EVALUATING TRAUMATIC LIFE EVENTS: AN ASSESSMENT OF THE HEALTH AND DELINQUENT OUTCOMES OF YOUTH EXPOSED TO TRAUMA

by

Steven D. Glassner, M.S., B.S.

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Committee Members:

Joycelyn M. Pollock, Chair

Mark C. Stafford

Bob E. Vasquez

Leana Bouffard

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Thanks to everyone I've encountered during this journey. Life is short, do something righteous.

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ABSTRACT

Traumatic life events that occur early in life can result in a number of negative outcomes for youth, including, but not limited to effects on physical health, mental health, behavioral health, and delinquency. While there is much evidence to support the aforementioned relationships, research also suggests that the delinquent outcome is likely mediated by the negative mental health and behavioral outcomes attributed to early traumatic experiences. This particular area of focus requires further development, because current research regarding youth exposed to traumatic life events tends to focus on singular forms of criminal victimization (e.g., violent victimization, sexual victimization, or bullying) and often neglects to account for other traumatic experiences. Likewise, research in this area tends to focus on one instance in time (e.g., in the short-term or in the long-term). As a result, it is important to further examine how mental health and behavioral outcomes that stem from various traumatic experiences operate as mediating effects, and assess how these problems affect delinquency at various points in time.

This dissertation relies on propositions from Agnew's (1992) general strain theory to assess the negative outcomes of youth who experienced various traumatic life events. The mental health (i.e., depression) and behavioral health (i.e., risky health behaviors) of youth exposed to traumatic circumstances are analyzed along with the delinquent outcomes (i.e., violent crimes, property crimes, and substance use) commonly associated with negatively affected youth. These effects are examined for youth who experienced

criminal victimization (i.e., violent and/or sexual assault, bullying, and victim of a burglary) and other traumatic incidents (i.e., vicarious victimization, death of a close family member, and the incarceration of a close family member).

To examine the aforementioned causal processes, data from the National Longitudinal Survey of Youth 1997 (NLSY97) were used to test a number of hypotheses. The overall results from this dissertation support Agnew's (1992) general strain theory and suggest that the effect of multiple traumatic experiences influence various deleterious outcomes. More concisely, traumatic life events that occur early in life have both short- and long-term consequences for mental health, behavioral health, and delinquent outcomes. The mental health and behavioral health outcomes also mediate the relationship between traumatic life experiences and delinquency at various points in time. The results highlight a complex relationship between all of the aforementioned factors, and future research that focuses on youth exposed to traumatic events needs to account for the confounding effects of multiple traumas when assessing the negative outcomes of harmed individuals.

CHAPTER I

TRAUMA AND VICTIMIZATION

Traumatic events that occur early in life are likely to result in a number of negative outcomes for youth including, but not limited to, problems with mental and/or physical health (Alegria et al., 2013; Alisic, Jongmans, van Wesel, & Kleber, 2011; Demaris & Kaukinen, 2005; Evans, Steel, & DiLillo, 2013; Finkelhor, 2008; Hodges et al., 2013; Khantzian, 1997), behavioral health (Topper, Castellanos-Ryan, Mackie, & Conrod, 2011; Woodruff & Lee, 2011), and/or delinquency (Bonn-Miller, Vujanovic, & Zvolensky, 2008; Fagan, 2003; Ford, Chapman, Mack, & Pearson, 2006; Hammersley, 2011). While there is considerable evidence to support the aforementioned relationships, research also suggests that the various delinquent outcomes resulting from traumatic life events can vary based on age (Bouffard & Koppel, 2012; Widom, DuMont, & Czaja, 2007; Widom, Marmorstein, & White, 2006) and gender (Alegria et al., 2013; Demaris & Kaukinen, 2005; Ruback, Clark, & Warner, 2013; Widom, Schuck, White, 2006; Wilson & Widom, 2009; Wise, Zierler, Krieger, & Harlow, 2001).

In addition to the general support for the aforementioned outcomes, there is evidence to suggest that the delinquent outcomes associated with traumatic life events are at least partially mediated by the negative mental health and/or behavioral effects linked to early traumatic experiences (Hay & Meldrum, 2010; Millett, Kohl, Jonson-Reid, Drake, & Petra, 2013; Watts & McNulty, 2013). This particular area of focus requires further development because much of the research on exposure to traumatic events typically analyzes singular forms of criminal victimization (e.g., violent victimization, sexual victimization, or bullying), and it often fails to account for other traumatic life

events that can also inhibit a youth's health. As a result, it is important to further examine the delinquent outcomes of youth who experience traumatic life events while accounting for relevant intervening health mechanisms and assess how these outcomes develop over time and across gender.

The purpose of this dissertation is to examine the delinquent outcomes of youth exposed to traumatic life events and assess how the mediating mental health (i.e., depression) and behavioral health (i.e., risky health behaviors) factors influence this relationship at various points in time. This dissertation draws on propositions stated in Agnew's (1992) general strain theory (GST) to drive the research hypotheses identified later in this paper. The current project contributes to the literature by evaluating more inclusive/collective trauma indices to assess the aforementioned relationships at various points in time and across gender.

This project begins with an introduction concerning the uniqueness of childhood and adolescence. The focus then shifts to provide an explanation of criminal victimization and the more inclusive notion of traumatic life events. The literature review in the following chapter provides an overview of various traumatic experiences and the outcomes that have been associated with each of the traumatic events discussed. The methods chapter then details the dataset, samples, and measures that are used in the current project. The chapter that follows provides the results from various descriptive analyses and structural equation models that examined the effects of traumatic life events on mental health, behavioral health, and delinquency. This dissertation concludes with a summary of the research findings and a discussion pertaining to the importance of the findings.

Childhood and Adolescence

Childhood is a unique period of time, and incidents that occur during childhood can significantly impact the developmental process (Corr & Balk, 2010). The term childhood is typically considered the point in a person's life between birth and 10 to 12 years of age when the onset of puberty and/or adolescence begins (Corr & Balk, 2010). This categorization can further be broken down into categories that include infancy (birth to 12-18 months), toddlerhood (infancy to 3 years of age), early childhood (3 to 6 years of age), and middle childhood (6 years to puberty) (Corr & Balk, 2010, p. 4). Each of these periods of time is unique in its own right, and significant events that transpire during these developmental stages can impact the life course (Corr & Balk, 2010; Erickson, 1968, 1975).

The biological and contextual factors that surround youth as they progress through childhood are multifaceted and involve a number of complexities that extend well beyond the scope of what can be discussed here (Corr & Balk, 2010; McDonald & Merrick, 2013). Nevertheless, childhood and adolescence are crucial points of time because they mold youth (Erikson, 1975; McDonald & Merrick, 2013). As individuals' progress from early childhood through adolescence, susceptibility to peer influence increases, parental influence decreases, and relationships outside the household begin; all of this transpires under a backdrop where there is a "burst in brain development and reorganization of cognitive and emotional processes" (McDonald & Merrick, 2013, p. 290). Traumatic life events that occur during this period can subsequently influence the processes that underlie normative development (Corr & Balk, 2010).

Exposure to traumatic events early in life can affect youth as they progress into adulthood (Corr & Balk, 2010). It is important to note that the concept of victimization differs from the notion of traumatization since it may be the case that an individual who experiences victimization might not necessarily experience a high level of trauma. A certain level of trauma is often implied for events that are globally deemed victimizing, and studies within criminology that analyze the effects of victimization often analyze significant forms of criminal victimization that would generally be considered harmful to youth (Agnew, 2001; Bouffard & Koppel, 2012; Cuevas, Finkelhor, Shattuck, Turner, & Hamby, 2013; Cuevas et al., 2007; Fagan, 2003; Finkelhor, Turner, Ormrod, Hamby, & Kracke, 2009).

Victimization is typically measured by evaluating crime(s) committed against an individual (e.g., an episode of violence, sexual assault, bullying). These measures can differ from the more inclusive notion of trauma because certain traumatic experiences (e.g., vicarious victimization, the incarceration of a parent, bereavement) would not be included. A main point of concern related to the concepts of victimization and traumatization is the fact that traumatic events that are not the result of criminal victimization can stimulate deleterious outcomes similar to criminal victimization (Lin, Cochran, & Mieczkowski, 2011). As a result, it is important to account for a more inclusive range of traumatic experiences when trying to understand later behaviors of harmed individuals.

Traumatization can result from events such as abuse (both physical and/or sexual), neglect, exposure to domestic violence, assault by peers, and other negative

incidents, such as the death of a close family member or even a natural disaster (Hodges et al., 2013). The American Psychological Association (2014) defines trauma as:

> … an emotional response to a terrible event like an accident, rape or natural disaster. Immediately after the event, shock and denial are typical. Long term reactions include unpredictable emotions, flashbacks, strained relationships and even physical symptoms like headaches or nausea. While these feelings are normal, some people have difficulty moving on with their lives.

The effects of traumatization can include psychological issues, health-related problems, and harmful behavioral outcomes (Alisic et al., 2011; Brewin et al., 2000; Evans, Steel, & DiLillo, 2013; Finkelhor, 2008; Ford et al., 2006; Hodges et al., 2013; Khantzian, 1997).

The consequences of traumatization can manifest as delinquent activities (Agnew, 1992, 2001, 2013). Agnew (1992), in particular, has argued that delinquency can be a coping mechanism for youth affected by negative events. The types of delinquent outcomes that have been associated with traumatic experiences include violent activities, property crimes, and/or substance abuse (Agnew, 2002; Fagan, 2003, Hammersley, 2011; Lin et al., 2011). Research beyond the field of criminology tends to focus particularly on the various health outcomes (i.e., physical health, mental health, and/or behavioral health) that are correlated with traumatic life events (Alisic et al., 2011).

The overall goal of this dissertation is to expand our understanding of the relationship between criminal victimization and delinquency by extending the analysis to include various traumatic experiences that may result in the same negative outcomes. The current dissertation relies on Agnew's (1992; 2001; 2013) GST to examine how early traumatic experiences affect delinquency/criminality later in life, and examine how

depression and risky health behaviors mediate this relationship over time and across gender.

This dissertation begins with a literature review pertaining to various forms of criminal victimization (i.e., violent victimization and bullying) and traumatic experiences (i.e., vicarious victimization, the incarceration of a close family member, and bereavement), and provides an overview of the outcomes that have been associated with these events. The topic matter then shifts to a discussion pertaining to the theoretical propositions in GST that offer explanations for the negative outcomes associated with traumatic experiences. Also, an in-depth discussion of the negative mental health and behavioral health outcomes associated with harmed youth that may underlie negative affect is provided.

The methods chapter following the literature review details the samples drawn from the National Longitudinal Survey of Youth 1997 (NLSY97) that are used to examine the following research hypotheses (Hai):

- Ha1: Traumatic life experiences in early childhood will be positively correlated with delinquency.
    - Ha_{1a}: The effect of traumatic life experiences on delinquency will vary based on gender.
        - Traumatic life experiences will have a direct effect on the delinquent outcomes of males.
        - Traumatic life experiences will not have a direct effect on the delinquent outcomes of females.

- Ha2: Traumatic life experiences will have a negative effect on mental health and behavioral health.
    - Ha_{2a}: The effect of traumatic life experiences on mental health and behavioral health will be similar across genders.
- Ha3: Traumatic life experiences will increase the likelihood of delinquency, and the negative mental health and behavioral health outcomes should mediate the effect of trauma on delinquency.
    - Ha_{3a}: The mediating effect should vary based on gender.
        - The effect of traumatic life experiences on delinquency should be mediated by behavioral health for males but not females.
        - The effect of traumatic life experiences on delinquency should be mediated by mental health for males but not females.

