the role of trauma in the pathway to delinquency, especially for those children who have experienced multiple forms of victimization over time. Recent methodological and theoretical efforts have been made by researchers to capture the co-occurrence of multiple types of trauma and the possible differential impacts on later adjustment (Pears & Fisher, 2008); however, there remains a significant gap in our understanding about the many factors that influence the direction and strength of this relationship, especially over time (Wilson, Stover, & Berkowitz, 2009). In addition, leading theories that address the development of antisocial behavior for boys and girls fail to include a comprehensive assessment of trauma as a contributing factor, even though it is clearly understood that children exhibiting high rates of aggressive and violent behavior also often endorse high rates of traumatic experiences (Siegfried, Ko, & Kelly, 2004; Smith & Thornberry, 1995; Vermeiren, 2003). Including childhood trauma experiences in our conceptualization of antisocial behavior trajectories becomes especially salient for girls due to the increased

rates of abuse and PTSD symptoms experienced by girls compared to boys (Zahn et al., 2010).

Study Purpose

Given the few longitudinal studies that have been done to understand the trajectory of girls' antisocial behavior, and the lack of clarity about these results, more and better research is needed to inform intervention and prevention efforts. Juvenile delinquent girls are perhaps the most at-risk group of children and yet efforts to reduce and prevent traumatization, delinquency and recidivism rates are driven by empirical evidence gathered on predominately male samples that seem to exhibit markedly different behavior and symptom constellations.

The purpose of this study, therefore, was to use an existing longitudinal data set to explore the relationship between childhood trauma experiences and the development of antisocial behavior over time for juvenile delinquent girls. I used a combined sample of juvenile delinquent girls (N = 166) who were part of two nationally funded research projects by researchers at the Oregon Social Learning Center (OSLC) entitled OSLC Relationship Study I (REL I: Chamberlain, Leve, & Reid, 2002) & OSLC Relationship Study II (REL II: Chamberlain, Leve, & Reid, 2008). I examined correlations between trauma and delinquency at three time points (T1=baseline, T2=12 months later, and T3=24 months later), the temporal stability of these constructs, and their cross-lagged effects (i.e., effects of trauma on delinquency and vice versa) across time (Hays et al., 1994). A multi-agent multi-method report of delinquency was used to capture a more comprehensive view of delinquency rates (Fontaine et al, 2009). Lastly, multiple group

analyses were also conducted to examine whether the cross-lagged model fit differently based on girls' experiences of cumulative historical trauma, sexual abuse and out of home placements.

CHAPTER II

LITERATURE REVIEW

This chapter is organized as follows: First, I provide a framework for conceptualizing childhood trauma by reviewing the literature on complex trauma responses of children and the current movement toward a developmental perspective of trauma in diagnosis and treatment. I then highlight the efforts of researchers to theoretically and methodologically capture these complex trauma responses, specifically for populations exhibiting multiple forms of victimization. Next, I review relevant literature that addresses the role of childhood trauma in the development of antisocial behavior. I highlight the documented correlational relationship between trauma and delinquency found for detained youth and review the emerging developmental theories linking trauma and delinquency to later outcomes. Lastly, I review the literature specific to childhood trauma experiences and the pathway to delinquency for juvenile delinquent girls. Throughout this chapter, I attend to the progress in the field related to identification of the role of trauma in outcomes for detained youth as well as future directions for advancement in our understanding of this relationship specifically for girls.

Complex Trauma Responses of Children

Given the high-risk backgrounds of children who develop antisocial behavior and delinquency, researchers have begun to investigate the relationship between trauma and the cascade of problem behaviors in youth (Ford, 2002; Patterson et al., 1998).

Psychological trauma is broadly conceptualized as directly experiencing, witnessing or learning about an event through another's experience that elicits an intense emotional and biological response (DSM-IV-TR, 2000; Ford, 2002). Each person will have similar and distinctly different responses to trauma that are dependent on individual and environmental factors. Although children's responses to traumatic events share some overlap with adult responses (House, 2002), studies have shown that children tend to elicit a wider range of associated symptoms that can significantly impact brain, personality and social skill development (Nadar, 2008). For example, trauma reactions during childhood involve additional difficulties to regulating anxiety and arousal exhibited by adults such as self-regulation of bodily processes and emotions, information-processing, impulse control and goal-directed behavior and relational involvement (Ford, 2011). Some children may function adequately for an extended period of time and do not experience symptoms or impairment until months or years following a traumatic experience (Nader, 2008; Yule, Udwin, & Bolton, 2002).

Despite the unique aspects of children's experience of trauma compared to adults, many of the scales that assess trauma for youth are based on adult diagnostic criteria (Nader, 2011). Considerable efforts have been made by clinicians and researchers to extend the current definition of Post Traumatic Stress Disorder (PTSD) criteria in the Diagnostic and Statistical Manual of Mental Disorder (DSM) to include developmentally adverse interpersonal trauma or complex trauma symptomology unique to children's responses to traumatic stress (Cook et al., 2005; Ford, 2005). Developmental trauma refers to a group of stressors most commonly associated with interpersonal, early, extreme or prolonged stressors that includes: sexual, physical and emotional abuse,

abandonment by caregiver(s), severe and chronic neglect, domestic violence, or death or gruesome injuries as a result of community violence, terrorism or war (Ford, 2005, 2009).

The shift to a developmental conceptualization of trauma response is especially important to consider as the highest rates of abuse and neglect in the United States occur before the age of 3 (USDHHS, 2009) when children are in an extremely sensitive developmental period. In addition, children who experience one traumatic event are at an increased likelihood for revictimization throughout childhood with most children experiencing multiple traumas (Haazen et al., 2009). Repeated victimization, especially when left untreated, can severely impact the cognitive, biological and psychosocial development and functioning of children (Bogler & Patterson, 2001). Long-term outcomes of abuse and neglect depend on many factors such as the child's developmental status when abuse occurs, the type of abuse, frequency, duration and severity of abuse, and the relationship between the child and his/ her abuser (USDHHS, 2009).

The impact of childhood maltreatment on children's developmental outcomes has traditionally been divided into two major investigative approaches. The first approach involves research with a sample of children that has experienced some form of maltreatment, such as those in the child welfare system, without differentiating among subtypes or severity of maltreatment. The second approach involves using populations that have experienced a certain type of maltreatment and then comparing their experiences to non-maltreated populations (Pears, Kim & Fisher, 2008). Although both approaches have yielded important advancements in documenting the negative effects of child maltreatment, several studies have demonstrated the need to address the effects of multiple experiences of maltreatment on childhood adjustment (Bolger & Patterson,

2001; Lau, 2005). Pears, Kim and Fisher (2008) performed a latent profile analysis on 117 preschool-aged maltreated foster children and found naturally occurring subgroups of children based on maltreatment type and severity. In addition, the authors found that these maltreatment profiles showed differential patterns of psychosocial adjustment and cognitive functioning. These findings, among others, point to the need for future research to consider the co-occurrence of maltreatment experiences, as well as the severity of these experiences, to more fully understand the effects of maltreatment on developmental outcomes. Future studies investigating maltreatment that look at experiences of older children and gender differences in profiles of maltreatment will further advance our understanding of the unique combinations of maltreatment experiences that yield differential developmental outcomes.

Childhood Trauma Experiences and the Development of Antisocial Behavior

Several studies have documented, with large samples and comparable control groups, that children who were maltreated or exposed to violence were more likely to have arrest records during adolescence or adulthood (Maxfield & Widom, 1996; Rivera & Widom, 1990; Smith & Thornberry, 1995; Thornberry et al., 2001; Widom, 1989a; Zingraff et al., 1993). Investigating the link between trauma and delinquency, therefore, becomes even more salient when considering the traumatic experiences of delinquent youth. The more adverse life experiences and time spent on a path of delinquency the more difficult it becomes for a child to return to a normal developmental progression (Geiger & Crick, 2001; Yates et al., 2003).

More than 90% of delinquent youth have experienced a traumatically stressful life

event and the typical delinquent has experienced an average of 14 distinct traumas during his or her lifetime (Abram et al., 2004). Juvenile delinquent girls are perhaps the most at-risk group of children as they disproportionately report traumatic victimization at alarmingly high rates compared to male juvenile delinquents and community-based populations (Zahn et al., 2010). The association between trauma experiences in childhood and the development of mental health concerns such as oppositional defiant disorder (ODD: Fisher et al., 1997; Merry & Andrews, 1994) and conduct disorder (CD: Cauffman et al., 1998; Fergusson et al., 1996; Kaplan et al., 1998; Lynskey & Fergusson, 1997; Steiner et al., 1997) has also been well established. Ford et al. (2000) found that children being treated for ODD were likely to have been victimized traumatically and exhibited symptoms of PTSD specific to their victimization. The authors also found that those children diagnosed with ODD had the most severe overall psychopathology and social impairment, which appeared to be explained primarily by their PTSD symptoms.

Researchers recently proposed new developmental theories of psychopathology for juvenile delinquents that conceptualize trauma as a pathway to psychological disturbance for adjudicated adolescents. Ford et al. (2006) purported that traumatic experiences overwhelm the executive functioning of the brain, causing impairment in the mediation of thoughts, behaviors and emotion. If this state of psychological and physiological alarm continues over time, an adolescent's resources become depleted and s/he develops a rigid cognitive schema, decreased ability to regulate emotions, and learns fewer coping strategies. Repeated victimization continues to hinder adolescent identity and skill development such as self-respect, interpersonal trust, and self regulation (Kerig et al., 2009). Ford et al. (2006) describes a cycle in which the adolescent attempts to regain

control through “survival coping”, which involves outward expression of defiance while masking internal feelings of shame and hopelessness. If the traumatic stress and symptoms continue to be ignored by the child’s interpersonal environment, the adolescent then escalates toward “victim coping”, a perceived justification to take any means necessary to avoid revictimization. In an attempt to gain a sense of control and redress the injustice of their maltreatment, they may begin to feel a need to defend themselves from a perceived hostile world. In order to carry out this defense, victim coping may result in the loss of empathy, ability to self regulate, distorted cognitions, lack of impulse control and other characteristics that can increase an adolescent’s tendency toward delinquent behavior. Although this theory is proposed to apply to both genders, girls may be more vulnerable to develop a victim coping mentality because of disproportionately reported higher rates of interpersonal traumas (Kerig & Becker, 2012). Lansford (2006) also proposed a “pathological adaptation” response to trauma by adolescents that causes an emotional numbness. The numbness protects them from the conscious experience of traumatic stress but causes them to act out in maladaptive ways.

Although these theories provide clarification about the link between trauma and delinquency, neither has been tested directly. Given the overwhelming correlational evidence that points to high experiences of trauma and related negative outcomes for delinquent youth, it becomes crucial to include a more complex conceptualization of childhood trauma in our investigation of antisocial behavior and delinquency, especially for girls. Further understanding of the interaction between trauma responses and trajectories toward antisocial behavior can lead to earlier prevention efforts aimed at

promoting healthy development and intervention efforts to reduce recidivism rates for detained youth.