The methods chapter then provides an overview of the samples extracted from the NLSY97. The indicators in each of the samples used to examine the hypotheses are discussed, and various limitations in the samples are identified.

Following the methods chapter, a main analysis and a supplemental analysis are provided. The main and supplemental analyses incorporate various descriptive analyses of the data, and these sections are complemented with multiple structural equation models to thoroughly examine the research hypotheses.

Chapter 5 provides a discussion of the results identified in the main and supplemental analyses, and this chapter identifies the main implications and limitations of this dissertation. The final chapter then concludes with an overview of the results, and

provides direction for future research that evaluates the various outcomes of youth exposed to traumatic life events.

CHAPTER II

LITERATURE REVIEW

Criminal victimization that occurs in early childhood has been linked to a number of deleterious outcomes (i.e., negative effects on mental health, behavioral health, physical health, and/or delinquency). These undesirable outcomes have also been associated with children exposed to traumatic life events other than criminal victimization (Adams et al., 1999; Auman, 2007; Cohen & Mannarino, 2011; Draper & Hancock, 2011; Nichols & Loper, 2012; Parke & Clarke-Stewart, 2001). Given these associations, it is important to further investigate criminally victimized youth by incorporating other traumatic events in analyses of delinquent outcomes.

The purpose of this dissertation is to expand on the research which evaluates the outcomes of criminally victimized individuals by looking at a broader range of traumatizing factors that can enhance and/or contribute to the negative outcomes experienced by harmed individuals. A major flaw in much of the victimization research is that studies typically analyze only singular traumatic events and neglect to account for a broader scope of traumatizing factors when making causal inferences. As a result, it is necessary to develop a comprehensive understanding of all types of traumatic events and situations that can result in negative outcomes by assessing the collective effects of traumatization on negative outcomes. This project addresses these shortcomings by analyzing the effects of multiple forms of traumatic exposure, and by assessing how traumatic experiences affect mental health (i.e., depression), behavioral health (i.e., risky health behaviors), and delinquency over time and across genders.

This chapter begins by defining and discussing the prevalence of various forms of criminal victimization (i.e., violent victimization and bullying) and exposure to other traumatic events (i.e., vicarious victimization, the incarceration of a close family member, and bereavement). It is worth noting that criminal victimization and traumatic events are collectively considered traumatic life events for the purposes of this dissertation. The various outcomes that have been associated with exposure to each of the aforementioned traumatic experiences (i.e., violent victimization, bullying, vicarious victimization, the incarceration of a close family member, and bereavement) are also discussed in this chapter.

Following these sections, an overview of Agnew's (1992, 2001, 2013) GST, which provides theoretical propositions as to why negative outcomes can result from traumatic experiences, is provided. This chapter concludes with an in-depth description of the negative mental health and behavioral health outcomes that are commonly associated with children exposed to traumatic events.

Traumatic Life Events

Violent Victimization

Violent criminal victimization can encompass a variety of events, and researchers analyzing the effects of violence typically focus on one form of violence exposure (e.g., child abuse, intimate partner violence [IPV], bullying, sexual violence, community violence, physical assault, and child maltreatment) (McDonald & Merrick, 2013). One of the issues that stems from analyzing the singular effects of violence is that the results from such research likely fail to account for the confounding effects of other traumatic life events. This issue is further exacerbated when accounting for the fact that children

are unique because they can be violently victimized in a variety of forms and venues specific to youth (Finkelhor, 2008). For example, children and adolescents can be exposed to violence at home from parents, siblings, or other caregivers; at school from peers or adults; and in the neighborhoods where they live from neighbors or acquaintances (Finkelhor, 2008). Assessing the outcomes of violently victimized youth can subsequently be challenging given the various settings youth are exposed to, the various people that affect this population, and the variation in the events that can be considered violent.

A unique form of violent victimization specific to children is child maltreatment. The Child Abuse Prevention and Treatment Act (2010) defines child maltreatment as:

> … an act or failure to act by a parent, caregiver, or other person as defined under State law that results in physical abuse, neglect, medical neglect, sexual abuse, emotional abuse, or an act or failure to act which presents an imminent risk of serious harm to a child (U.S. Department of Health and Human Services Administration for Children and Families Children's Bureau, 2011, p. 124).

The range of activities that fit into this category is broad, and the general categories typically used to report child maltreatment by individual states largely involves four forms of maltreatment: neglect, physical abuse, psychological maltreatment, and sexual abuse. Official statistics collected at the state-level concerning child maltreatment are submitted to the National Child Abuse and Neglect Data System (NCANDS), and this source is useful for determining the prevalence of reported child maltreatment.

Data from NCANDS indicate that over 750,000 incidents of child maltreatment were reported in the year 2010. The majority of these incidents involved youth who

experienced neglect (78.3 percent of total incidents), followed by physical abuse (17.6 percent), other forms of maltreatment, i.e., abandonment, threats of harm to the child, congenital drug addiction (10.3 percent), sexual abuse (9.2 percent), psychological maltreatment (8.1 percent), medical neglect (2.4 percent), and unknown forms of maltreatment (0.3 percent) (U.S. Department of Health and Human Services Administration for Children and Families Children's Bureau, 2011, p. 24). A notable statistic from this database involves the fact that over 1,500 children died as a result of abuse or neglect in 2010. Overall, the data from NCANDS provide a sufficient source for determining the total amount of reported maltreatment within the United States; nonetheless, these figures are limited because they represent only known and documented cases of child maltreatment as defined by federal statute.

Child maltreatment is a form of criminal victimization that is largely relegated to younger children (generally 10 years of age and below) even though this form of victimization does affect adolescents. Child maltreatment is typically committed by individuals within the household thus making child maltreatment indicative of the notion of interfamilial violence. Beyond interfamilial victimization, violence from outside the immediate family (e.g., being robbed, threatened, assaulted, and/or sexually assaulted) is an experience that many youth face during adolescence (Hosser, Raddatz, & Windzio, 2007; Finkelhor, 2008). Exposure to extra-familial violence tends to increase with age given the fact that the opportunity structure for such exposure increases as youth transition from childhood to adolescence and begin to move about and function freely within society (Finkelhor, 2008).

Various sources of data suggest that adolescents and young adults are exposed to violence and crime at a significantly greater rate than adults, and both adolescents and young adults between the ages 12 to 19 are more than twice as likely to be a victim of violent crime when compared to the rest of the population (Finkelhor et al., 2009; Truman, Langton, & Planty, 2013). The National Crime Victimization Survey (NCVS) provides an official source regarding the extent of victimization from a nationally representative sample of households within the United States. Results from the NCVS indicate that more than 6,800,000 people were the victim of a violent crime in 2012. The most common group of victims were adolescents and young adults between the ages 12 and 17, and this group was estimated to have a violent victimization rate of 48.4 per 1,000 individuals (Truman et al., 2013). This rate was followed by people between the ages of 18 and 24 (41.0 per 1,000), 25 and 34 (34.2 per 1,000), 25 to 49 (29.1 per 1,000), and 50 to 64 (15.0 per 1,000) (Truman et al., 2013). It is important to note that the violent victimization rates identified in the NCVS are based on self-reported incidents of simple assault, aggravated assault, robbery, and rape or sexual assault. Overall, the NCVS provides a broad picture of the self-reported incidents of violent victimization experienced by adolescents and young adults in the age range 12 to 17. These statistics, however, are limited to youth who fall within this age range and likely miss a number of victimizing events that are not reported by respondents.

The NCVS is a limited source for identifying the extent of violent victimization of children because it does not survey youth younger than the age of 12. Other nationally representative surveys have analyzed samples of youth beyond this limited age range. For example, the National Survey of Children's Exposure to Violence (NatSCEV) provides a

more comprehensive analysis of both children and adolescents by surveying this population to assess lifetime exposure to violence for individuals ages 17 and younger (Finkelhor et al., 2009, p. 1). Results from the NatSCEV indicate that youth in the United States are exposed to violence at a high rate, and more than 60 percent of respondents experienced either direct or indirect forms of violence in the year prior to 2008 (Finkelhor et al., 2009). Additionally, statistics from this survey show that approximately: (a) 36.7 percent of the respondents were assaulted with no weapon or injury; (b) 14.9 percent were assaulted with a weapon and/or injury; (c) 6.1 percent were sexually victimized; (d) 10.2 percent experienced some form of child maltreatment; (e) 9.8 percent witnessed a family assault; and (f) 19.2 percent of the respondents reported witnessing a community assault (Finkelhor et al., 2009, p. 2). Trends in the data suggest that the main forms of victimization for respondents nine years of age and younger were largely the result of assault by siblings, observing family violence, and bullying (Finkelhor et al., 2009, p. 5). Respondents between the ages 10 and 17 were at a greater risk of being assaulted with injury, assaulted with a weapon, sexual harassment and sexual victimization, and exposure to other forms of violence (Finkelhor et al., 2009, p. 5). A notable finding from the NatSCEV is that a large portion of youth who were victimized experienced multiple incidents and/or forms of criminal victimization (i.e., poly-victimization), and approximately 10 percent of the victims in this survey reported five or more violent experiences within the survey year (Finkelhor et al., 2009, p. 8).

Outcomes of Violent Victimization. The aforementioned statistics provide an overview pertaining to the extent of violent victimization and child maltreatment that both children and adolescents experience. The direct and singular negative effects of

child maltreatment on children have extended consequences beyond the initial harm caused, and these harmful events can manifest as delinquent outcomes later in life (Fagan, 2003; Widom, 1989a, 1989b). To highlight this notion, Mass, Herrenkohl, and Sousa (2008) reviewed 12 articles to assess the delinquent effects of child maltreatment. The authors evaluated various forms of child maltreatment, including physical abuse, neglect, sexual abuse, and emotional/psychological abuse. The authors concluded that physical abuse is generally the most consistent predictor of future violent behavior by child victims (Mass et al., 2008). This outcome can apply to adolescents victimized by violence as well (Mass et al., 2008).

A direct consequence of violent victimization may be increased levels of aggression and retaliatory behaviors (Copeland-Linder, Johnson, Haynie, Chung, & Cheng, 2012; Wiebe, Blackstone, Mollen, Culyba, & Fein, 2011). Wiebe and colleagues (2011) analyzed retaliatory behaviors using a sample of victimized youth between ages 12 to 19 admitted to an urban emergency department. The authors found that violent outcomes were common for youth in an 8-week follow-up survey. Findings showed that 53 percent of the adolescent victims had threatened someone, 48.6 percent had carried a gun or knife, 31.4 percent had assaulted someone, and 31.3 percent had been assaulted themselves since their release from the emergency department. Additionally, the individuals that expressed retaliatory attitudes upon admittance were 4.9 times more likely to threaten someone than individuals who did not express retaliatory attitudes on the initial survey (Wiebe et al., 2011). The direct emotional response to violent victimization thus increases the likelihood for violent behavioral outcomes of adolescents in the short-term.

In addition to the short-term likelihood for violent outcomes of adolescent victims, retaliatory attitudes can also result in long-term consequences (Fagan, 2003; Hay & Evans, 2006). In an assessment of both the short- and long-term effects of violent victimization, Fagan (2003) examined both interfamilial and extra-familial violence on the self-reported offending habits of youth. Fagan (2003) used a sample of youth from the National Youth Survey (NYS) to determine that the effects of violence have an immediate and long-term effect on offending for both forms of violence. Likewise, victims of violence demonstrated a greater frequency of general offending, drug use, and both serious and nonviolent offending behaviors than the non-victims in the sample (Fagan, 2003). Fagan (2003) also found that individuals who reported both interfamilial and extra-familial violence had higher rates of criminal involvement than respondents who reported only one form of violent victimization. This study shows that multiple victimizations appear to increase delinquent behaviors later in life.

Similar to the findings of Fagan (2003), the long-term impact of violence has been linked to other negative consequences beyond violent or retaliatory behaviors. Nuris, Hooven, and Thompson (2013) followed a sample of youth into early adulthood and found that youth with histories of violent victimization were more likely to experience higher levels of stress, substance use, illegal behaviors, emotional distress, and exposure to violent experiences. These negative outcomes extend beyond the realm of delinquency, and they highlight the negative mental health, behavioral health, and physical health effects that can be associated with traumatic experiences that occur early in life.

Overall, delinquency has been associated with both child maltreatment from within the household and violent victimization from outside the home in both the short-

and long-term for children and adolescents (Baron, 2009; Finkelhor et al., 2009). Beyond delinquency, violent victimization can negatively affect the mental and behavioral health of youth (Garbarino, Bradshaw, & Vorrasi, 2002; Hay & Evans, 2006). Another form of victimization that affects youth is bullying.

Bullying

Bullying is difficult to assess given the range of activities that can be construed as bullying. Bullying has been defined as the "(1) intentional negative behavior that (2) typically occurs with some repetitiveness and is (3) directed against a person who has difficulty defending himself or herself" (Olweus, 2011, p. 151). Olweus (2011) argues that this definition, which he developed in 1983, makes a clear statement that bullying involves the violation of another person. Given the definition provided, bullying can occur in a variety of places and apply to a range of persons. As it relates to children or adolescents, bullying generally takes place within the context of school and/or near the learning environment where youth spend a large portion of their time.

General estimates pertaining to the extent of bullying suggest that between one in three and one in four students in the U.S. have been bullied while at school (U.S. Department of Health and Human Services, 2013). The majority of bullying tends to occur during middle school, and the types of activities that commonly affect victims involve verbal and social bullying (U.S. Department of Health and Human Services, 2013). Although these statistics provide a simple picture of the extent of bullying in schools, another official source for figures regarding bullying is the NCVS.

The NCVS conducted a School Crime Supplement (SCS) in 1989 and every other year from 1995 to 2011 to estimate the prevalence of violence in schools (U.S.

Department of Education, 2005; 2011). The SCS collects data on a nationally representative sample of students between the ages 12 and 18 (enrolled in grades 6 through 12) in the United States. In 2001, there were a total of 8,374 students who participated in the SCS, and questions in this earlier version assessed both direct and indirect forms of bullying. Direct bullying was measured in the 2001 survey by asking respondents "Have you been bullied at school? That is, has anyone picked on you a lot or tried to make you do things you did not want to do (e.g., give them money)?" (U.S. Department of Education, 2005, p. 2). Indirect bullying was measured by asking students "Have you felt rejected because other students have made fun of you, called you names, or excluded you from activities?" (U.S. Department of Education, 2005, p. 2).

Results from the SCS (2001) indicate that approximately 7 percent of the students were bullied indirectly and roughly 3 percent were bullied directly (5 percent of the overall respondents experienced both indirect and direct forms of bullying) (U.S. Department of Education, 2005, p. 6). One notable trend that appeared in this data is that the total percentage of students reporting both forms of bullying declined from 24 percent for 6th graders to 7 percent for 12th graders (U.S. Department of Education, 2005).

A more recent version of the SCS (2009) collected data on 4,326 students between ages 12 and 18 (U.S. Department of Education, 2011). During this year, the SCS assessed the differences between "traditional bullying" and "electronic bullying" by incorporating more elaborate questions in the survey (U.S. Department of Education, 2011). Traditional forms of bullying were measured by asking respondents whether or not another student made fun of them, called them names, insulted them, spread rumors about them, threatened them with harm, pushed or shoved them, forced them to do

something they did not want to do, excluded them from activities, or destroyed their property (U.S. Department of Education, 2011, p. 11). Electronic bullying was measured by asking students questions regarding whether or not they had been victimized in any manner via electronic means, including the internet, e-mail, instant messaging, online gaming, text messaging, and online communities (U.S. Department of Education, 2011, p. 11).

A notable feature of the 2009 version of the SCS is that a distinction was made between criminal victimization at school and bullying at school to address arguments regarding the likelihood of criminally victimizing events being reported as incidents of bullying (U.S. Department of Education, 2011). To account for this nuance, a variety of questions were administered to student participants regarding different forms of criminal victimization at school (i.e., victimization by violent crime and/or theft). The findings suggest that students do report bullying independent of criminal victimization with 1.4 percent of students reporting that they were a victim of a violent crime at school (e.g., rape, sexual assault, robbery, aggravated assault, and simple assault), and 2.8 percent of the students reported that they were the victims of theft (i.e., victims of purse snatching, pickpocketing, and all completed and attempted thefts excluding motor vehicle theft) (U.S. Department of Education, 2011, p. 5). A prominent finding within this study is that youth who reported criminal victimization at school also reported much higher levels of traditional bullying (63.5 percent) and electronic bullying (19.8 percent) than students who experienced no criminal victimization but did experience bullying (26.6 percent of non-victims reported traditional bullying and 5.5 percent reported electronic bullying) (U.S. Department of Education, 2011, p. 10). These statistics highlight the notion that

those who are criminally victimized are more likely to experience other traumatic experiences, including bullying (Finkelhor, 2008; McCarthy, Hagan, & Martin, 2002).

Outcomes of Bullying. Research on bullying is of particular interest because there is evidence to suggest that there are distinct sub-groups of victims (Cuevas et al., 2013; Higgins, Khey, Dawson-Edwards, & Marcum, 2012; Olweus, 1978, 1995, 2011). A specific typology that has been developed within the bullying literature is the bully-victim (Cuevas et al., 2007; Olweus, 1978, 1995, 2011; Solberg, Olweus, & Endersen, 2007). Bully-victims are offenders who act out and use violence as a method of coping with victimization (typically bullying). Much of the research on bully-victims involves samples of children and adolescents from outside of the United States (Olweus, 1978, 2011); however, there is evidence supportive of this typology in students at schools within the country (Wang, Iannotti, & Nansel, 2009).

The notion of bully-victims refers to a negative outcome where the victim uses violence to cope with the trauma of being victimized. Other effects beyond this outcome have been found in both children and adolescence exposed to bullying (Bouffard & Koppel, 2012; Cuevas, Finkelhor, Turner, & Ormrod, 2007; Topper et al. 2011). For example, there is evidence to suggest that bullying is associated with higher levels of alcohol and substance use (Topper et al., 2011), self-harming behaviors (Hay & Meldrum, 2010), aggressive and violent behaviors (Cuevas et al., 2007; Cuevas et al., 2013; Solberg et al., 2007), and negative psychological health (Ireland, 2005; Olweus, 1995).

Overall, the extent and pervasiveness of bullying is of concern because it is largely specific to youth, and this type of traumatic experience is estimated to affect

somewhere between 20 to 30 percent of the youth within the population. Similar to violent victimization, experiences with bullying can be traumatic for children and adolescents as they mature into adulthood. Beyond these direct forms of victimization, there are other forms of violence that can be traumatic for youth which need to be accounted for when assessing the outcomes of negatively affected individuals.

Vicarious Victimization

Vicarious victimization can simply be defined as "witnessing the victimization of others" (Lin et al., 2011, p. 195). Some have referred to this form of victimization as indirect victimization, indirect exposure, exposure to violence, or community violence (which sometimes encompasses both direct and indirect forms of victimization) (Haden & Scarpa, 2008; Scarpa, 2001; Scarpa & Haden, 2006; Scarpa, Haden, & Hurley, 2006; Scarpa, Hurley, Shumate, & Haden, 2005; Stein, Jaycox, Kataoka, Rhodes, & Vestal, 2003; U.S. Department of Justice, 2012). There are subtle differences in the way that some of the operational definitions for these concepts are applied, and analyses that focus on the effects of community violence sometimes assess both direct and indirect forms of exposure to community violence (Stein et al., 2003). Indirect exposure to violence denotes vicarious victimization because it has been measured by using events such as learning about violence, knowing someone that has been victimized, hearing gunshots, observing violence on television or movies, and observing violence in person (Stein et al., 2003).

Official statistics regarding the number of children exposed to vicarious victimization are limited (Bureau of Justice Statistics, 2008), and determining the extent of this form of victimization is difficult given the fact that vicarious victimization is not

consistently measured in victimization surveys at the national level. Given this limitation, there are a number of studies and meta-analyses that analyze the extent of vicarious victimization exposure (Fowler, Tompsett, Braciszewski, Jacques-Tiura, & Baltes, 2009; Stein et al., 2003), and the results from these analyses are beneficial for estimating the prevalence of this phenomenon.

In a review of 46 articles evaluating the extent of community violence, Stein and colleagues (2003) found that the prevalence of exposure to community violence ranges substantially for both direct and indirect forms of community violence. The prevalence of indirect exposure to violence (i.e., vicarious victimization) for the studies reviewed ranged from 3 percent to 45 percent for observing someone get shot or murdered; 4 percent to 65 percent for observing a shooting; 3 percent to 56 percent for watching someone get stabbed; 24 percent to 55 percent for observing someone get robbed; and 29 percent to 92 percent for observing someone get physically assaulted (Stein et al., 2003, pp. 250-259). One of the main concerns about the findings above involves the fact that there is an excessive range in the rates of exposure to indirect forms of community violence. The authors argued that the amount of variation between samples is likely the result of differences in the samples of youth who could be classified based on environmental factors ranging from "low-risk" areas (i.e., living in rural locations with little crime) to "high-risk" locations (i.e., youth living in the inner-city, from low income areas, and environments highly conducive to crime) (Scarpa, 2001; Stein et al., 2003).

In a more recent investigation of the effects of community violence exposure on the mental health outcomes of youth, Fowler and colleagues (2009) evaluated 114 studies to understand the effects of community violence exposure. The authors substantiated the

notion that the prevalence of vicarious victimization varies considerably across samples, and the variation across studies is likely related to a variety of factors including the age of youth in the sample, the type of violence assessed, and the type of neighborhood the sample was drawn from (Fowler et al., 2009). Overall, Fowler and colleagues (2009) determined that the prevalence of exposure to community violence as it applies to youth is indeed a wide-ranging phenomenon based on their research.

Outcomes of Vicarious Victimization. Vicarious victimization can be a traumatic event for youth, and this traumatic experience has been associated with a number of negative consequences (Boynton-Jarrett et al., 2008; Fowler et al., 2009; Lin et al., 2011; Scarpa, 2001). Much of the research assessing the negative effects of vicarious victimization has analyzed the mental health outcomes associated with exposure to violence (Fowler et al., 2009; Haden & Scarpa, 2008; Scarpa, 2001; Scarpa & Haden, 2006; Scarpa et al., 2005; 2006).

Scarpa (2001) and her colleagues (Haden & Scarpa, 2008; Scarpa & Haden, 2006; Scarpa et al., 2005; 2006) have directed a considerable amount of attention toward assessing the effects of community violence exposure on a relatively "low risk" sample of youth by evaluating the negative psychosocial outcomes associated with this traumatic experience. Scarpa (2001) found that in her low-risk sample of individuals (i.e., college students), the majority of respondents indicated some form of community violence exposure within their lifetime (between 83 percent and 96 percent depending on the form of violence assessed). Individuals with high levels of violence exposure were found to have significantly greater levels of depression and aggressive behaviors compared to those with low levels of exposure (Scarpa, 2001, p. 49). Later analyses using the same

sample showed that the effects of simply hearing about community violence can lead to negative psychological states, higher levels of depression, and interpersonal problems indicative of various psychological disorders (Scarpa et al., 2005).