Trauma Experiences and Antisocial Behavior for Juvenile Delinquent Girls

Juvenile delinquent girls represent the fastest growing segment of the juvenile-justice system, with female delinquent youth representing 30% of all juvenile arrests (Zahn et al., 2010). From 1997 to 2006, arrests for aggravated assaults decreased for boys by 24% and, for girls, only by 10%. During this same time period, arrests for simple assault decreased for boys by 4% but increased for girls by 19% (FBI, 2010). In addition to the growth in delinquency rates, victimization experiences reported by juvenile delinquent girls, in particular extreme and repeated victimization, is exponentially greater than that reported by male juvenile offenders and females in the community (Belknap & Holsinger, 2006; Bender, 2010; Gaarder & Belknap, 2002).

Research suggests that male and female emotional and behavioral reactions to abuse differ with females more likely to show aggression accompanied by depression, self blame, suicidal ideation/behaviors, and disordered eating (Sullivan, Farrell, & Kliewer, 2006). In addition, girls may be more likely than males to develop PTSD symptoms as a result of increased exposure to multiple forms of trauma (i.e., polyvictimization), especially interpersonal trauma, making juvenile delinquent girls at particular risk for developing PTSD (Dembo et. al., 2007; Ford et. al., 2010; Kerig et al., 2009). Gammelgard, Weizmann-Henelius, Koivisto, Eronen and Kaltiala-Heino (2012) studied gender differences in violence risk profiles for 231 institutionalized adolescents and found that boys in general had more high-risk ratings on items regarding criminal

conduct, problem-solving and ADHD while girls endorsed high self destructive behavior. In addition, girls' risk for violent behavior were strongly associated with past violent behavior and lifetime stress, whereas boys' risk behavior was more associated with anti-social behaviors.

Researchers have noted that the difference in responses to abuse experiences between boys and girls may be understood by the fact that girls are at a greater risk of repeated interpersonal victimization such as sexual abuse by family members or being direct targets of violence within the community (Chamberlain & Moore 2002; Freyd, 2009; Herrera & McCloskey, 2003; McCabe et al., 2002). High rates of interpersonal violence victimization, categorized as betrayal trauma (Freyd, 1994), lead to poorer outcomes such as revictimization in adulthood, depression, anxiety, disassociation, and PTSD (Freyd, 2009; Gobin & Freyd, 2009), especially when left untreated. The growth in delinquent behavior for girls combined with high incidences of interpersonal trauma experiences has created momentum in the field to examine the antecedents and trajectories of delinquent behavior specific to girls.

Provided that much of the development and empirical testing of theories of antisocial behavior onset and classification is predominately based on research with delinquent boys, researchers recently set out to explore the trajectories toward delinquency for girls (Fontaine, 2009; Leve & Chamberlain, 2004). With one of the first attempts to theoretically explain the trajectory of girls' antisocial behavior, Silverthorn and Frick (1999) proposed a delayed onset pathway in which early childhood risk factors predicted the onset of behavior problems during adolescence. Although females also tend to show signs of antisocial behavior at an early age, the authors suggest that factors such

as gender socialization and stereotypes that reject females' use of aggressive behavior and encourage internalization of behavior problems may explain the delayed onset of antisocial behavior. The authors posit that girls with delayed onset tend to have more negative and diverse long-term outcomes into young adulthood whereas boys tend to exhibit antisocial behavior earlier with the majority of negative outcomes occurring during middle childhood and adolescence. It is also hypothesized that boys and girls share some precipitating risk factors (e.g., family dysfunction and psychopathology), but girls tend to exhibit a separate set of risk factors including higher rates of physical and sexual abuse and early menstrual changes (Graber et al., 2004; Moffit & Caspi, 2001).

An alternative model was proposed by Moffit and Caspi (2001) that outlines similar precipitating risk factors (e.g., neurological, cognitive, temperamental factors) that lead to the early onset of antisocial behavior for both girls and boys, with fewer girls experiencing these risk factors. The authors also suggested fewer sex differences in the development of late onset antisocial behavior and a different set of precipitating risk factors for boys versus girls. Moffit and Caspi (2001) empirically tested their model longitudinally using a population-based sample. Study results confirmed their assertions, as well as those of Silverthorn and Frick (1999); that is, fewer girls than boys exhibited early onset antisocial behavior, but this difference significantly narrowed by adolescence. In contrast to Silverthorn and Frick (1999), Moffit and Caspi (2001) found that girls with early onset of antisocial behavior had similar high-risk backgrounds to boys with early onset, while both girls and boys in the late onset group did not show these risk factors (e.g. parenting, neuropsychological and temperament difficulties).

More recently, Bender (2010) reviewed the child welfare and juvenile delinquent

literature to converge the overlapping evidence related to child maltreatment and risk for delinquency. Based on this review, she proposed an empirically based model highlighting five potential intervening factors in the path from maltreatment to delinquency for children, with specific hypothesized paths based on sex. The five intervening factors proposed for all youth were: running away, mental health problems, substance abuse problems, school disengagement and deviant peer associations. The pathways hypothesized especially important for females include mental health problems, substance abuse and academic problems, while running away from home is hypothesized to be a similar pathway for both sexes.

Despite the important advances made in the field, trauma and delinquency rates for girls' continue to rise and a theoretical and empirical framework for understanding the risk and protective factors specific to girls' antisocial and delinquent behavior does not exist (Zahn et al., 2010). In their review of 46 empirical studies that examined the developmental trajectories of antisocial behavior in females, Fontaine, Carbonneau, Vitaro, Barker and Tremblay (2009) found the majority of results supported that (1) an early on-set/life course-persistent trajectory exists for females, (2) adolescent-onset of antisocial behavior seems to be more prevalent for females and (3) the difference in risk and protective factors for girls that follow the adolescence-limited trajectory versus the adolescence-delayed-onset trajectory are inconclusive. The authors of this review suggest several hypotheses that may contribute to the lack of cohesion and consistency in findings related to trajectories for females; however, none of these suggestions incorporate looking at the parallel trajectories of trauma experiences, responses and treatment for girls. Given the distinct differences in risk profiles for girls and the

correlation of the prevalence of risk factors to the onset of delinquency (Fergusson & Horwood, 2002), it may be beneficial to examine factors of maltreatment more closely such as type(s) of trauma experienced, frequency and severity of trauma and access to trauma informed interventions. Understanding specific constellations and profiles of trauma experiences may lead to more clarification of the offending trajectories.

Summary

Recent research has postulated a correlation between childhood trauma and delinquency but few empirical studies have examined the causal relationship between these constructs over time and, specifically, with juvenile delinquent girls. Despite the increase in antisocial behavior for girls and the overrepresentation of adolescent girl survivors of trauma in the juvenile justice system, a trauma informed theory of antisocial behavior does not exist. Youth violence is multi-determined and an outcome of risk factor interaction that includes a comprehensive assessment of trauma across a child's developmental context is needed to address these theoretical and empirical gaps. For example, including mental health outcomes such as PTSD and other complex trauma responses is essential. It is also important to understand the severity and rates of repeat victimization among this population. Understanding the similarities and differences in the sequelae of delinquent behavior for girls and boys becomes essential to identifying risk and protective factors related to the development of delinquency and future trauma experiences for both sexes.

Purpose of Current Study

The purpose of this study, therefore, was to use an existing longitudinal data set to explore the relationship between childhood trauma experiences and the development of antisocial behavior over time for juvenile delinquent girls. I used a combined sample of juvenile delinquent girls ($n = 166$) who were part of two nationally funded research projects by researchers at the Oregon Social Learning Center (OSLC) entitled OSLC Relationship Study I (REL I: Chamberlain, Leve, & Reid, 2002) and OSLC Relationship Study II (REL II: Chamberlain, Leve, & Reid, 2008).

The current study adds to the literature in a number of ways: First, this study examined the temporal and cross lagged effects of trauma and delinquency over time using a large sample of juvenile delinquent girls. Second, multi-agent and multi-method reports of trauma and delinquency were utilized to allow for a more comprehensive depiction of trauma and delinquency experiences for girls. Third, these effects were examined based on age in order to decipher the impact of development factors on these relationships. Fourth, multiple group analyses were performed to determine whether the cross-lagged effects looked differently for the full sample compared to grouping girls by cumulative historical trauma experiences and specific incidences of trauma experienced by this sample. Using a cumulative trauma measure of childhood traumatic experiences, in addition to examining specific incidences of trauma, helps clarify the influence of specific profiles of trauma on the course of delinquent behavior for girls. Lastly, the current study aims to further unite the relatively separate research fields of mental health and criminal justice, which will allow for more comprehensive intervention and

prevention efforts aimed at reducing revictimization and recidivism rates for juvenile delinquent girls (Jennings et al., 2011).

Research Questions

Using an existing longitudinal data set with a sample ($n = 166$) of juvenile delinquent girls, I examined correlations between trauma and delinquency at three time points (T1=baseline, T2=12 months later, and T3=24 months later), the temporal stability of these constructs, and their cross-lagged effects (i.e., effects of trauma on delinquency and vice versa) across time (Figure 1). Multiple group analyses were also conducted to examine whether the cross-lagged model fit differently based on participant age (Figure 2) cumulative historical trauma experiences (Figure 3), sexual abuse experiences (Figure 4) and out of home placements (Figure 5). This study was organized based on the following research questions:

1. Is there an association between trauma and delinquency over time for juvenile delinquency girls?
2. Does age group moderate the relationship between trauma and delinquency over time?
3. Do cumulative historical trauma experiences moderate the relationship between trauma and delinquency over time?
4. Do sexual abuse experiences moderate the relationship between trauma and delinquency over time?
5. Does the frequency of out of home placements moderate the relationship between trauma and delinquency over time?