There are a range of negative health effects associated with vicarious victimization (Boynton-Jarrett, Ryan, Berkman, & Wright, 2008; Lin et al., 2011). Delinquent outcomes have been linked to this traumatic experience, and there is evidence to suggest that vicarious victimization is associated with greater levels of violent crime, property crime, and drug use (Baron, 2009; Lin et al., 2011).

Overall, the various analyses that have investigated the extent and the effects of vicarious victimization give credence to the notion that exposure to community violence, or what will be called herein vicarious victimization, is a phenomenon that many youth will face at some point in their lifetime. Exposure to vicarious victimization can be highly traumatic for children and adolescents as they grow and mature (Fowler et al., 2009).

Incarceration of a Close Family Member

The incarceration of a close family member is a traumatic event that growing numbers of children have experienced (Arditti, 2013; Arditti & Savla, 2013; Miller, 2006; Turanovic, Rodriguez, & Pratt, 2012). The incarceration of a close family member usually involves a situation where a caregiver (i.e., mother and/or father), or someone else close to a child, is removed from the household and placed under some form of correctional supervision (i.e., jail or prison). It is important to note that this type of event does not necessarily need to be a biological parent for the situation to be traumatic to a child or adolescent, and any individual living within a youth's household who has a significant attachment to the child/adolescent can potentially fit into this categorization.

Official statistics related to the incarceration of a close family member of a child/adolescent are generally relegated to biological parents who are incarcerated. It was estimated that 809,800 people in prison were the parent of at least one child under 18 years of age during 2007 (a total of 744,200 fathers and 65,600 mothers) (Bureau of Justice Statistics, 2010). At the same time, roughly 1.7 million youth (or 2.3 percent of the U.S. population under the age 18) had a biological parent who was incarcerated in a state or federal prison (a total of 1,559,200 children had a father that was incarcerated, and 147,400 children had a mother that was incarcerated) (Bureau of Justice Statistics, 2010). One of the main limitations of these statistics is that these figures fail to account for parents who are serving time in local or county jails. Also, parental incarceration figures do not account for other individuals close to a child (i.e., a sibling or a caregiver who is not by definition a parent of the child) whose incarceration can have a traumatic effect on the individual. With these limitations in mind, this type of event can result in a variety of negative outcomes for youth.

Outcomes of Incarceration of a Close Family Member. The incarceration of a close family member can be a traumatic experience for youth because this situation can disrupt the nurturing relationship between a child and their primary caregiver[s], affect the overall family stability and financial situation, and expose a child to a harsher environment (Arditti, 2012; National Conference of State Legislators, 2009). One of the main factors associated with the incarceration of a close family member that can make this situation traumatic for youth involves the rapid and unexpected shift in environmental conditions. The shifting environmental factors can subsequently promote an unstable climate for a child/adolescent which, in turn, can increase the likelihood of

exposure to risk factors such as extreme poverty, substance abuse, maltreatment, and homelessness (National Conference of State Legislators, 2009; Roettger, Swisher, Kuhl, & Chavez, 2010; Wildeman, 2014). The deprivation that is experienced by youth in this regard leads to other negative outcomes (Arditti, 2012; National Conference of State Legislators, 2009).

Research on the outcomes of youth who have an incarcerated parent suggests that children with an incarcerated mother are at a greater risk of becoming involved in delinquency/criminality (Arditti, 2012; Huebner & Gustafson, 2007; Murry, Farrington, & Sekol, 2012). For example, Huebner and Gustafson (2007) found that the chances of being placed on probation and being convicted of a crime during adulthood were 75 percent greater for individuals whose mother was incarcerated during childhood or adolescence than individuals whose mother was not. Moreover, sons of incarcerated mothers were at least three and one-half times as likely to be convicted of a crime or placed on probation as daughters whose mothers were incarcerated (Huebner & Gustafson, 2007, p. 289). Finally, individuals with an incarcerated mother reported greater levels of drug use than individuals whose mothers were never incarcerated (Huebner & Gustafson, 2007).

Beyond the delinquent and criminal outcomes associated with the incarceration of a caregiver, the changing lifestyle of a child/adolescent experiencing this hardship can increase the likelihood of problems with attachment, diminished cognitive abilities, emotional problems, and psychological issues (Murry et al, 2012; Nichols & Loper, 2012; Parke & Clarke-Stewart, 2001). Moreover, there is evidence to support the notion that parental incarceration is associated with higher levels of antisocial behavior or

"behaviors that violate social norms or laws" (Murray et al., 2012, p. 177). In a review of 40 studies that analyzed the effects of parental incarceration, Murry and colleagues (2012) determined that youth with incarcerated parents had a 10 percent increased risk for developing antisocial behaviors than youth who never had a parent incarcerated, and this effect was found in studies that controlled for antisocial behaviors prior to the incarceration of a parent.

The nation's move towards mass incarceration that began in the 1980s has subsequently resulted in "invisible consequences" that extend beyond the reentry issues of incarcerated parents (Wildeman, 2014, p. 74). The incarceration of parents and other individuals close to a child thus need to be accounted for when assessing negatively affected youth. Similar to the incarceration of a close family member in the life of a child/adolescent, other indirect traumatic experiences need to be accounted for when assessing the outcomes of harmed youth.

Bereavement

One of the more notable traumatic situations a child may experience is the loss of a significant person in their life (i.e., bereavement). Bereavement is a feeling of sadness, mourning, and grief that a person feels after the loss of a loved one (National Cancer Institute, 2013). Bereavement involves a situation where the death of someone close to a person occurs, and the individual[s] left behind experience a variety of feelings associated with the loss. The circumstances surrounding the death of a loved one, and the contextual factors specific to children and adolescents, typically make this a unique situation for youth.

Official statistics concerning bereavement at the national level are limited due to a lack of "key relational" information involving bereaved individuals (Draper & Hancock, 2011, p. 288). The overall prevalence of death within the United States can be determined, however, and there were a total of 2,468,435 deaths that occurred during the year 2010 (Murphy, Xu, & Kochanek, 2013). From these figures, one can assume that a significant number of youth were impacted by the death of someone close because these figures include people who were siblings, parents, other close relatives, and/or friends. Nonetheless, these data are limited, and accurately determining the number of bereaved children and adolescents is difficult at the national level.

General estimates have suggested that approximately 5 percent of the children and adolescents within the United States will experience bereavement before the age 15 (Currier, Holland, & Neimeyer, 2007). Also, it has been estimated that approximately 3.4 percent of youth under the age 18 will experience parental bereavement (Stroebe, Schut, & Stroebe, 2007). Several factors associated with youth may influence the grieving process including the child's age/stage of development, personality, previous experiences with death, relationship with the deceased, cause of death, family stability after the loss, family structure and who will care for the child, and how the parents or caregivers cope with the stress (Corr & Balk, 2010; National Cancer Institute, 2013). Youth attempting to cope with the loss of a significant person may have more barriers, both mentally and physically, to overcome than adults (Corr & Balk, 2010). The effects of bereavement can sometimes be even more complicated/problematic for youth because some experiences with death may be marginalized and not fully appreciated by the adults in their lives, especially when the loss involves a friend of the child (Corr & Balk, 2010).

Outcomes of Bereavement. The aforementioned factors contribute to how children deal with a loss they experience and can be linked to negative outcomes (Adams et al., 1999; Auman, 2007; Cohen & Mannarino, 2011; Draper & Hancock, 2011). For youth, bereavement has been associated with higher levels of anxiety, grief, distress, anger, depression, and loneliness (Adams et al., 1999; Auman, 2007; Clayton, 1990; Cohen & Mannarino, 2011; Draper & Hancock, 2011; Freeman, Shaffer, & Smith, 1996; National Cancer Institute, 2013). Additionally, bereaved youth have been associated with an increased risk of death themselves particularly in the form of suicide (Stroebe et al., 2007, p. 1962).

Beyond the general health effects associated with bereavement, there is evidence to suggest that the death of a close individual can lead to higher levels of delinquency for some youth (Draper & Hancock, 2011; Rheingold et al., 2003). Specifically, the loss of a parent has been associated with higher levels of general delinquency and substance use (Draper & Hancock, 2011; Rheingold et al., 2003). The multiple effects associated with this traumatic life event are consequently similar to the outcomes associated with criminal victimization and are likely to have a compounding effect when assessed along with other traumatic experiences.

The previous sections highlight various forms of traumatic exposure and the outcomes that have been associated with the incidents discussed. The following section provides a theoretical explanation for why delinquency can result from traumatic life events.

General Strain Theory

The purpose of this dissertation is to examine the relationship between traumatic life experiences and delinquency. This dissertation is unique because it expands the analysis to include multiple traumatic experiences (i.e., violent and/or sexual assault, bullying, victim of a burglary, vicarious victimization, bereavement, and the incarceration of a close family member), and evaluates how these events are mediated by mental health (i.e., depression) and behavioral health (i.e., risky health behaviors) on delinquency. This dissertation also contributes to the literature by assessing how the aforementioned factors function over time and across gender.

One of the more notable theoretical explanations for why some individuals exposed to traumatic life events offend comes from Agnew's (1992, 2001) GST. GST proposes that individuals exposed to negative stimuli, such as traumatic life events, sometimes use delinquency to cope with the strain. A basic proposition of GST contends that certain strains increase the likelihood of crime (Agnew, 1992, 2001, 2013). This outcome occurs because the negative affect (e.g., anger, fear, frustration, and/or depression) produced by strain creates internal pressure for corrective action, and delinquent behavior affords one possible response (Agnew, 1992, 2001). The model in Figure 1 provides a general depiction of the process that underlies Agnew's (1992) main hypothesis.

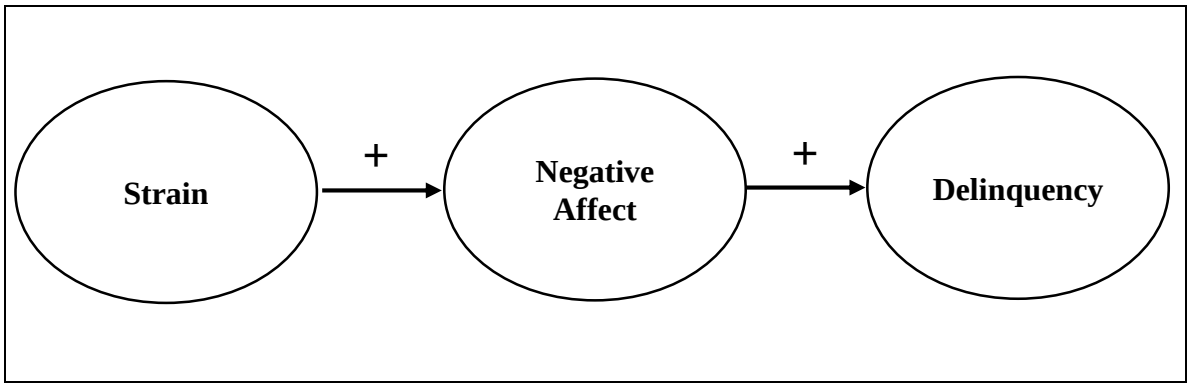

Figure 1: Causal Depiction of Agnew's (1992) General Strain Theory

Agnew's (1992) GST is a derivative of Merton's (1938) earlier work, which argued that the social structure pressures individuals to achieve certain goals through legitimate means and recognized that not everyone has the same opportunity to achieve such goals. The classical perspective of strain theory thus contends that individuals are likely to resort to illegitimate means (i.e., crime) in order to achieve socially desirable goals (Merton, 1938).