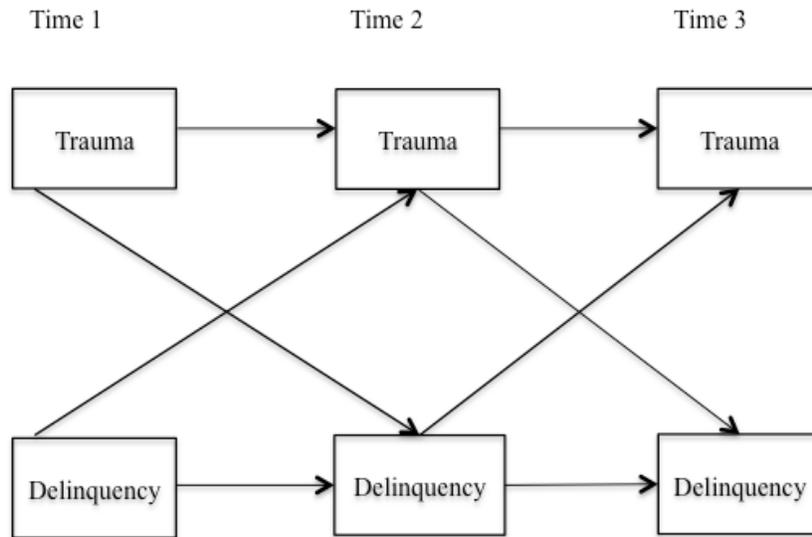


FIGURE 1. Overall Theoretical Cross-lagged Model

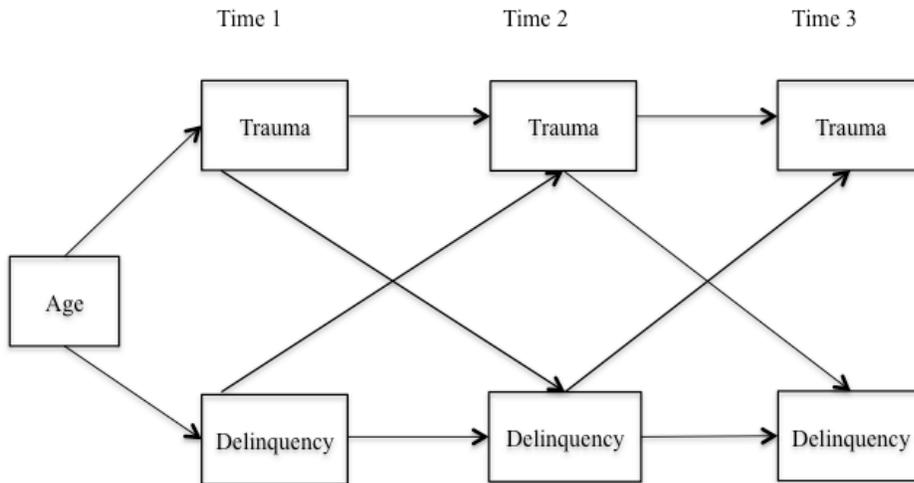


FIGURE 2. Theoretical Multiple Group Analysis Model for Age

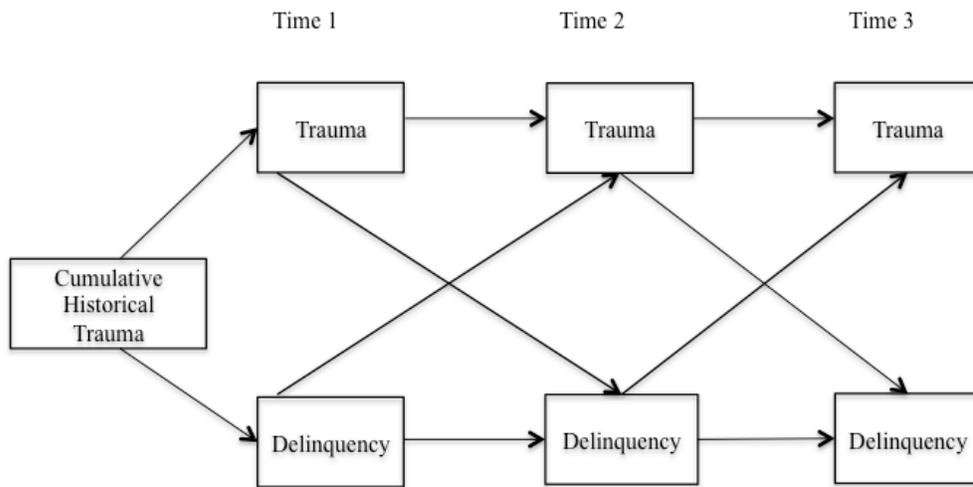


FIGURE 3. Theoretical Multiple Group Analysis Model for Cumulative Trauma

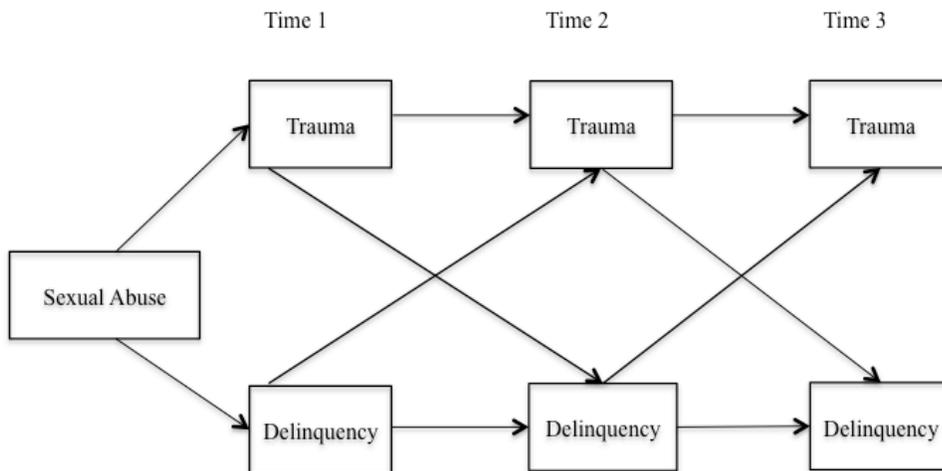


FIGURE 4. Theoretical Multiple Group Analysis Model for Sexual Abuse

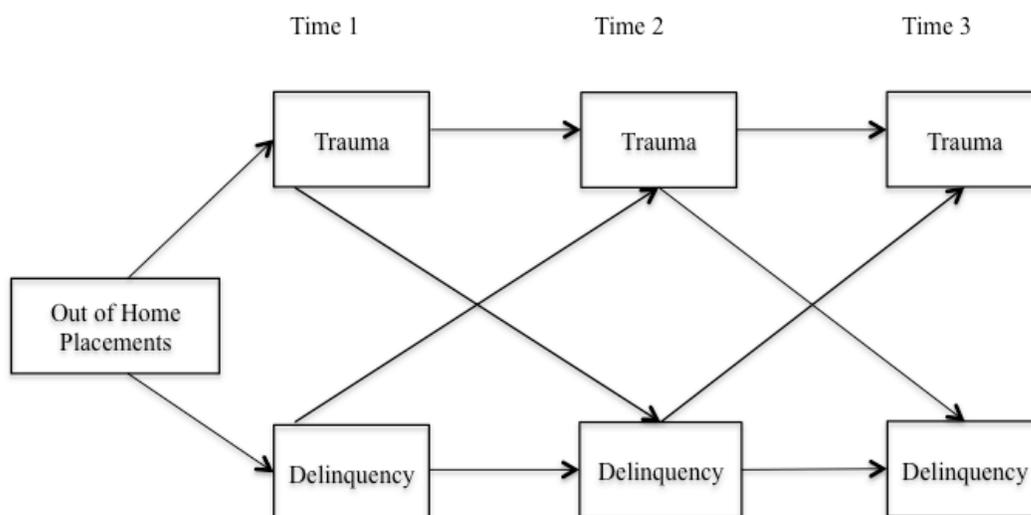


FIGURE 5. Theoretical Multiple Group Analysis Model for Out of Home Placements

Hypotheses

First, I hypothesized that trauma experiences at T1 are associated with trauma experiences at T2 and T3. Higher rates of victimization among juvenile delinquent girls are well supported within the literature with the average detained youth having experienced 14 distinct traumas (Chamberlain & Moore 2002; Freyd, 2009; Herrera & McCloskey, 2003; McCabe et al., 2002). Second, it was hypothesized that delinquency rates at baseline (T1) would be associated with levels of delinquency at T2 and T3. Third, based on well documented correlational evidence found in the literature, I hypothesized that reciprocal casual effects will be found between trauma and delinquency rates across time points. Lastly, I hypothesized that these effects would differ based on the participant's age at baseline, cumulative trauma experiences, sexual abuse experiences and number of out of home placements.

CHAPTER III

METHODOLOGY

Participants

Study participants included girls transitioning out of the juvenile justice system ($n = 166$) who were part of two nationally funded research projects by researchers at the Oregon Social Learning Center (OSLC) entitled OSLC Relationship Study I (REL I: Chamberlain, Leve, & Reid, 2002) & OSLC Relationship Study II (REL II: Chamberlain, Leve, & Reid, 2008) with sample sizes of $n = 81$ and $n = 85$, respectively. REL I (Chamberlain, Leve & Reid, 2002) and REL II (Chamberlain, Leve, & Reid, 2008) were two consecutive randomized control studies conducted to contrast multi-dimensional treatment foster care (MTFC: Chamberlain, 2003) and group care (GC; i.e., aftercare services-as-usual) to improve adjustment and reduce delinquency during adolescence.

Both studies were conducted in the Northwestern United States between 2002 and 2010. Girls were included in the study if they had been mandated to community-based out-of-home care due to chronic delinquency, were 13–17 years old, had at least one criminal referral in the prior 12 months, and were placed in out-of-home care within 12 months following referral. Girls pregnant at the time of recruitment were excluded from enrollment. Girls provided assent, and their legal guardian provided consent, to participate in the study.

The present dissertation study sample of girls ($N = 166$) were assessed at baseline (T1), again 12-months after baseline (T2), and again 24-months after baseline (T3). Participants' mean age at baseline was 15.30 years old ($SD = 1.2$), 16.3 ($SD = 1.2$) at T2,

and 17.4 ($SD = 1.2$) at T3. Of the total sample, 69% of girls identified as Caucasian, 16% as Multiracial, 19% as Hispanic, 2% African-American, 1% Native American, 1% Asian, and 1% Other/Unknown. At T1, 61% of the girls lived in single-parent families and 32% of the girls lived in families earning less than \$10,000 per year.

Procedures

To access data for the current study, I received approval from the Oregon Social Learning Center (OSLC), as well as the Institutional Review Board at the University of Oregon (see Appendix A). All girls in the REL I (Chamberlain, Leve, & Reid, 2002) and REL II (Chamberlain, Leve, & Reid, 2008) intervention projects were referred by the juvenile justice system and were mandated to enter community-based out-of-home care due to chronic delinquency. Girls were screened to see if they met study eligibility criteria: were 13–17 years old, had at least one criminal referral in the prior 12 months, and were placed in out-of-home care within 12 months following referral. If a girl met study inclusion criteria, she was randomly assigned to the MTFC or GC group. Each girl and the current caregiver participated in a 2-hour baseline assessment (T1), separately. The caregiver interview contained measures that assessed parenting practices such as supervision, discipline, monitoring, positive reinforcement, and problem solving. The number of parent transitions, parent/child relationship quality, child self esteem, child adjustment and behavior at home, school and the community were also assessed. The child interview and questionnaires assessed the girl's employment and further education, community involvement, services use, arrests and delinquent behavior, family relationships, parenting, employment and finances, quality of peer and romantic

relationships, substance use, and traumatic stress. All assessment interviews took place at OSLC and were conducted by staff members who were blind to participants' group assignment and not involved in the intervention.

Exactly 12 months (T2) and 24 months post baseline (T3), girls and the current caregivers participated in another 2-hour follow-up assessment that assessed similar constructs from baseline interviews. In most cases, a biological parent or aftercare parent participated. If parent participation at all assessments was not possible due to the child's reentry into detention settings, for example, then the placement setting staff participated in the assessment.

Intervention Condition (MTFC)

Multidimensional Treatment Foster Care (MTFC; Chamberlain, 2003) is an empirically evaluated, randomized intervention involving girls who have been in the juvenile justice system. It is designed to assist youth to transition successfully into the community after detainment. The MTFC girls were individually placed in 1 of 22 highly trained and supervised homes with state-certified foster parents. Experienced program supervisors with small caseloads (i.e., 10 MTFC families) supervised the clinical staff, coordinated aspects of each youth's placement, and maintained daily contact with the MTFC parents. The intervention was individualized to meet each girl's individual behavior problems and aftercare needs; however, all participants received the basic MTFC intervention components: daily telephone contact with foster parents to monitor case progress and program adherence; weekly group supervision and support meetings for foster parents; an in-home, daily point-and-level program for girls; individual therapy

for girls; weekly meetings with behavioral support specialists in community settings; family therapy for the aftercare placement family focused on parent management strategies; close monitoring of school attendance, performance, and homework completion; case management to coordinate the interventions; 24-hr, on-call staff support for foster and aftercare parents; and psychiatric consultation as needed.

For the second REL II trial, MTFC was similar, but also included components targeting substance use (e.g., motivational interviewing and incentives for clean urinalyses) and risky sexual behavior (e.g., information on sexual behavior norms and education and instruction about strategies for being sexually responsible).

Control Group Care (GC) Condition

Girls in the GC group were placed in community-based programs in Oregon State that represented typical out-of-home care by the juvenile justice system. Between the two REL I and REL II trials, each site served 1–12 study participants ($M [SD] = 2.18 [2.95]$). The GC programs had between 2–83 youth in residence ($M = 13$) and 1–85 staff members ($Mdn = 9$). The community-based program facilities served girls only (68%) or both genders but housed girls and boys separately and required on-grounds schooling (41%), sent only some girls to school off-grounds (38%), or sent all girls to off-grounds school (21%). The program philosophies were primarily behavioral (67%) or multiperspective (33%); 80% of the programs reported delivering weekly therapeutic services.

Measures

The current study included data from three time points, which for efficiency, will be referred to hereafter as T1 for baseline, T2 for the assessment 12 months after baseline, and T3 for the assessment 24 months after baseline.

Cumulative Historical Trauma Experiences

Researchers have suggested that using a cumulative measure of traumatic experiences can provide a more accurate indication of the level of stress that an individual has experienced (Lehmann, 1997; Lloyd & Turner, 2003; Smith, et al., 2006; Yehuda, Schmeidler, Siever, Binder-Brynes, & Elkin, 1997). A cumulative score of trauma was used to determine a total count of traumatic incidences each girl experienced before the age of 13. A total of four traumatic events were summed for the cumulative trauma score: *(a) documented physical abuse, (b) documented sexual abuse, (c) history of family violence and (d) out of home placements*. First, each categorical indicator (documented physical abuse, documented sexual abuse and history of family violence) was coded as 0 (No) and 1 (Yes). Second, the continuous indicator variable (out of home placements) was recoded as a dichotomous variable using a median split: 0 (0-1 placements) or 1 (2 or more placements). Lastly, all indicators were then summed (range = 0-4) to create a total cumulative trauma score. Higher scores indicate higher experiences of trauma.

Trauma During Adolescence (T1, T2 and T3)

Trauma experiences at T1, T2 and T3 was measured using three caregiver report

items from the Traumatic Stress Index (TSI; Norris, 1990). The TSI screening instrument was designed to measure the occurrence of traumatic events in the last year using six indicators: a) being the victim of a robbery, b) being the victim of an assault, c) being involved in motor vehicle accident, d) losing a friend/family member, e) being the victim of natural or manmade disasters and f) other unique traumatic events. For the current study, only items a, b and f were used as these items were more theoretically related to influence delinquent behavior. A total trauma score for each participant was calculated by summing the total scores for each of the three indicators. The range of possible scores was 0-3, with higher scores indicating more trauma events experienced.

Delinquency (T1, T2 and T3)

A delinquency construct was created to determine the level of criminal/antisocial behavior at each assessment time point (Chamberlain, Leve, & DeGarmo, 2007). The construct is comprised of three indicators assessing girls' behavior during the prior 12-month period: *(a) number of criminal referrals, (b) number of days in locked settings and (c) self reported delinquency.*

Number of criminal referrals was measured using frequency counts of official criminal records from state police and circuit courts. The *number of days spent in locked settings* was measured using frequency counts of girls' self report of total days spent in detention, correctional facilities, jail or prison. *Self reported delinquency* was measured using the Elliott Self-report of Delinquency Scale (Elliott, Huizinga, & Ageton, 1985), which is a 21-item self-report measure of delinquency and includes four subscales: (a) delinquency, (b) index offenses, (c) minor delinquency, and (d) illicit drug use. Each girl

was asked how many times she violated certain laws during the preceding 12 months. The Elliott Self report of Delinquency Scale has shown to have acceptable internal consistency with this sample ($\alpha=.91$) (Chamberlain, Leve, & DeGarmo, 2007).

The weighted average of the three indicators (*number of criminal referrals, number of days in locked settings and self reported delinquency*) across T1, T2 and T3 was then combined to create the total delinquency score. The Elliot Self-report of Delinquency Scale items were divided by the max frequency over all waves, creating a 0 to 1 score at each time point for each participant. The other two indicators, number of days spent in a locked setting and number of criminal referrals, were logarithmically transformed and then shifted and divided to fit a 0 to 1 scale based again on the max frequency over all waves. The average of the three scores was then calculated to create the delinquency construct. Higher scores indicate a higher rate of delinquency for that participant.

CHAPTER IV

RESULTS

This chapter describes the study findings. Contents are presented in the following order: data screening and missing data, descriptive information and statistical assumptions, bivariate correlations and results of cross-lagged SEM model testing and multiple group analyses.

Data Screening and Missing Data

All preliminary analyses to model testing, including data screening and examination of missing data, were conducted using Predictive Analytics Software 18.0 for Windows (PASW; SPSS Inc., 2009). Data ranges were checked for each variable to ensure that all data were within the prescribed ranges. Missing data were also examined. Table 1 shows the percentage of missing data per variable. As expected, attrition resulted in a loss of data at time points 2 and 3. The attrition was largest for the trauma variable with 24.70% of the cases missing at time point 3.

TABLE 1. Percentage of Missing Data per Variable

Variable (time point)	Missing data (%)
1. Age (T1)	0.00
2. Delinquency (T1)	0.00
3. Delinquency (T2)	4.20
4. Delinquency (T3)	10.80
5. Trauma (T1)	4.20
6. Trauma (T2)	21.70

7. Trauma (T3)	24.70
8. Physical abuse	0.00
9. Sexual abuse	0.60
10. Family history of violence	9.60
11. Number of out of home placements	4.80

The missing data were imputed using maximum likelihood estimates under the full information maximum likelihood (FIML) method (Little & Rubin, 2002). This method was chosen because FIML estimation provides a best estimate based on all available information from all observations (Olinsky, Chen, & Harlow, 2003).

Descriptive Statistics and Statistical Assumptions

Descriptive statistics for the measured variables are presented in Tables 2 & 3. Multivariate normality and linearity were assessed, which are both primary statistical assumptions that underlie SEM (Kline, 2005). Skewness and kurtosis statistics were examined using the following cutoffs, respectively: -0.8 to .8 (skew) and below 10.0 (Kline, 2005). Examination of skew and kurtosis, as well as visual inspection of histograms, indicated that data distributions were not normal for the following variables: trauma (Time 2 and 3) and delinquency (Time 3). Skewness was out of range for these variables, but kurtosis appeared normal for each variable. Because of the suspected violation of normality, cross-lagged models were estimated with maximum likelihood estimation (ML) and ML with robust standard errors (Muthen & Muthen, 2010a). ML with robust standard errors provides some protection against the biasing effects of nonnormal variables. Examination of the results from both sets of models revealed

substantively identical effects. Thus, only the results using standard ML are reported below.

TABLE 2. Descriptive Statistics and Normality for Continuous Measured Variables

Variable	<i>M</i>	<i>SD</i>	Range	Skew	Kurtosis
Age at baseline	15.30	1.17	12 – 17	-0.06	-0.66
Trauma at T1	1.31	0.83	0 – 3	0.16	-0.52
Trauma T2	0.52	0.72	0 – 3	1.29	1.13
Trauma T3	0.52	0.76	0 – 3	1.40	1.39
Delinquency T1	0.47	0.17	0.00 - 0.09	-0.59	0.47
Delinquency T2	0.24	0.20	0.00 – 0.77	0.46	-0.81
Delinquency T3	0.17	0.19	0.00-0.69	0.88	-0.40
Out of home placements	2.26	2.81	0 – 15	2.21	5.93

Note. Trauma (Times 2 and 3) and Out of home placements were positively skewed and Delinquency (Time 3) was negatively skewed.

TABLE 3. Frequency Statistics for Categorical Measured Variables

Variable	%
Physical abuse	91.0
Sexual abuse	60.6
Family violence	45.3
Cumulative trauma	87.3

Note. Percentage of participants who experienced specific traumatic incident before age 13.

Bivariate Correlations

A zero order Pearson correlation matrix of study variables is presented in Table 4. One disadvantage of Pearson correlations is that skewness or extreme outliers can influence them. Rank-based Spearman correlations, which are not affected by skewness and outliers, were also examined given that several of the measures were skewed. The pattern of Spearman correlations was substantively identical to the Pearson correlations and, thus, only the Pearson correlations are reported.

Correlations were all in the expected direction, though some were of small magnitude or non-significant. As expected, delinquency variables were significantly correlated with one another across time points. Trauma at T1 was significantly correlated to trauma at T3 as expected; however, trauma at T1 was not significantly correlated to trauma at T2. As expected, trauma at T2 was significantly correlated to trauma at T3.

Unexpectedly, delinquency at T1 was not significantly correlated with trauma at any time point, including cumulative trauma and pre-baseline trauma categories (e.g., sexual abuse, physical abuse, family violence, out of home placements). Delinquency at T2 was significantly correlated with pre-baseline measures of physical abuse, out of home placements and trauma at T2 and T3 only. Delinquency at T3 was significantly correlated with out of home placements as well as trauma at T1 and T3 only.

As expected, physical abuse, sexual abuse and out of home placements were significantly correlated to trauma at T1; however, family violence was not. Unexpectedly, physical abuse, family violence and out of home placements were not correlated with trauma at T2 and T3. Sexual abuse was the only pre-baseline trauma significantly

correlated to trauma at T3. As expected, the cumulative historical trauma composite variable was significantly correlated to trauma at T1 and T3.