GST was developed in order to extend previous versions of strain theory and address the various critics of strain by providing a theory that explains the "variation in delinquency rates over time and between groups" (Agnew, 1985, p. 154). Whereas other theories of crime focus on positive relationships (i.e., social learning theory; *see* Akers, 1973, 1985), or the absence of relationships (i.e., control theories; *see* Hirschi, 1969), strain theory explicitly focuses on negative relationships (Agnew, 1992, p. 49). Agnew (1992) argued that strain differs from other theoretical perspectives in at least two regards: (1) strain theory emphasizes the role of negative relationships with others, and (2) strain theory states that youth are "pressured into negative affective states" that are the result of negative relationships (p. 49). Negative affect influences the pressure for corrective action by adolescents who subsequently turn to illegitimate means for goal

achievement, attack or flee the source of strain, and/or resort to the use of illicit drugs to manage the emotion (Agnew, 1992). Accordingly, strained individuals have a greater propensity to utilize illegitimate mechanisms (i.e., delinquency or crime) to cope with pressure and to mitigate strain.

Agnew (1992) identifies three major sources of strain that can pressure a juvenile into delinquency. First, an individual is strained when they are blocked from achieving positively valued goals. This proposition is associated with the classical perspective of strain theory, and a variety of factors may be related to this form of strain. These factors include a disjunction between (a) aspirations and expected/actual achievement, (b) expectations and actual achievement, and (c) just/fair outcomes and actual outcomes (Agnew, 1992, p. 56). The removal of positively valued stimuli is a second major source of strain (Agnew, 1992). This type of strain is associated with the notion that individuals may resort to delinquency in order to prevent, retrieve, or seek revenge against those responsible for the loss of positively valued stimuli. Finally, strain can result from the presentation of negative stimuli (Agnew, 1992). This form of strain leads to delinquency when an individual attempts to avoid, terminate/alleviate, seek revenge against the source, and/or manage the negative stimuli by resorting to drug use (Agnew, 1992, p. 58).

Although the sources of strain are hypothesized to increase the likelihood of delinquency, Agnew (1992) noted that not all strained individuals resort to delinquent activities. While a range of factors can be associated with straining events, Agnew (2001) suggests strains that are high in magnitude, viewed as unjust, associated with low social control, and create some pressure or incentive for crime are most likely to influence delinquent behaviors.

Magnitude of strain is influenced by the degree/severity, recency, duration, and frequency of the strain. The magnitude of a strain is subjective in nature and differs depending on the strain being examined (Agnew, 1992). For example, magnitude may differ in respect to goal blockage when analyzing the gap between reality and one's goals. Also, magnitude can differ in respect to the evaluation of the loss of a positive stimuli as well as the presentation of negative stimuli. Agnew (1992) argued that because of the subjective nature of magnitude, individual perceptions must be accounted for when analyzing this concept.

Along with magnitude, Agnew (1992) identified unjust strains as increasing the likelihood of delinquent responses. Unjust strains can be defined as "the voluntary and intentional violation of a relevant justice norm" (Agnew, 2001, p. 328). The perception of injustice is subjective, and it can be influenced by a variety of factors. It is argued that strain from perceived injustice can increase criminal activity because the strain is likely to instigate negative emotions conducive to delinquent behavior (i.e., anger). Anger is argued to be favorable to delinquent behavior since it impedes on non-criminal coping mechanisms, reduces the perceived and actual cost of crime, energizes an individual for action by creating a sense of power and control, and promotes a desire for revenge or retribution (Agnew, 2001, p. 327).

Strains that are associated with low social control are believed to increase delinquent behavior because the perceived cost of crime is reduced. Agnew (2001) notes that "individuals low in direct control, conventional attachments, and conventional commitments generally lack the social support and resources that facilitate noncriminal coping" (p. 335). When there is no reason for juveniles to control themselves and a

straining incident transpires, individuals may resort to illegitimate activities because other outlets are not accessible. Incidents involving low social control likely stem from situations where there is erratic discipline, parental rejection, and homelessness, amongst others; all of which reduce the notion of normative control and facilitate criminal coping behaviors (Agnew, 2001).

Finally, strains that create pressure or incentive to engage in delinquent activities can increase the likelihood of delinquency. Agnew (2001) draws on social learning theories and routine activities theory to explain this proposition. The core argument from this perspective is that individuals who experience strain may be influenced to engage in criminal coping as a result of exposure to strain. There may be an appeal to take part in delinquent activities, as well as create more opportunities to be exposed to others who engage in criminal behavior as a result of the strain. When exposed to others who positively reinforce delinquent activities as a result of strain, a juvenile may find solace in this form of coping (Agnew, 1992).

Sources of Strain

Agnew (1992, 2001, 2013) argues that not all strains will result in delinquency; however, he detailed a number of events and conditions that are likely to lead to crime. First, the failure to achieve certain "core" goals that are easily achieved through crime may influence the decision to engage in delinquent activities (Agnew, 2001, p. 343). Core goals include attainment of money, thrills or excitement, autonomy, and masculine status. When an individual is blocked from achieving these types of goals, the strain and pressure to achieve such goals produces a greater motivation to attain those objectives through illegitimate means.

Parental rejection provides another source of strain that is likely to result in delinquency. Parental rejection can be defined as parents who reject their children and express no love and/or affection, show little interest, offer little or no support, and display high levels of hostility towards their child (Agnew, 2001, 2013). High levels of supervision and discipline, along with neglect and abuse, also promote straining environments conducive to delinquency (Agnew, 1992, 2001). Strain is likely to result from these types of situations because a child's goals, values, needs, activities, and/or identities are threatened. Also, these types of strain are enhanced because they may be perceived as unjust, and because they are associated with low social control (Agnew, 2001).

Homelessness is another strain that is highly conducive to delinquency because homelessness is seen a strain that is high in magnitude, typically perceived as unjust – especially when it involves youth – and provides some pressure and incentive to participate in delinquent activities. Additionally, homelessness is highly associated with low social control and provides an environment that is conducive to learning delinquency (Agnew, 2001, p. 345).

Agnew (2001, 2013) identifies abusive peer relations and criminal victimization as another important source of delinquent behavior. Abusive relations amongst peers are likely to be viewed as unjust and create pressure for a youth to respond. Moreover, abusive peer relations are likely to promote anger and result in the use of illegitimate mechanisms as a method of coping (Agnew, 2001). Criminal victimization also produces strain, especially when the victimization is perceived as unjust and is high in magnitude (Agnew, 2001). The strain resulting from criminal victimization is likely compounded

when a juvenile who has been victimized or is in an abusive relationship, is unable to remove his- or herself from the situation. Thus, a variety of traumatic events can be viewed as strains given Agnew's (1992, 2001) theory.

Tests of General Strain Theory

Agnew's (1992, 2001, 2013) framework provides an explanation for why some individuals who experience traumatic life events engage in delinquent or criminal activities. Research has demonstrated support for the major tenets of GST (Carson, Sullivan, Cochran, & Lersch, 2009; Cullen, Unnever, Hartman, Turner, & Agnew, 2008; Hay & Meldrum, 2010; Hollist, Hughes, & Schailbe, 2009; Lin et al., 2011; Sigfusdottir, Gudjonsson, & Sigurdsson, 2010), and the current dissertation relies on GST to drive the analyses examining the negative mental health, behavioral health, and delinquent outcomes of youth who report exposure to various traumatic life events.

It is important to note that few studies of delinquency have incorporated relevant intervening health factors that have been linked to persons exposed to traumatic life events when assessing delinquent outcomes (Watts & McNulty, 2013). Nevertheless, there has been a recent shift within the criminological literature to address the effects of various intervening mechanisms (i.e., anger, anxiety, depression, and others) stemming from traumatic life events which subsequently condition delinquent outcomes.

Some of the earlier tests of GST evaluated the mediating effects of negative affect stemming from traumatic life events on delinquency. Agnew (2001, 2013) emphasized the role of anger as one of the more important emotional responses to straining events (Sigfusdottir, Asgeirsdottir, Gudjonsson, & Sigurdsson, 2008), and a few notable studies have found support for this hypothesis. For example, Aseltine, Gore, and Gordon (2000)

tested GST using data from a three-wave panel of high school students in the Boston area. The authors formulated an index of 61 items that they considered stressful life events (i.e., school problems, money problems, job difficulties, rape or victimization, health problems, parent and sibling health problems, parental death, amongst others), and examined how anger, anxiety, and/or depression conditioned these strains on delinquency. Anger was assessed using a five-item measure that incorporated hostile, aggressive, and resentful feelings (Aseltine et al., 2000). The authors also examined the conditioning effects of anxiety and relied on a ten-item measure that included measures of depressive symptoms and various anxiety indicators (Aseltine et al., 2000). Delinquency was measured three different ways: (1) nonaggressive acts, which included six self-reported items of stealing, running away from home, joy riding, and driving while impaired; (2) aggressive acts, which included measures of damaging property, carrying a weapon, and getting into physical fights; and (3) drug use, which was a frequency scale of marijuana use. The authors found limited support in their test of GST, but determined that negative life events and conflict within the family increase delinquency (Aseltine et al., 2000). Additionally, anger and anxiety significantly mediated the effect of negative life events on delinquency, and the effects of anger resulting from negative events fully conditioned violent and aggressive outcomes (Aseltine et al., 2000).

Maschi, Bradely, and Morgen (2008) furthered this line of research by using GST to examine how the effects of traumatic experiences on delinquency are mediated by negative affect (i.e., anger and depression) and delinquent peers. Data from the National Survey of Adolescents (NSA) were used to formulate a traumatic index comprised of a 20-item victim scale that assessed exposure to violence (i.e., physically abusive

punishment, physical and sexual assault, and witnessing violence), and a 14-item composite was constructed which included stressful life events (i.e., divorced parents, parent(s) lost a job, death of a family member, new step-parent, and changes in school) (Maschi et al., 2008). Negative affect was measured using two items to assess anger, 12 items to measure depression, and 13 items that estimated delinquent peer exposure. Delinquent outcomes were measured using self-reported property crime and violent offending. Age, socioeconomic status, race, family structure, geographic location, and social support were used as control variables. The authors determined that anger and delinquent peer exposure condition the effect of traumatic experiences on delinquency (Maschi et al., 2008).

Beyond the conditioning effects of anger, others have focused specifically on the role of depression. For example, Bender, Postlewait, Thompson, and Springer (2010) used a sample of youth from the National Survey for Child and Adolescent Well-Being (NSCAW) to examine the mediating effects of depression and posttraumatic stress disorder (PTSD) from maltreatment on delinquency. The authors analyzed these factors at three 18 month intervals. Maltreatment was the primary strain evaluated and involved measures of risk of maltreatment (i.e., stability in the home and safety factors). The conditioning mental health factors included measures of depressive symptoms (i.e., feelings of self, self-blame, suicidal thoughts, negative affect, and isolation) and measures of PTSD (i.e., a 10-item measure for symptoms including experiences of bad dreams, remembering scary things, and difficulty stopping thoughts about something bad that happened) (Bender et al., 2010). The delinquent composite for the primary outcome variable included 36 different delinquent activities that were summed together. The

authors also controlled for age, gender, race, and socioeconomic status. Bender and colleagues (2010) determined that higher risk of maltreatment was associated with greater risk of delinquency. Additionally, the internalizing symptoms of depression and PTSD associated with risk of maltreatment significantly mediated the effect of maltreatment risk on delinquency (Bender et al., 2010). The authors concluded that depressive symptoms and PTSD symptoms resulting from maltreatment are important conditioning factors that deserve greater attention in future studies (Bender et al., 2010).