TABLE 4. Bivariate Correlations Among Measured Variables for Full Sample

Variable	1	2	3	4	5	6	7	8	9	10	11
1. Del. T1	---										
2. Del.T2	.345**	---									
3. Del T3	.362**	.495**	---								
4. Trauma T1	.121	.155	.241**	---							
5. Trauma T2	.012	.259**	.095	.127	---						
6. Trauma T3	.130	.198*	.205*	.178*	.203*	---					
7. Sexual abuse	-.030	.072	.085	.233**	.094	.184*	---				
8. Phys. abuse	-.085	-.197*	-.090	.197*	-.030	.008	.066	---			
9. Out of home	-.145	.198*	.168*	.269**	-.040	.079	.144	.109	---		
10. Family viol	.033	-.008	-.051	-.028	.037	-.107	.056	-.080	-.117	---	
11. Cum trauma	-.08	.08	.11	.29**	-.07	.21**	.59**	.42**	.44**	.52**	---

Note. Del. T1 = delinquency at time 1; Del. T2 = delinquency at time 2; Del. T3 = delinquency at time 3. Phys. abuse = documented physical abuse. Out of home = count of out of home placements. Family Viol. = documented family violence. Cum trauma = Cumulative trauma composite.

* $p \leq .05$ ** $p \leq .01$

Model Testing

A three wave, two-variable cross-lagged structural equation model (SEM) was conducted to test the study hypotheses using Mplus 6.0 software (Muthen & Muthen, 2010b). The use of cross-lagged models is recommended when the measurement of constructs are available at multiple time points, which allows for the ability to control for the autocorrelation within a construct when predicting subsequent scores of the same construct (e.g., trauma from year to year). The ability to control for autocorrelation allows for improved accuracy in predicting the directionality among constructs (Duncan, 1975).

A total of four models (Model 1, Model 2, Model 3 and Model 4) were initially tested to examine the relationship between trauma and delinquency for the full sample. First, the stability only model (Model 1) was tested without any cross causal paths. Next, Model 2 consisted of cross lag paths from delinquency to trauma (Del -> Trauma) only. Third, Model 3 consisted of paths from trauma to delinquency only (Trauma -> Del). Lastly, Model 4 consisted of all stability and cross-lagged paths. Model fit was then compared across the four models to determine whether adding the cross casual paths increased model fit for the full sample.

After the initial model testing, exploratory multiple group analyses were conducted to examine whether the cross-lagged model fit equally well across different groups, or if different groups (i.e., older versus younger girls) are best fit by different models. Four potential group moderators were used: a) age at baseline, b) cumulative historical trauma, c) past sexual abuse, and d) out of home placements.

Model-fit was assessed for all models with a joint consideration of the chi-square statistic (χ^2), the Comparative Fit Index (CFI), and the Root Mean Square Error of Approximation (RMSEA) (Hu & Bentler, 1999). Good model fit is evidenced by a nonsignificant chi-square, which suggests that the hypothesized model is not different from a perfect model. A CFI of at least .95 represents very good model fit, and a CFI of .90 to < .95 represents adequate model fit (Hu & Bentler, 1999). An RMSEA of .05 or less represents a very good fit, while .08 to > .05 suggests adequate fit (Hu & Bentler, 1999). When comparing models, chi-square difference tests were used (Hu & Bentler, 1999).

Model 1-4: Trauma and Delinquency for Full Sample

As stated earlier, four models (Model 1, Model 2, Model 3 and Model 4) were initially tested and compared based on goodness of fit to examine possible causal effects between trauma and delinquency across three time points. All of the models resulted in borderline adequate fit (see Table 5).

TABLE 5. Model Fit and Chi Square Difference Tests for Full Sample.

Model	Model Comparison	$\Delta\chi^2(df)$	χ^2	$\chi^2 p\text{-value}$	CFI	RMSEA
1			19.06	.02	.87	.09
2	M1 vs M2	6.73 (4)	15.30	.02	.89	.10
3	M1 vs M3	3.76 (2)	16.17	.01	.88	.10
4	M1 vs M4	2.89 (2)	12.33	.02	.90	.11

Note. Model 1 includes only stability paths across time points and correlational paths at each time point. Model 2 includes only casual paths from delinquency to trauma. Model 3 includes only causal paths from trauma to delinquency. Model 4 includes the full cross-lagged model. $\Delta\chi^2(df)$ = chi square difference and degrees of freedom.

Despite the modest improvements in model fit with the addition of the causal paths, chi-square difference tests were non-significant (see Table 5) which means that Model 2, Model 3 and Model 4 did not provided a significant increase in the quality of fit over the stability model. Thus, we can infer that delinquency and trauma across time for the full sample are casually unrelated. Figure 6 shows the standardized effects from the stability only model.

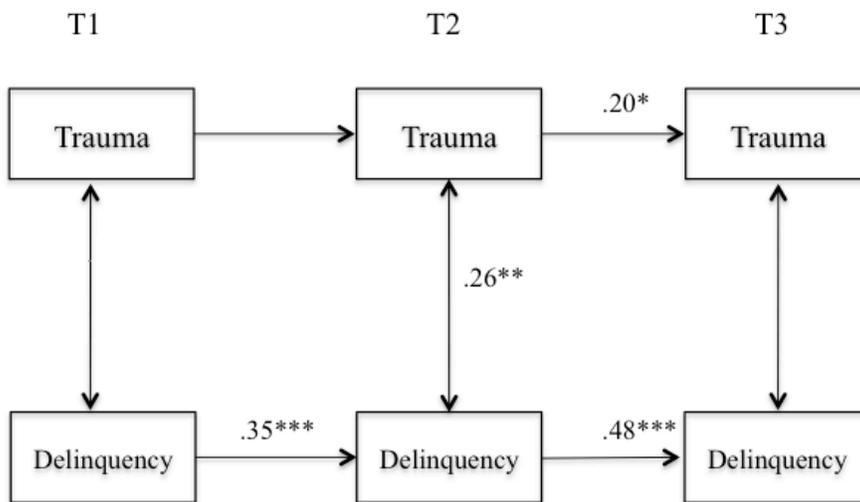


FIGURE 6. Stability Only Model for Full Sample With Standardized Parameter Estimates; * $p < .05$. ** $p < .01$. *** $p < .001$.

Model 5: Potential Moderating Effect of Age

Multiple group analysis was used to explore whether the cross-lagged model fit differently for younger and older girls using a median split of age at baseline (Median = 15.2). First, an unconstrained stability only model was specified to allow the system to find the parameter estimates that best fit the data for the two age groups separately. The hypothesis that the stability model fit equally well for both groups was not strongly

confirmed $\chi^2(16) = 29.64, p = .02, CFI = .85, RMSEA = .10$. Thus, an unconstrained full cross-lagged model was explored based on older and younger groups, Model 5a and Model 5b respectively. This model resulted in similar indices of fit, $\chi^2(8) = 17.75, p = .02, CFI = .89, RMSEA = .12$, indicating that the cross lag model effects may differ between the age groups.

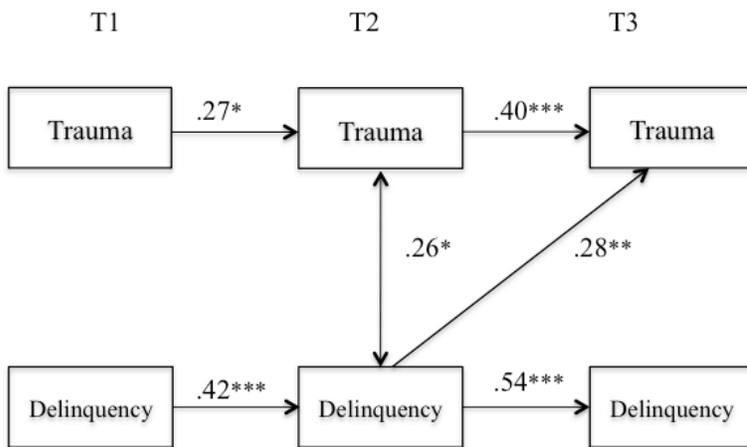


FIGURE 7. Model 5a Cross-lagged Multiple Group Analysis for Older Girls With Standardized Parameter Estimates; * $p < .05$. ** $p < .01$. *** $p < .001$.

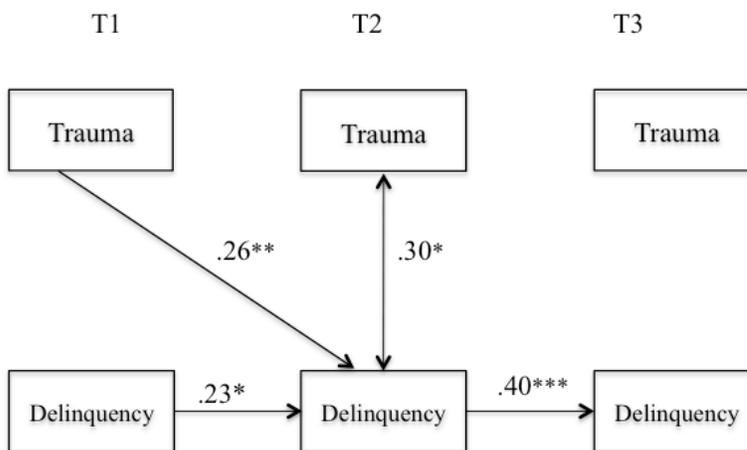


FIGURE 8. Model 5b Cross-lagged Multiple Group Analysis for Younger Girls With Standardized Parameter Estimates; * $p < .05$. ** $p < .01$. *** $p < .001$.

For older girls, significant pathways were found between trauma at T1 to T2 ($\beta = .27$) $p < .05$ and trauma at T2 to T3 ($\beta = .40$) $p < .001$. There were no statistically significant pathways between trauma variables found for younger girls. These results indicate that trauma is a stable construct across the three time points for older girls but not for younger girls.

Delinquency paths for both samples, however, were found to be statistically significant (e.g., delinquency from T1 to T2 and from T2 to T3) indicating that delinquency is a stable construct over time for both older girls and younger girls in this sample. In addition, a significant correlation was found between trauma at T2 and delinquency at T2 for both older ($r = .26$) $p < .05$ and younger ($r = .30$) $p < .05$ girls. There were no other significant correlations found between trauma and delinquency for either age group.

For older girls, a significant unidirectional casual path was found between delinquency at T2 and trauma at T3 ($\beta = .28$) $p < .01$. All other casual pathways were not statistically significant. For younger girls, a significant unidirectional casual path was found between trauma at T1 and delinquency at T2 ($\beta = .26$) $p < .01$, however, no other causal paths were statistically significant. These results offer some evidence that the causal effects between trauma and delinquency may be working differently in the different age cohorts, however, the casual pattern is not significant across the time points for either group. In other words, the statistically significant casual pathways are unidirectional for each age group implying weak evidence for a reciprocal effects model. Thus, the evidence for the causal effects between trauma and delinquency are not strong for either age group.

Model 6: Potential Moderating Effect of Cumulative Historical Trauma

Multiple group analysis was used to explore whether the cross-lagged model fit differently for girls with more traumatic experiences. Cumulative historical trauma was comprised of four different historical traumas: 1) physical abuse (yes/no), 2) sexual abuse (yes/no), 3) history of violence in family (yes/no), and 4) at least one out of home placement (yes/no). A median split was then used to categorize participants into low (1-2 historical traumas) and high (3-4 historical traumas) groups. Then, an unconstrained stability only model was specified. The hypothesis that the stability model fit equally well for both groups was confirmed by adequate model fit, $\chi^2(16) = 21.80$, $p = .15$, CFI = .92, RMSEA = .07. Thus, there was no evidence for the moderating effect of cumulative historical trauma.

Model 7: Potential Moderating Effect of Sexual Abuse

Multiple group analysis was used to explore whether the cross-lagged model fit differently for girls who had experienced sexual abuse or not (yes/no). An unconstrained stability only model was specified. The hypothesis that the stability model fit equally well in both groups was confirmed by adequate model fit, $\chi^2(16) = 21.14$, $p = .17$, CFI = .93, RMSEA = .06. Thus, there was no evidence for the moderating effect of historical sexual abuse experiences.

Model 8: Potential Moderating Effect of Out of Home Placements

Multiple group analysis was used to explore whether the cross-lagged model fit differently for girls with higher or lower out of home placements. A median split was used to categorize out of home placements into two groups: low (0-1 out of home placements) and high (2 or more out of home placements). An unconstrained stability only model was specified. The hypothesis that the stability model fit equally well in both groups was confirmed by adequate model fit, $\chi^2(16) = 17.76$, $p = .33$, CFI = .97, RMSEA = .04. Thus, there was no evidence for the moderating effect of the number of out of home placements.

In sum, study results do not provide support for a significant relationship between trauma and delinquency over time for the full sample. Multiple group analysis yielded partial support for a moderating effect of age, with older and younger girls showing different significant pathways between constructs. Although delinquency is a stable construct over time for both age groups, early adolescent trauma is predictive of later trauma for older girls only. Cumulative trauma experiences, sexual abuse and out of home placements did not show significant moderating effects.

CHAPTER V

DISCUSSION

There are a disproportionate number of girls in detention who report histories of maltreatment and in the past several years there has been a significant increase in arrests of girls for minor and violent offenses. The purpose of this study, therefore, was to use an existing, longitudinal data set and cross-lagged analyses to examine the association between trauma and delinquency over time for juvenile delinquent girls. In addition, multiple group analyses were performed to examine whether age, cumulative trauma, sexual abuse and out of home placements moderated the relationship between delinquency and trauma over time.

Girls in this sample reported high rates of physical abuse (91%), sexual abuse (60%), family violence (68%) and parental incarceration (62%). On average, girls experienced four distinct types of sexual abuse, twenty parental transitions and two out of home placements before the age of 13. Overall, study results showed that trauma and delinquency rates were not associated over time for the full sample. The moderating effect of age was partially supported with younger and older girls exhibiting different pathways. There were no significant moderating effects found for cumulative trauma experiences, sexual abuse experiences or out of home placements for this sample.

Association Between Trauma and Delinquency for Full Sample

Results from the full cross-lagged model testing the directional influence of trauma and delinquency over time did not support a reciprocal casual relationship

between delinquency rates and trauma experiences for the full sample. This finding is surprising and is not in line with current literature that points to victimization as a strong predictor of girls' offending behavior (Belknap & Holsinger, 2006). Although few researchers have examined longitudinally the relationship between trauma and delinquency among youth, results from extant research reveal that early maltreatment and exposure to violence predicts later delinquency (Cernkovich et al., 2008; Kerig & Becker, 2012; Widom et al., 2006).

Given that the full cross-lagged model did not significantly increase model fit over the stability only model, examination of the stability only model for the full sample is first warranted. Results supported the hypothesis that delinquency at baseline was positively related to delinquency at later time points. These results are congruent with existing delinquency research with high-risk samples, and so it is not surprising that early delinquency predicted later delinquency in the present study. Contrary to the study hypothesis, however, trauma was not stable over time for the full sample. Trauma at baseline (T1) was not predictive of trauma 12 months later (T2), but trauma at 12 months (T2) did predict trauma at 24 months (T3).

Further tests are needed to fully understand the implications of these results; however, there are multiple explanations that may account for the instability of trauma across time for the full sample. First, the measurement of trauma used in this study addressed specific victimization events, such as robbery, assault and other self identified events, but did not measure interpersonal or relational traumas specifically. In addition, the trauma measure consisted solely of caregivers' reports of girls' traumatic event experiences, which may have led to inaccurate or missing information given that caregivers frequently changed for girls. Third, traumatic experiences substantially

decreased for the full sample between baseline ($M = 2.01$) and one year follow up ($M = .72$) with a slight increase at 24 months post baseline ($M = .77$). All study participants were removed from detention and placed in out of home care during the first 12 months of the study, either in a residential treatment facility or with foster parents who received intensive parent training. This transition into a different and perhaps more stable environment with multiple supports may have contributed to lowering the risk of exposure to traumatic experiences (e.g., being a victim of a robbery or assault) during that time frame. In addition, simply being released from detention, which in itself comprises a traumatic stressor, may have contributed to temporarily reducing chaos and traumatic responses for girls (Chamberlain & Moore, 2002; Hennessy et al., 2004).

The instability of trauma over time as explained above, combined with a highly delinquent sample, may provide some explanation as to why the current study results did not support a reciprocal casual relationship between trauma and delinquency for the full sample. Accordingly, the absence of variables that may substantially impact the direction and strength of the relationship between traumatic incidences and delinquent behavior over time could provide further clarification of these results. For example, Ford and colleagues (2010) found that traumatic exposures typically thought to be involved in the development of PTSD (e.g., accidents, injuries, witnessing violence) may not lead to delinquent behavior, but rather broader symptoms of dysregulation (e.g., substance use) may be responsible for the association between poly-victimization and delinquency. It would be important in future examinations of the relationship between delinquency and trauma over time to include other behaviors associated with dysregulation.

A common assertion among researchers is that delinquent behavior for girls is more likely an enactment of psychological distress often produced from trauma, rather

than a reflection of their involvement in a delinquent lifestyle as suggested for boys (Dembo et al., 1995). More specifically, research suggests that poly-substance abuse, depression and anxiety occur at rates as high as 82% for delinquent girls. Dixon and colleagues (2004), found mental health status to be a leading factor related to female juvenile offending, with 83% of their sample meeting criteria for as many as eight psychiatric diagnoses. In addition, a well-replicated finding across multiple studies points to a diagnosis of PTSD as more common for girls than boys, even when children are exposed to the same traumatic event (Tolin & Foa, 2006). Inclusion of traumatic stress responses unique to children, PTSD diagnoses and internalizing symptoms may have provided a more accurate reflection of the interaction between trauma and girls' delinquent behavior for the current study.

Current theory and extant research also points to self-regulatory and cognitive processes as important to include when examining relations between trauma and delinquency, especially for girls. Researchers have posited that children cope with trauma outwardly as a means to protect themselves emotionally and regain a sense of control (Ford, 2010; Lansford et al., 2006). In addition, a dynamic developmental model of trauma and delinquency suggests that some forms of delinquent behavior may be a result of maladaptive coping strategies derived from traumatic stress. In turn, engagement in delinquent behavior increases a child's risk of exposure to new traumatic events which then creates a cyclical pattern of trauma and delinquency (Hayes et al., 1996; Kerig & Becker, 2012).

Inclusion of variables related to emotional numbing, experiential avoidance and internalizing of shame also may lead to a clearer understanding of trauma and delinquency over time. Allwood et al. (2011) found, for example, that delinquency was

predicted by posttrauma numbing of fear for a sample of youth in the community. Zerubavel and colleagues (2009) found that juvenile youth who reported traumatic experiences high in betrayal were more likely to report experiential avoidance as a means to block traumatic experiences. These factors may be especially salient to investigate with female populations given that girls tend to experience higher incidences of direct victimization and interpersonal trauma which are categorized as betrayal traumas (Kerig & Becker, 2012).

Moderation Effects of Age and Historical Traumas

Given the unique constellations of outcomes for children who have experienced different forms of maltreatment, multiple group analyses were conducted to determine if girls' cumulative and singular historical trauma experiences differentially moderated the relationship between trauma and delinquency. Age was also examined to determine if pathways between trauma and delinquency differ for younger and older girls.

Moderation Effects of Age

The hypothesis that participants' age at baseline would moderate the relationship between trauma and delinquency was partially supported. First, the temporal stability of trauma and delinquency was tested without casual paths given that this model held up best for the full sample. Results showed that the stability only model did not fit equally well across age groups and, thus, a full cross-lagged model was explored. Overall, results of the full cross-lagged model indicated differing models for younger ($M = 14$) and older girls ($M = 16$) with this model fitting slightly better for older girls.

For younger girls, trauma experiences at baseline were predictive of delinquency rates 12 months later. In addition, delinquency was stable over time, as expected, but early trauma experiences did not predict later trauma experiences for younger girls. Although researchers are still deciphering how age interacts with traumatic responses for children (Meiser-Stedman, 2002; Trickey et al., 2012), it is likely that the child's age or the developmental period during which trauma first occurs is an important factor for the onset of delinquent behavior for girls. Children who experience trauma at an older age could rely on positive emotional and social skills they developed before the traumatic incident in order to cope with their post-trauma reactions. Younger children may not have reached those developmental milestones and have less prior knowledge and resources which could differentially affect their response to the same event. This developmental conceptualization of trauma responses is consistent with literature showing that girls who engage in delinquent behavior at a younger age are at risk for poorer outcomes and greater long-term problems than girls who are in the late onset group (Leve & Chamberlain, 2004). In addition, juvenile offenders with a background in foster care and negative home environments are significantly more likely to engage in delinquent activities earlier than juvenile offenders without such backgrounds (Alltucker, Bullis, Close & Yovanoff, 2006; Caldwell, Beutler, Sturges & Silver, 2006).

It may be possible, then, that girls who exhibit delinquent behavior at a younger age use externalizing behaviors to cope with early trauma and other risk factors given their younger, less-developed cognitive and emotional development. Younger children often have difficulty understanding and appraising their experience of traumatic incidences as well as regulating their emotions that occur as a result of these experiences (Salmon & Bryant, 2002). Finkelhor and colleagues (2009) identified four distinct

pathways that can lead to polyvictimization in children. The authors found that having emotional problems was the only significant pathway to polyvictimization for younger children; however, this was the only non-significant pathway for older children. Living in a dangerous family, in a dangerous community and having a chaotic, multi-problem family environment were significant pathways leading to polyvictimization for older children only. Closer examination of early exposure and responses to trauma during specific developmentally sensitive periods, therefore, may add more clarity to our understanding of early arrests rates and onset of delinquent behavior for girls. In addition, the current study results point to the need for early identification of children who have experienced trauma and early intervention to prevent antisocial behavior and provide healthy coping strategies that foster pro-social development.