Carson and colleagues (2009) conducted a similar test of GST by examining the effects of early victimization on subsequent drug use using a sample of youth from the NSA. The authors explicitly noted that few studies have tested GST while utilizing victimization as a measure of strain, which Agnew (2001) identified as an important type of strain leading to delinquency (Carson et al., 2009). Physical and sexual assault were the main exogenous factors used to examine how victimization influenced subsequent drug use (i.e., tranquilizers, sedatives, stimulants, pain medication, marijuana, cocaine, angel dust, hallucinogens, heroin, and inhalants) (Carson et al., 2009). This relationship was assessed along with the conditioning measures of social bonds (i.e., problems within the family and problems at school) and negative emotions (i.e., depression) (Carson et al., 2009). The authors controlled for gender, age, race, and socioeconomic status, and concluded that early victimization increases drug use and decreases the age of first drug use. Also, early victimization was found to decrease social bonds and increase depression, and both outcomes mediated the effect of early victimization on drug use (Carson et al., 2009).

Lin and colleagues (2011) also contributed to the GST literature by using data from the NSA to examine the intervening effects of depression, low social control, and delinquent peers for victims of both direct and vicarious victimization on delinquency. Direct violence was measured by asking respondents five questions pertaining to whether or not they had experienced various forms of assault. Vicarious victimization was measured using six different questions pertaining to whether or not a respondent had ever witnessed various forms of violence in school, in the neighborhood where they live, and within their family. Depression was measured using four items that addressed depressed mood and suicidal thoughts. Low social control relied on six items that assessed problems at school and at work. Delinquent peer associations relied on nine items to determine the extent of delinquent peer associations, and delinquency was measured using two domains of delinquent activity (i.e., violent/property crime and drug use). The researchers concluded that: (1) direct and vicarious victimization are linked to delinquency; (2) the combined violent and vicarious victimization measures have a stronger impact on delinquent outcomes than the singular measures; (3) violent and vicarious victimization cause increased levels of depression, weaker social bonds, and increased delinquent peer associations; and (4) the mediating factors of depression, low social control, and delinquent peer associations significantly condition the effects of violent and vicarious victimization on delinquency (Lin et al., 2011).

The Role of Gender in Delinquency. The effects of traumatic experiences on delinquent outcomes are moderated by gender. Previous studies suggest that the differential effects between genders are a function of the contrasting styles of coping used by males and females in response to negative stimuli (Broidy & Agnew, 1997; Ford,

Grasso, Hawke, & Chapman, 2013; Gange, Lavoie, & Herbert, 2005; Widom et al., 2006).

Broidy and Agnew (1997) developed a number of propositions associated with gender and crime by relying on GST to understand the gender gap in criminal behavior. The authors proposed a number of hypotheses to explain gendered differences in crime and suggested: (1) females and males experience different types of strain leading to unique behavioral outcomes; (2) the emotional response to strain is at least partially a function of the criminal outcome observed; and (3) males are more likely to respond to strain(s) with anger than females (Broidy & Agnew, 1997). Additionally, the authors suggested that women are more likely to engage in crime when (1) the oppression of women occurs in a social venue that facilitates criminal actions; (2) if non-criminal coping mechanisms are not effective or unavailable; (3) there exist criminal opportunity; (4) there is low social control; and (5) when females are predisposed to criminal behavior (Broidy & Agnew, 1997, pp. 297-298). The hypotheses provided by Broidy and Agnew (1997) afford plausible explanations for the differential outcomes of strain for males and females. Nevertheless, research addressing gendered differences in criminal outcomes extends well beyond the hypotheses offered by Broidy and Agnew (1997).

The rationale for the differential delinquent outcomes of females and males has been an on ongoing endeavor for decades (Widom, 1978; Widom, Katkin, Stewart, & Fondacaro, 1983; Widom, 1989a, 1989b), and much effort has been devoted towards explaining the delinquent outcomes of females and the uniqueness of women's pathways to crime.

Cathy Widom is well-known for her research assessing the delinquent outcomes of females, and she has garnered much attention for her research pertaining to the cycle of violence (i.e., violence begets violence) (Widom, 1989b). Widom (1989b) determined that early abuse and neglect increased the likelihood of delinquency and adult criminal behavior, and she pointed out that not all youth exposed to traumatic life events become delinquent. Widom (1989b) tested the basic cycle of violence hypothesis using a prospective cohort design. The sample included youth who were admitted to a juvenile or adult court for abuse or neglect from 1967 to 1971. Results indicated that youth who experienced abuse and neglect also experienced greater levels of criminality later in life. Moreover, physical abuse and neglect were found to increase later violent behaviors overall, and females exposed to child abuse and neglect experienced different long-term consequences than males. Specifically, abused and neglected females had greater levels of depression, self-destructive behaviors, withdrawal, and other negative outcomes dissimilar to their male counterparts (Widom, 1989b).

Widom (1989a) extended this line of research by assessing the gendered outcomes of early traumatic exposure. Using the sample of youth obtained in her previous studies, Widom (1989a) estimated the relationship between childhood abuse and neglect on criminal behaviors (i.e., violence, property offenses, sex offenses, drug use, alcohol use, and order offenses) approximately 20 years later. She found that 29 percent of youth exposed to childhood victimization had an adult criminal record compared to 21 percent of the individuals in the control sample who reported no victimization (Widom, 1989a). Also, female victims were more likely than non-victims to have an adult arrest, and the long-term criminal outcomes stemming from abuse and neglect for females differed from

males because females indicated increased risk for order offenses (i.e., disorderly conduct, curfew, and loitering), property offenses, and drug offenses as opposed to violent criminal behaviors (Widom, 1989a). Widom (1989a) concluded that victimized females were more likely than males to have internalized symptoms and suffer from depression or other mental health disorders.

Wilson and Widom (2009) also relied on Widom's prospective cohort sample to examine how abuse and neglect in childhood effects illicit drug use in middle adulthood. The authors identified gendered differences in their results and determined that for women, prostitution, homelessness, delinquency, and school problems collectively mediated the relationship between childhood abuse and neglect and the use of illicit drugs later in life (Wilson & Widom, 2009). Additionally, abuse and neglect did not affect drug use later in life for males, and only early drug use significantly predicted later use of drugs for males (Wilson & Widom, 2009). The results further highlight the unique pathways to criminal behavior for women exposed to traumatic life events.

There is a wealth of empirical evidence to support the notion that females and males who experience traumatic life events cope through different processes (Broidy & Agnew, 1997; Schuck & Widom, 2001; Topitzes, Mersky, & Reynolds, 2012; Widom, 1978; Widom, 1989a, 1989b; Widom, Czaja, & Dutton, 2008; Widom et al., 1983, 2008; Widom & Kuhns, 1996; Wilson & Widom, 2009, 2011). According to the theoretical framework advanced by Broidy and Agnew (1997), a few notable tests of GST have shown gendered differences in criminal outcomes.

Gendered Test of General Strain Theory

Manasse and Ganem (2009) analyzed the effects of victimization on delinquency and the mediating role of depression while accounting for gendered differences. The authors tested a number of hypotheses using data from the NYS Waves 5 and 6. Victimization was measured by asking respondents whether or not they had been the victim of various forms of assault (i.e., assault from a parent, attacked with a weapon, been sexually assaulted, and pressured into sex) and property crimes (i.e., motor vehicle theft, bicycle theft, things stolen from a public place, and had a pocket picked in the past year) (Manasse & Ganem, 2009). A 36-item summative index was used to measure depression. The authors determined that victimization increased the likelihood of depression, but females were more likely to display signs of depression than males. Also, depression increased the odds of delinquency, but females were less likely to be delinquent than males overall. The authors noted that gender moderated the effect of depressive symptoms on delinquency, and males with depressive symptoms were 50 percent more likely to respond to victimization with delinquency than males who did not report depressive symptoms (Manasse & Ganem, 2009).

Sigfusdottir and colleagues (2008) addressed the role of gender in their test of GST. They evaluated the conditioning effects of anger and depression that stem from sexual abuse on suicidal behavior and delinquency. The authors used a sample of youth from the National Survey of Icelandic Adolescents to examine six different hypotheses (Sigfusdottir et al., 2008). Sexual abuse was measured using five questions pertaining to exposure to sexual abuse, depressed mood relied on responses to eight items that were summed to formulate an index, and anger was assessed using five items regarding various

anger problems (Sigfusdottir et al., 2008). The outcome index of suicidal behavior was measured with four questions, and the delinquent index was comprised of responses to whether or not a respondent committed various property or assaultive crimes. The authors found that sexual abuse increased both feelings of anger and depression, and they determined that depression from sexual abuse is a greater predictor of suicidal behavior while anger was a greater predictor of delinquency (Sigfusdottir et al., 2008). Also, girls were more likely to demonstrate depressed mood from sexual abuse than boys, and the effect of anger on delinquency was stronger for boys than it was for girls. The authors concluded that gender plays a complex role in how traumatic events influence health and delinquent outcomes, and this is similar to previous research that has evaluated the matter (Sigfusdottir et al., 2008).

In a final test of GST that examined gendered effects, Watts and McNulty (2013) used data from the National Longitudinal Study of Adolescent Health (Add Health) to examine whether violent victimization (i.e., physical abuse and sexual abuse) resulted in higher levels of criminal behavior, and whether this effect was mediated by depressive symptoms. The authors accounted for gendered outcomes by disaggregating the sample to test their main hypothesis that the effects of child abuse on delinquency should be mediated by depression. The measure of physical and sexual abuse (i.e., strain) involved responses to questions regarding certain types of abuse from the respondents' parents or other caregivers before sixth grade. The mediating index of depression included 19 items, and the delinquent outcome involved a 12-item index of both property and violent offenses with one item asking about drug sales. The authors also controlled for five variables: (1) a six-item index of self-control that examine the decision making processes

of respondents; (2) a three-item index of social learning theory which measured delinquent peer activity; (3) race; (4) parental education; and (5) parents receiving public assistance (Watts & McNulty, 2013). The authors used negative binomial regression models to conclude that early physical and sexual abuse significantly affects depressive symptoms, which, in turn, have a positive effect on offending (Watts & McNulty, 2013, p. 3035). The authors claimed that the results from this analysis demonstrate that the effect of childhood physical abuse on delinquency functions through depressive symptoms for both genders (Watts & McNulty, 2013). Additionally, the results show that sexual abuse has a differential effect on offending between genders because both males and females had significant levels of depressive symptoms, but only males demonstrated significant delinquent outcomes (Watts & McNulty, 2013).

Overall, there are relatively few studies of GST that account for relevant intervening mechanisms when assessing the gendered effects of traumatic life experiences on delinquency. This dissertation is unique because it evaluates a broad range of traumatic life events that can enhance or contribute to the negative outcomes observed by harmed individuals, and it also accounts for gendered pathways between these relationships. The multiple forms of traumatic experiences, which could be considered multiple forms of strain, analyzed here are proposed to increase what Agnew (1992, 2001) has referred to as negative affect. The negative affect that is a product of strain is hypothesized to mediate the effect of trauma on delinquency. Thus, it is important to fully explore the concept of negative affect, and there is a wealth of literature outside the realm of criminology that speaks towards the matter. The following

section discusses at length the potential negative mental health and behavioral health outcomes that may underlie the negative affect discussed by Agnew (1992, 2001).