Examination of the cross-lagged model for older girls showed that a) delinquency at 12 months post baseline (T2) significantly predicted trauma at 24 months (T3), b) early delinquency rates were predictive of later delinquency rates and c) early experiences of trauma predicted later experiences of trauma across all time points. The finding that trauma is stable over time for older girls is not surprising given that children with polyvictimization experiences are more likely than other children to be re-victimized and experience other forms of adversity (Ford, 2010). It is surprising, however, that this finding was not replicated for younger girls given that all girls in this sample reported experiencing more than one form of maltreatment during childhood.

These discrepant results could also be explained by examining characteristics of this sample; that is, younger girls may have endured types of repeat trauma that were not included in the current trauma construct. For example, older girls in this sample were more likely to be living independently at 12 and 24 months post baseline while younger

girls were more likely to remain with their families or as part of the various child protective services (e.g., foster care, child welfare). As a result, older girls living in a non-familial context and who experience greater independence and unmonitored time with peers may be more susceptible to victimization experiences measured in this study (e.g., robbery), which could be thought of as crimes committed more outside the family context. Consequently, younger girls' continued experiences of trauma might look differently in that they are often more connected to the same familial environment that may have contributed to their prior experiences of maltreatment and delinquency. In sum, older and younger girls may be experiencing different types of traumatic incidences and varied support based on their developmental stage, which was not accounted for in this study.

The finding that delinquency rates predicted later trauma experiences for older girls, with the opposite relationship being true for younger girls, is somewhat surprising. One possible explanation for this could be that older girls may be engaged in different types of delinquent acts that increase their risk for assault and victimization. Girls in mid to late adolescence are more likely to have older dating partners that can provide access to drugs and alcohol, socialization away from adult supervision, access to a car and increased risk to other types of delinquent behavior (Carver, 2003; Haynie, 2003). Research indicates that older female adolescents and early adult women, ages 15–25 years, are most at risk for experiencing emotional, physical, and/or sexual abuse from a romantic partner (Arriaga & Foshee, 2004; Kim & Capaldi, 2004; Renzetti, Edelson, & Bergen, 2001). Older girls who are transitioning from adolescence to young adulthood, then, may be experiencing different individual and contextual factors that influence the relationship between trauma and delinquency. Future research would benefit from

including new incidences of trauma, in addition to accounting for past experiences, when examining delinquency for girls of different age groups.

In sum, the current study results provide evidence that trauma and delinquency risk trajectories vary according to developmental stage. The current study results point to the importance of using a developmental conceptualization of trauma to investigate delinquency trajectories for girls. In addition, these results provide preliminary support for differential casual effects of trauma and delinquency based on age. Lastly, it is clear that trauma experiences continue to impact development of juvenile delinquent girls and should be included in screening and recidivism prevention efforts.

Moderation Effects of Cumulative Historical Trauma

Results from the multiple group analysis did not provide evidence to support a moderating effect of cumulative trauma experiences in the casual relationship between trauma and delinquency across time points. This finding was surprising and not consistent with studies showing that children with higher cumulative trauma risk scores have worse outcomes than those with lower scores (Raviv et al., 2010). Given that girls in this sample have higher risk backgrounds and rates of delinquent behavior as compared to community samples, range restriction may be a possible explanation for this finding.

Perhaps a more likely reason that these results do not replicate those of existing literature may have to do with the measurement of cumulative trauma as frequency count. Although classifying children's experiences of trauma by multiple maltreatment experiences is often a better representation of children's trauma histories rather than using only a single type of abuse to predict later adjustment, combining ratings of severity with each incident of trauma is a stronger predictor of future outcomes (English

et al., 2005; Pears et al., 2008). For example, McCrae, Chapman and Christ (2006) examined profiles of sexually abused children that included the severity and duration of that abuse and found that distinct profiles of sexually abused children were linked to specific mental health outcomes. The current study did not include measurement of the severity or duration of the traumatic event and, therefore, may not accurately capture the cumulative trauma experiences and subsequent delinquent behavior of girls in this sample.

When interpreting the results of this study, it is also important to note that the cumulative trauma measure included interpersonal and family violence prior to baseline, experiences not included in measurement of new trauma incidences in T1-T3. Future studies that include the severity and duration of abuse within a cumulative trauma variable, as well as a congruent measure of trauma across time, may lead to a more accurate representation of historical trauma on future trauma and delinquent outcomes. The current study is one of the first to measure the influence of cumulative historical trauma on later incidences of victimization and subsequent delinquency. Given that girls are more likely than boys to experience poly-victimization (Belknap & Holsinger, 2006; Kerig et al., 2010; Martin et al., 2008), studies that continue to refine the assessment and measurement of girls' cumulative trauma experiences are crucial to informing prevention and intervention efforts for juvenile delinquent girls.

Moderation Effects of Sexual Abuse and Out of Home Placements

Results from the multiple group analysis did not provide evidence to support a moderating effect of sexual abuse experiences or out of home placements for this sample. An aim of the current study was to explore whether a singular or cumulative

measurement of historical trauma incidences was more likely to moderate the longitudinal relationship between future trauma and delinquency. Given that the current study did not find a moderating effect for past cumulative trauma or singular trauma experiences, it is likely that adding descriptions of abuse severity and duration to the construction of the trauma variables may have yielded different results. It is also plausible that additional factors, as mentioned earlier, are directing the association between trauma and delinquency for this sample. For example, future studies may benefit from including additional mediators such as age, mental health indicators and coping strategies in the examination of past experiences of trauma on new traumatic incidences and delinquent behavior for girls.

Careful inclusion and consideration of girls' experiences of sexual abuse in future studies is important as findings are clear that girls report being victims of sexual abuse and assault more often than boys (Abram et al., 2004; Belknap & Holsinger, 2006). Interpersonal traumas, such as sexual abuse and other forms of betrayal traumas, are associated with different responses and outcomes that are important to consider for girls (Freyd, 1996; Kerig & Becker, 2012). For example, Feiring and colleagues (2007) found that stigma and shame following sexual abuse were related to increased delinquent behavior over the course of six years for a sample of 160 youth (73% were girls) with histories of childhood sexual abuse.

In addition to being a victim of sexual abuse, girls are also more likely than males to be placed out of their homes and to come from a more dysfunctional and complex family of origin (Leve & Chamberlain, 2005). Extant research has shown that maltreated children who are exposed to frequent changes in caregivers and residences are at an increased risk for delinquency (Herrenkohl, Herrenkohl, & Egolf, 2003). Subsequently,

age of first arrest for girls has been linked to multiple changes in caregivers (Leve & Chamberlain, 2004). Out of home placements, therefore, represents a unique risk factor that should continue to be investigated with future studies.

Limitations of This Study

Limitations of the current study are important to consider when interpreting results. First, although a multi-method and multi-agent report approach was used to measure delinquency, new incidences of trauma across time points were measured solely by caregiver report of trauma. Reliance on caregiver report alone does not allow for a comprehensive measurement of girls' experiences of trauma, especially interpersonal traumas that may include family members. Furthermore, girls may not have felt comfortable reporting their experiences to their caregivers who were not a stable figure in the lives of girls in this sample. Lastly, only three types of victimization were included in the measurement of new trauma experiences (at T2 and T3). Future studies would benefit from using a multi-agent report of trauma that includes measurement of varied types of traumatic incidences such as interpersonal traumas for which girls are at particular risk.

A second limitation is that all trauma variables utilized in this study were a count of traumatic experiences. This measurement method only accounts for having experienced the particular traumatic event and does not include attention to specifics of the traumatic incident such as severity, frequency and duration of the abuse. Recent efforts are being made to understand the heterogeneity of abuse experiences in order to account for individual differences and responses to abuse (Ford et al., 2010; Pears, Kim & Fisher, 2008; Raviv et al., 2010). Future studies would benefit from utilizing this measurement method as it removes the assumption that all individuals who have

experienced a certain category of trauma then have the same antecedents, experience and outcomes.

A third limitation refers to the minimally or non-significant correlations between study variables. The absence of direct correlations reduced the likelihood of producing a good fit of the model to the data or accounting for casual relationships across time. In addition to improving the construction of the trauma variables as mentioned above, future studies could benefit from adding casual mechanisms that may influence the association between trauma and delinquency over time. Variables that are thought to uniquely contribute to associations between trauma and delinquency for girls are family and peer support, coping strategies (e.g., substance use), cognitive processes (e.g., attributions of stigmatization or shame) and emotional processes (e.g., dissociation, experiential avoidance) (Ford, 2010; Kerig & Becker, 2012; Lansford et al., 2006; Miller et al., 2011). Lastly, attrition rates may also help explain low correlations between study variables. Although attrition was expected across time points due to the longitudinal nature of this study, the fact remains that 21.7% and 24.7% of data were missing from the trauma variable at 12 and 24 months, respectively. Missing data, especially when using high-risk samples, can lead to an inaccurate representation of relationships between variables. The absence of information from these participants may have resulted in a sampling bias in which those who dropped out of the study may have comprised a more at-risk group, for example, and their responses were not accounted for.

Lastly, girls in this sample are locally representative with the majority of girls self-identifying as European-American, however, results of this study may not generalize to more ethnically and geographically diverse samples. Future studies would benefit from exploring these associations among a more diverse sample as well as using a contextual

and ecological approach that allows for the intersection of gender with race, ethnicity, social class, ability and sexual orientation (Gaarder et al., 2004).

Strengths and Implications for Practice

The current study offers several strengths and implications for intervention in polyvictimization and delinquency for girls. The use of an existing longitudinal data set with a sample of delinquent girls adds to the literature as very few studies have tested the association between trauma and delinquency over time for this population. The inclusion of three time points is also particularly noteworthy as this relationship was observed over multiple time points giving even further detail about the stability of trauma, delinquency and the association between these variables over time. Incorporating historical incidences of trauma, new experiences of victimization and delinquency over time in one model sheds light on the non-linear relationship between these variables and provides insight into alternative pathways to delinquency for groups of girls with different trauma experiences.

Results of this study show that early trauma experiences, future victimization and the trajectory of delinquency for girls is non-linear and affected by developmental factors. In other words, an increase in trauma experiences may not directly relate to an increase in delinquency but rather play out through a myriad of individual and environmental influences in which age is an important component. Early intervention programs that include a specific trauma focus, and target contextual and individual factors accordingly, can help promote resiliency and reduce future negative outcomes. As researchers and clinicians are able to more closely identify how children's responses to trauma are affected by their pre-trauma life experiences and mental health, services can

be tailored to preventing children from chronic victimization and participation in antisocial behavior.

Recently, important strides have been made to conceptualize youth's trauma experiences as an important factor influencing the development of delinquent behavior. Emerging developmental theories describing the impact of trauma on the trajectory toward juvenile delinquency highlight the pivotal role of the environmental response to a child's experience of trauma. The support of parents/caregivers, for example, has been identified as one of the most significant factors to positively influence children's ability to heal from traumatic experiences and recover from subsequent behavior problems (Cohen, 2000; Zahn et al., 2010). For juvenile delinquents, however, parent/ caregiver support can be especially hard to examine because of the high rates of parental transitions and incarceration, parent mental health concerns and low level of parental involvement. In light of this reality, it becomes especially salient to continue our investigation of ways to promote resiliency and support delinquent youth in transitioning to a healthier lifestyle.