Mental Health and Behavioral Health Outcomes of Traumatic Life Events

There is extensive work outside the field of criminology that identifies and analyzes the mental health and behavioral health outcomes attributed to traumatic life experiences (Alisic et al., 2011; Beers & De Bellis, 2002; Bradley, Greene, Russ, Dutra, 2005; Copeland-Linder et al., 2012; Greenwald, 2008; Hammersley, 2011; Hodges et al., 2013; Ozer, Best, Lipsey, & Weiss, 2008; Turner, Finkelhor, & Ormrod, 2006, 2010; Widom et al., 2007; Wiebe et al., 2011). Alisic and colleagues (2011) contend that children who experience traumatic events can develop posttraumatic stress symptoms or a diagnosis of PTSD (*see* Alisic et al., 2011). Diagnoses of PTSD are made upon the accumulation of symptoms for a specific duration of time. An individual may display symptoms of a disorder without ever reaching the full criteria for a PTSD diagnosis. Nevertheless, exposure to traumatic events increases the likelihood of developing a variety of disorders including PTSD (Alisic et al., 2011).

The *Diagnostic and Statistical Manual of Mental Disorders* (5th ed.; DSM-V) states that the "essential feature of posttraumatic stress disorder is the development of characteristic symptoms following exposure to one or more traumatic events" (American Psychiatric Association, 2013, p. 274). The types of events that are likely to result in a diagnosis for PTSD include incidents such as:

> … threatened or actual physical assault (e.g., physical attack, robbery, mugging, childhood physical abuse), threatened or actual sexual violence (e.g., forced sexual penetration, alcohol/drug-facilitated sexual penetration, abusive sexual

contact, noncontact sexual abuse, sexual trafficking), being kidnapped, being taken hostage, terrorist attack, torture, incarceration as a prisoner of war, natural or human-made disasters, and severe motor vehicle accidents (American Psychiatric Association, 2013, p. 274).

Beyond the diagnostic list offered in the DSM-V, there is evidence to show that symptoms of PTSD can be an outcome of childhood violent victimization and/or maltreatment (Beers & De Bellis, 2002; Ford, Grasso, Hawke, & Chapman, 2013; Hodges et al., 2013; Koenen & Widom, 2009; Wemmers, 2013), bullying (Idsoe, Dyregrov, & Idsoe, 2012), vicarious victimization (Garbarino et al., 2002), and bereavement (Stoppelbein & Greening, 2000). The DSM-V provides the diagnostic criteria for PTSD which is detailed in Table 1.

Table 1: DSM-V PTSD Diagnostic Criteria (Older than 6 years old)

A. Exposure to actual or threatened death, serious injury, or sexual violence in one (or more) of the following ways: 1. Directly experiencing the traumatic event(s). 2. Witnessing, in person, the event(s) as it occurred to others. 3. Learning that the traumatic event(s) occurred to a close family member or close friend. In cases of actual or threatened death of a family member or friend, the event(s) must have been violent or accidental. 4. Experiencing repeated or extreme exposure to aversive details of the traumatic event(s) (e.g., first responders collecting human remains; police officers repeatedly exposed to details of child abuse) (American Psychiatric Association, 2013, p. 271)

Individuals with PTSD demonstrate a variety of negative symptoms associated with the disorder including aggressive verbal and/or physical behaviors, self-destructive behaviors, hypervigilance, and problems with concentration (American Psychiatric Association, 2013). The symptomatology for PTSD in persons older than 6, as defined in the DSM-V, are listed in Table 2.

The range of symptoms associated with PTSD are numerous, and it is suggested that approximately half of the individuals with symptoms of PTSD recover within three months of onset; however, a number of people with the disorder demonstrate symptoms anywhere from 12 months to as long as 50 years after the traumatic experience (Agaibi & Wilson, 2005; American Psychiatric Association, 2013, p. 277).

PTSD has a higher rate of prevalence in females than males (American Psychiatric Association, 2013). The duration of symptoms are likely to last longer in females arguably because females are at a greater risk of exposure to multiple traumatic events, such as sexual assault and other forms of interpersonal violence that can occur over an extended period of time (American Psychiatric Association, 2013).

It is estimated that persons with PTSD are 80 percent more likely than individuals without the disorder to have symptoms of at least one other mental disorder (American Psychiatric Association, 2013). Multiple traumatic experiences (i.e., cumulative trauma) has been linked to multiple complex psychological issues or comorbidity (Hodges et al., 2013). Comorbidity occurs when various symptoms beyond the main disease or disorder co-occur with other diseases or disorders (Ford, Elhai, Connor, & Frueh, 2010; Hodges et al., 2013; Lin et al., 2011). Multiple disorders experienced by individuals exposed to traumatic events can subsequently influence the likelihood of future traumatic exposure and/or offending (Finkelhor et al., 2009), and multiple disorders have been substantiated as intervening mechanisms in the overall relationship between traumatic events and offending (Hay & Meldrum, 2010; Millett et al., 2013; Watts & McNulty, 2013).

Table 2: DSM-V PTSD Symptoms (Older than 6 years old)

A. Presence of one (or more) of the following intrusion symptoms associated with the traumatic event(s), beginning after the traumatic event(s) occurred:

1. Recurrent, involuntary, and intrusive distressing memories of the traumatic event(s)
2. Recurrent distressing dreams in which the content and/or affect of the dream are related to the traumatic event(s)
3. Dissociative reactions (e.g., flashbacks) in which the individual feels or acts as if the traumatic event(s) were recurring. (Such reactions may occur on a continuum, with the most extreme expression being a complete loss of awareness of present surroundings.)
4. Intense or prolonged psychological distress at exposure to internal or external cues that symbolize or resemble an aspect of the traumatic event(s).
5. Marked physiological reactions to internal or external cues that symbolize or resemble an aspect of the traumatic event(s).

B. Persistent avoidance of stimuli associated with the traumatic event(s), beginning after the traumatic event(s) occurred, as evidenced by one or both of the following:

1. Avoidance of or efforts to avoid distressing memories, thoughts, or feelings about or closely associated with the traumatic event(s).
2. Avoidance of or efforts to avoid external reminders (people, places, conversations, activities, objects, situations) that arouse distressing memories, thoughts, or feelings about or closely associated with the traumatic event(s).

C. Negative alterations in cognitions and mood associated with the traumatic event(s), beginning or worsening after the traumatic event(s) occurred, as evidenced by two (or more) of the following:

1. Inability to remember an important aspect of the traumatic event(s) (typically due to dissociative amnesia and not to other factors such as head injury, alcohol, or drugs).
2. Persistent and exaggerated negative beliefs or expectations about oneself, others, or the world.
3. Persistent, distorted cognitions about the cause or consequence of the traumatic event(s) that lead the individual to blame himself/herself or others.
4. Persistent negative emotional state (e.g., fear, horror, anger, guilt, or shame).
5. Markedly diminished interest or participation in significant activities.
6. Feelings of detachment or estrangement from others.
7. Persistent inability to experience positive emotions (e.g., inability to experience happiness, satisfaction, or loving feelings).

D. Marked alterations in arousal and reactivity associated with the traumatic event(s), beginning or worsening after the traumatic event(s) occurred, as evidenced by two (or more) of the following:

1. Irritable behavior and angry outbursts (with little or no provocation) typically expressed as verbal or physical aggression toward people or objects.
2. Reckless or self-destructive behavior.
3. Hypervigilance.
4. Exaggerated startle response.
5. Problems with concentration.
6. Sleep disturbance (e.g., difficulty falling or staying asleep or restless sleep)

(American Psychiatric Association, 2013, pp. 271-272)

Children with PTSD are at a greater risk of demonstrating separation anxiety disorder, which is an excessive fear or anxiety of separation from home or attachment figures, and oppositional defiant disorder (American Psychiatric Association, 2013). According to the DSM-V, individuals with oppositional defiant disorder are likely to demonstrate frequent "angry/irritable mood[s], argumentative/defiant behavior[s] or vindictiveness" (American Psychiatric Association, 2013, p. 463). Also, individuals with oppositional defiant disorder may express defiant behaviors and argumentative attitudes towards authority figures. The DSM-V notes that oppositional defiant disorder is likely the result of harsh, inconsistent, and neglectful parenting, and that these parenting practices have a significant role in theories associated with the disorder (American Psychiatric Association, 2013). Oppositional defiant disorder symptoms may manifest as delinquent behaviors.

Abuse and neglect have been linked to several other psychological and psychiatric disorders (Finkelhor, 2008; Ford et al., 2010; Garbarino, Bradshaw, & Vorrasi, 2002; Widom et al., 2007). Finkelhor and colleagues (2009) found that victims of crime often suffer from difficulties with depression, attachment, anxiety, aggression, as well as conduct problems, and these problems are likely to lead to behaviors or activities conducive to future victimization or delinquency (p. 2). Likewise, there is empirical evidence to support the notion that experiencing traumatic events is associated with greater levels of depression, poorer perceptions of health, and major depressive disorders (MDD) (Boynton-Jarrett, Ryan, Berkman, & Wright, 2008; Lin et al., 2011; Widom et al., 2007). Traumatic life events in early childhood can also be linked to greater levels of

other psychological problems beyond PTSD including MDD (Hodges et al., 2013; Turner et al., 2006, 2010; Widom et al., 2007).

The DSM-V notes that one of the greater risk factors associated with MDD is "adverse childhood experiences, particularly when there are multiple experiences of diverse types" (American Psychiatric Association, 2013, p. 167). MDD is characterized by a number of symptoms, and the DSM-V diagnostic criteria for MDD are provided in Table 3.

It is estimated that approximately seven percent of the individuals in the United States experience MDD for the duration of a year (American Psychiatric Association, 2013). Likewise, persons in the age range of 18 to 29 years are more likely to have symptoms of MDD than older groups of individuals, and females are likely to experience anywhere from 1.5 to 3.5 times higher rates of MDD than males in early adolescence (American Psychiatric Association, 2013, p. 165).

The direct physical consequences associated with MDD include loss of appetite, issues with sleeping habits, problems with concentration, diminished ability to think, and an increased risk of suicidal thoughts (American Psychiatric Association, 2013). The negative physical symptoms of MDD have serious and potentially fatal consequences. Perhaps the most pressing issue associated with MDD is the reality that suicidal ideation is a genuine concern for those suffering from the disorder (Horwitz, Hill, & King, 2011; Oquendo et al., 2004).

Table 3: DSM-V MDD Diagnostic Criteria

A. Five (or more) of the following symptoms have been present during the same 2-week period and represent a change from previous functioning; at least one of the symptoms is either (1) depressed mood or (2) loss of interest or pleasure.

1. Depressed mood most of the day, nearly every day, as indicated by either subjective report (e.g., feels sad, empty, hopeless) or observation made by others (e.g., appears tearful). (**Note:** In children and adolescents, can be irritable mood.)
2. Markedly diminished interest or pleasure in all, or almost all, activities most of the day, nearly every day (as indicated by either subjective account or observation).
3. Significant weight loss when not dieting or weight gain (e.g., a change of more than 5% of body weight in a month), or decrease or increase in appetite nearly every day. (**Note:** In children, consider failure to make expected weight gain.)
4. Insomnia or hypersonmnia nearly every day.
5. Psychomotor agitation or retardation nearly every day (observable by others, not merely subjective feelings of restlessness or being slowed down).
6. Fatigue or loss of energy nearly every day.
7. Feelings of worthlessness or excessive or inappropriate guilt (which may be delusional) nearly every day (not merely self-reproach or guilt about being sick).
8. Diminished ability to think or concentrate, or indecisiveness, nearly every day (either by subjective account or as observed by other).
9. Recurrent thoughts of death (not just fear of dying), recurrent suicidal ideation without a specific plan, or a suicide attempt or a specific plan for committing suicide.