In addition to early intervention in the pre-trauma environment or immediate aftermath of abuse, post-trauma interventions are important for preventing future negative mental health and behavioral outcomes. Study results show that earlier trauma predicted later trauma and delinquency for older and younger girls, respectively. Given that girls in this study were transitioning out of the juvenile justice system, these results highlight that the treatment that girls receive upon entering the system may severely impact their pathways and outcomes once they leave. The literature examining recidivism for juvenile delinquent girls is sparse; however, most studies conclude that girls who are consistently part of the juvenile justice system will continue offending in adult hood (Coleman et al., 2008). For example, researchers have found that detention officials often

label girls as whiny, manipulative and difficult to work without regard for viewing their behavior as a response to contextual factors such as abuse and maltreatment (Gaarder et al., 2004). The point of entry and time spent within the system, therefore, provides a pivotal point of intervention and prevention. Prioritizing trauma informed services that educate service providers on developmental trauma responses and risk factors will assist in preparing girls with the social, emotional and relational skills needed to heal and lead productive, healthy lives.

Given the lack of clarity in our understanding of the mechanisms involved in girls' trajectory toward delinquency, results of this study provide further evidence for the inclusion of a developmental conceptualization of trauma in theories of delinquency. In addition, these findings have important implications for merging criminal justice and mental health fields in order to provide the most effective interventions. Even though arrest trends for girls have changed substantially compared to boys, males continue to commit the majority of crimes. The policies and services provided, therefore, are not tailored to meet unique needs of girls (Leve and Chamberlain, 2004; Miller et al., 2011). Shifts in policy to support youth at each stage of the juvenile justice process, such as implementing trauma informed alternatives to entering the system and psychoeducation upon before leaving, may be a good start.

Recommendations for Future Research

Results from this study have several implications for future research. First, the current study did not find a consistent pattern of casual effects between trauma and delinquency over time. Future studies would benefit from examining this model with a more comprehensive measurement of trauma experiences such that unique childhood

responses to trauma and the severity and duration of abuse are included (Pears et al., 2008; Smith et al., 2006). Second, given that the current study did not find moderating effects for cumulative historical trauma experiences, it may also be of particular interest to identify more specific profiles of trauma and relate those to specific types of delinquent acts. Greater understanding of the heterogeneity of abuse experiences may lead to a more precise understanding of the longitudinal relationship between trauma experiences and delinquent acts for girls. Investigation of delinquent behaviors specific to girls (e.g., running away from home, risky sexual behavior, relational aggression) in measurement of delinquency in relation to specific profiles of maltreatment could also lend a more precise conceptualization of this dynamic relationship. For example, Begle and colleagues (2011) found that girls who were exposed to sexual abuse were six times more likely than boys and girls who were not exposed to refrain from delinquent behaviors than to engage in them. The authors did find, however, that these same girls were more likely than their counterparts to engage in later high-risk behaviors (e.g., alcohol and drug use), while girls who engaged in early high-risk behaviors were not at risk for later sexual abuse.

A third direction for future research, then, is to include variables that have been shown to increase the association between traumatic incidences and delinquent behavior such as cumulative exposure to traumatic stressors, self-regulation and coping strategies, poor interpersonal relationships and mental health issues (Cruise & Ford, 2011; Ferig et al., 2007; Kerig & Becker, 2012; Wolfe & Wekerle, 1997). Because not all youth who experience maltreatment and abuse will become delinquent, more research is needed to understand the complex interaction between trauma experiences and antisocial behavior development for girls. Future studies should also include a more comprehensive

measurement of developmental responses and experiences of trauma by including the severity and frequency of past incidences of trauma. As shown by the results of this study, it is also important to account for recent experiences of trauma, rather than rely on historical trauma experiences only, which can lend a more accurate perspective of poly-victimization on future outcomes.

A fourth point is the need for researchers to use a developmental conceptualization of trauma experiences when investigating chronic victimization and delinquency for girls. For example, studies that examine early developmental responses to trauma and link those to early signs of antisocial behavior could be an important step in prevention of negative outcomes in adolescence. The onset of maltreatment during different developmental periods has been associated with varying outcomes in adolescence and adulthood, however, these results are ambiguous and more research is needed to clarify this relationship (Kaplow & Widom, 2007; Thornberry, Ireland & Smith, 2001).

Lastly, the current sample was an intent-to-treat sample of juvenile delinquent girls who reported high incidences of abuse and delinquency. The high incidences of trauma and delinquency in this sample may obscure factors or pathways between trauma and delinquency that may be present in samples that exhibit less overall risk. The results of this study, therefore, may not be generalizable to other juvenile delinquent or community samples. Future studies would benefit from testing the longitudinal relationship between trauma and delinquency for males and community samples.

Conclusion

Results of this study add to the growing body of literature aimed at unraveling the complex relationship between childhood maltreatment and future outcomes for girls. Overall, study results provide support for inclusion of a developmental trauma informed approach to the conceptualization of antisocial behavior trajectories for girls. The findings of this study support literature showing that juvenile delinquent girls experience high rates of maltreatment in childhood and continue to experience traumatic events throughout adolescence. In addition, age seems to be an important moderator in the longitudinal association between trauma and delinquency.

It is clear that an inclusive measurement of trauma that captures unique experiences and responses for children is important to include in future studies examining this relationship. Assessment of additional factors that may contribute to the direction and strength of the relationship between trauma and delinquency over time is also warranted. More research is needed to decipher the dynamic interaction between trauma and delinquency over time to provide girls with the opportunity to heal and live healthy and productive lives.

APPENDIX A

UO INSTITUTIONAL REVIEW BOARD APPROVAL



Research Compliance Services
University of Oregon Institutional Review Board

DATE: December 15, 2011 **IRB Protocol Number: 11292011.077**

TO: Mary Marsiglio, Principal Investigator
Counseling Psychology Program

RE: Protocol entitled, "Examination of the Link Between Trauma and Antisocial Behavior for Juvenile Delinquent Girls: The Mediating Role of Parent Support"

**Notice of Review and Determination-Not Human Subject Research
as per Title 45 CFR Part 46.102 (c-f)**

Research Compliance Services has reviewed the proposed study named above. Based on submitted materials and the project description, the study activities do not meet the definition of research with human subjects according to Title 45 CFR 46.102 (c-f).

You may conduct your activities as described without further submission. However, if the activities described are implemented in conjunction with any other human experimentation or if this project is modified to involve research with human subjects, you will need to submit a new protocol application for review by Research Compliance Services and/or the University of Oregon Institutional Review Board (IRB).

If you have any questions regarding your protocol or the review process, please contact Research Compliance Services at human_subjects@orc.uoregon.edu or (541)346-2510.

Sincerely,

A handwritten signature in black ink that reads 'Mary Hanabury'.

Mary Hanabury, Assistant Director
Research Compliance Services
University of Oregon

CC: Krista Chronister, Faculty Advisor

COMMITTEE FOR THE PROTECTION OF HUMAN SUBJECTS • RESEARCH COMPLIANCE SERVICES
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APPENDIX B

TRAUMATIC STRESS SCHEDULE ITEMS

Prompt: The next part of the interview is about highly stressful things that may have happened to you in the last year.

Did anyone take something from you by force or threat of force, such as in a robbery, mugging or hold-up?

1- Yes

2- No

Did anyone beat you up or attack you?

1- Yes

2- No

Did you have some other terrifying or shocking experience?

1- Yes

2- No

APPENDIX C

ELLIOT SELF-REPORT OF DELINQUENCY SCALE

How many times in the past 6 MONTHS have you:

1. purposely damaged or destroyed property belonging to your parents or other family members?
2. (IF IN SCHOOL) purposely damaged or destroyed property belonging to a school, college, or university?
3. (IF WORKING) purposely damaged or destroyed property belonging to your employer?
4. purposely damaged or destroyed other property that did not belong to you, not counting family, school, or work property?
5. stolen or tried to steal a motor vehicle such as a car or motorcycle?
6. stolen or tried to steal something worth more than \$50?
7. knowingly bought, sold, or held stolen goods or tried to do any of these things?
8. purposely set fire to a building, a car, or other property or tried to do so?
9. carried a hidden weapon other than a plain pocket knife?
10. stolen or tried to steal things worth \$5 or less?
11. attacked someone with the idea of seriously hurting him or her?
12. been paid for having sexual relations with someone?
13. paid someone to have sexual relations with you?
14. been involved in gang fights?
15. used checks illegally or used phony money to pay for something?
16. sold marijuana or hashish? ("POT," "GRASS," "HASH")
17. hitchhiked where it was illegal to do so?
18. stolen money or other things from your parents or other members of your family?
19. (IF WORKING) stolen money, goods, or property from the place where you work?
20. had or tried to have sexual relations with someone against their will?
21. (IF IN SCHOOL) hit or threatened to hit a teacher, professor, or other school staff?
22. hit or threatened to hit one of your parents?
23. (IF IN SCHOOL) hit or threatened to hit other students?
24. (IF WORKING) hit or threatened to hit your supervisor or other employee?
25. hit or threatened to hit anyone else (other than teachers, students, parents, persons at work)?
26. been loud, rowdy, or unruly in a public place--disorderly conduct?
27. sold hard drugs such as heroin, cocaine, and LSD?
28. tried to cheat someone by selling them something that was worthless or not what you said it was?
29. taken a vehicle for a ride or drive without the owner's permission?
30. bought or provided liquor for a minor?
31. (IF IN SCHOOL) used force or strong-arm methods to get

- money or things from other students?
32. used force or strong-arm methods to get money or things from people? (If in school: not including other students)
 33. avoided paying for such things as movies, bus rides, and food?
 34. been drunk in a public place?
 35. stolen or tried to steal things worth between \$5 and \$50?
 36. (IF IN SCHOOL) stolen or tried to steal something at school or on campus?
 37. broken or tried to break into a building or vehicle to steal something or just to look around?
 38. begged for money or things from strangers?
 39. failed to return extra change that a cashier gave you by mistake?
 40. used or tried to use credit cards without the owner's permission?
 41. made obscene telephone calls (such as calling someone and saying dirty things)?
 42. snatched someone's purse or wallet or picked someone's pocket?
 43. embezzled money, [that is, used money or funds entrusted to your care for some purpose other than that intended?]
 44. used force or threat of force to rob a person, store, bank or other business establishment?
 45. burglarized a residence, building, house, business, or warehouse?
 46. Of all the things you just told me about, how many of them did your parents or caretakers know about?
- | All | Most | Half | Some | None | N/A |
|-----|------|------|------|------|-----|
| 1 | 2 | 3 | 4 | 5 | 8 |

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