B. The symptoms cause clinically significant distress or impairment in social, occupational, or other important areas of functioning.

C. The episode is not attributable to the physiological effects of a substance or to another medical condition (American Psychiatric Association, 2013, pp. 160-161).

Physical abuse and multiple forms of abuse increase the risk of lifetime MDD and comorbidity (Finkelhor et al., 2009; Ford et al., 2010; Hodges et al., 2013; Horwitz et al., 2011; Turner et al., 2006, 2010; Widom et al., 2007). High levels of depressive symptoms have been found in individuals traumatized by bullying (Cuevas et al., 2007; Ireland, 2005; Olweus, 1995), vicarious victimization (Scarpa, 2001), and bereavement (Clayton, 1990; Weller, Weller, Fristad, & Bowes, 1991). These negative events subsequently increase the likelihood that a child or adolescent will suffer from the symptoms associated with MDD.

Another negative effect of traumatization beyond MDD is conduct disorder (Finkelhor et al., 2009; Ford et al., 2010; Greenwald, 2008; Koenen et al., 2005). Conduct disorder involves behaviors that violate societal norms or rules through a variety of negative behaviors. The criteria for conduct disorder as defined in the DSM-V are provided in Table 4.

The DSM-V highlights a number of the potential environmental factors linked to conduct disorder including:

> … family-level risk factors [that] include parental rejection and neglect, inconsistent child-rearing practices, harsh discipline, physical or sexual abuse, lack of supervision, early institutional living, frequent changes of caregivers, large family size, parental criminality, and certain kinds of familial psychopathology (American Psychiatric Association , 2013, p. 473).

Risk factors at of conduct disorder include associations with delinquent peers, neighborhood violence exposure, and peer rejection (American Psychiatric Association, 2013, p. 473).

Table 4: DSM-V Conduct Disorder Diagnostic Criteria

A. A repetitive and persistent pattern of behavior in which the basic rights of others or major age-appropriate societal norms or rules are violated, as manifested by the presence of at least three of the following 15 criteria in the past 12 months from any of the categories below, with at least one criterion present in the past 6 months.

Aggression to People and Animals

1. Often bullies, threatens, or intimidates others.
2. Often initiates physical fights.
3. Has used a weapon that can cause serious physical harm to others (e.g., a bat, brick, broken bottle, knife, gun).
4. Has been physically cruel to people.
5. Has been physically cruel to animals.
6. Has stolen while confronting a victim (e.g., mugging, purse snatching, extortion, armed robbery).
7. Has forced someone into sexual activity.

Destruction of Property

8. Has deliberately engaged in fire setting with the intention of causing serious damage.
9. Has deliberately destroyed others' property (other than by fire setting).

Deceitfulness or Theft

10. Has broken into someone else's house, building, or car.
11. Often lies to obtain goods or favors or to avoid obligations (i.e., "cons" others).
12. Has stolen items of nontrivial value without confronting a victim (e.g., shoplifting, but without breaking and entering; forgery).

Serious Violations of Rules

13. Often stays out at night despite parental prohibitions, beginning before age 13 years.
14. Has run away from home overnight at least twice while living in the parental or parental surrogate home, or once without returning for a lengthy period.
15. Is often truant from school, beginning before age 13 years (American Psychiatric Association, 2013, pp. 469-470).

14. Has run away from home overnight at least twice while living in the parental or parental surrogate home, or once without returning for a lengthy period.
15. Is often truant from school, beginning before age 13 years (American Psychiatric Association, 2013, pp. 469-470).

A number of youth within the U.S. are believed to be affected by conduct disorder. It is suggested that the prevalence of conduct disorder ranges anywhere between 2 percent to 10 percent within the general population (American Psychiatric Association, 2013). This disorder typically develops in childhood and often occurs in males who display frequent aggressive behaviors to others and have disruptive associations. This

disorder can also begin later in life during adolescence; however, adolescents are more likely to have normative peer relations and less likely to display aggressive behaviors than children with the disorder (American Psychiatric Association, 2013). Also, both boys and girls with adolescent-onset of conduct disorder tend to demonstrate symptoms equally (American Psychiatric Association, 2013).

There is evidence to suggest that maltreated children are more likely to display symptoms of conduct disorder than non-victimized children (De Sanctis et al., 2008). Bullies, bully-victims, and children exposed to parental incarceration are also at a greater risk of exhibiting symptoms of conduct disorder (Gabel, 1992; Olweus, 1995; Phillips, Burns, Wagner, Kramer, Robbins, 2002). These traumatic experiences are unique to youth, and the diagnostic criteria for youth with conduct disorder largely involve activities that would be deemed delinquent/criminal.

The aforementioned health outcomes (i.e., PTSD, MDD, anxiety disorder, oppositional defiant disorder, and conduct disorder) linked to early traumatic events have been identified as intervening mechanisms between traumatic events and delinquency (Hay & Meldrum, 2010; Millett et al., 2013; Watts & McNulty, 2013). The following sections address the negative behavioral health outcomes that have been linked to traumatic events which can also have a mediating effect on the traumatic exposure and delinquent relationship.

Behavioral Health

Traumatic experiences can have a negative effect on the future behavioral health of individuals (Lang et al., 2010). According to Lang and colleagues (2010), behavioral health can "be positive, such as increased physical activity, or negative, such as smoking

cigarettes" (p. 150). Traumatic events have been linked to a variety of negative health behaviors including risky sexual behaviors, increased or excessive alcohol use, and tobacco use (Brener, McMahon, Warren, & Douglas, 1999; Green et al., 2005; Gjelsvik, Dumont, Nunn, & Rosen, 2013; Lang et al., 2010; Widom & Kuhns, 1996).

A variety of traumatic events have been linked to negative behavioral health outcomes. For example, Widom and Kuhns (1996) examined how the traumatic events of physical abuse, sexual abuse, and/or neglect of children influence promiscuity – or risky sexual behaviors – approximately 20 years later. The authors found that early victimization increased the risk of prostitution (i.e., paid to have sex) for females traumatized by sexual abuse and neglect. Also, females who were sexually abused and neglected had an increased likelihood of teenage pregnancy (i.e., having a child before the age of 18) and promiscuity (i.e., sex with 10 or more people in any single year) (Widom & Kuhns, 1996).

Brener and colleagues (1999) extend the research on the effect of childhood abuse and neglect in their analysis of a nationally representative sample of female college students. The authors examined the association between victimization by rape and risky health behaviors. Data collected in the National College Health Risk Behavior Survey was used to assess the effects of forced sexual intercourse (i.e., rape) on heaving drinking, smoking cigarettes, marijuana use, getting into a physical fight, and suicidal ideation (Brener et al., 1999). The results showed that female college students were much more likely than males to have experienced forced sexual intercourse (20% to 4% respectively) (Brener et al., 1999). It was also determined that women who were raped were more likely than non-rape victims to (1) engage in risky sexual behaviors, (2) have

consensual sex at a much earlier age, (3) engage in risky drinking behaviors, (4) smoke cigarettes, (5) be in a physical fight, and (6) consider suicide in the year prior to the survey (Brener et al., 1999). The findings from this study highlight the multiple negative behavioral health outcomes that can result from traumatic experiences.

Consistent with the notion that traumatic events increase the negative behavioral health outcome of excessive alcohol use, Schuck and Widom (2001) analyzed the effects of abuse and neglect in early childhood on the number of alcohol-use symptoms later in life. The authors found that abuse and neglect play a role in the development of excessive alcohol consumption later in life. Results also indicated that depression mediates the relationship between childhood abuse and/or neglect and alcohol problems for females later in life (Schuck & Widom, 2001).

Previous literature lends support to the claim that traumatic events experienced early in life have a direct impact on the behavioral health of individuals exposed to such incidents. Additionally, the type of traumatic experience as well as the effect of traumatic events differ by gender and should be accounted for when assessing the negative health outcomes of youth exposed to traumatic life events.

Discussion

The previous sections provide an overview of the existing literature pertaining to the various health effects that likely underlie the traumatic experience and delinquent relationship. According to GST, strains (i.e., traumatic life events) increase negative affect (i.e., anger or depression) which subsequently increases the likelihood of a delinquency (Agnew, 1992, 2001). The mental health and behavioral health sections above speak largely to the literature that exists outside the realm of criminology, and the

above sections identify a number of negative responses that are similar to negative affect. The deleterious mental health and behavioral health consequences that are linked to traumatic experiences are important to fully account for when attempting to address why traumatized youth are sometimes more likely to become delinquent based on their experiences.

Based on the literature reviewed here, the current project plans to contribute to the various shortcomings within the literature by assessing the collective effects of traumatic life experiences on delinquency while accounting for relevant mediating health mechanisms. In pursuit of this goal, the current dissertation plans to address the following research questions that were developed in response to the literature reviewed here:

1. Do experiencing traumatic life events increase delinquent outcomes?
2. How do the negative health effects associated with traumatic life events influence the correlation between traumatic life events and delinquency?
3. How do the health and delinquent effects vary over time and across gender?

The following chapter identifies the hypotheses that were developed to answer the aforementioned research questions. Also, the following chapter provides details for the samples, measures, and the overall analytic strategy that is implemented in order to answer the questions presented here.

CHAPTER III

DATASET, SAMPLES, MEASURES, AND ANALYTIC STRATEGY

The purpose of this dissertation is to assess the negative mental health (i.e., depression), behavioral health (i.e., risky health behaviors), and delinquent/criminal outcomes associated with traumatic life events. First and foremost, the current dissertation analyzes the outcomes of youth who experience various forms of criminal victimization (i.e., violent victimization, bullying, and victim of a burglary) and other traumatic life events (i.e., vicarious victimization, the incarceration of a close family member, and the loss of a loved one), and assesses how these factors influence delinquency (i.e., violent crime, property crime, and substance use). These effects are analyzed along with mediating mental health (i.e., depression) and behavioral health (i.e., risky health behaviors) outcomes at various points in time.

The central research question for this analysis asks whether or not exposure to traumatic life events is a precursor to delinquency. Two additional questions are addressed including what role do the various health mechanisms have on the aforementioned relationship, and how do these factors develop over time and across gender? Based on these general questions, a number of hypotheses (Ha_i) were developed. The hypotheses developed for this dissertation are consistent with the framework offered by Agnew's (1992, 2001) GST which postulates that strain increases negative affect, which, in turn, increases delinquency.

The term traumatization is used in the hypotheses for this dissertation. Traumatization can be viewed as strain(s), and this term refers to various traumatic life

experiences including: (a) violent/sexual victimization, (b) bullying, (c) vicarious victimization, (d) the incarceration of a close family member, and (e) bereavement.

The first hypothesis (Ha1) is consistent with Agnew's (1992) GST which postulates strain increases the likelihood of delinquency. A wealth of research has found that traumatic experiences have a direct effect on delinquent outcomes (Bender et al., 2010; Carson et al., 2009; Maschi et al., 2008; Sigfusdottir et al., 2008; Watts & McNulty, 2013), and there is evidence to suggest that the delinquent outcomes resulting from traumatic experiences differentiate between gender (Broidy & Agnew, 1997; Ford et al., 2013; Gange et al., 2005; Widom et al., 2006). Accordingly, Ha_{1a} accounts for gendered differences in delinquent outcomes. Furthermore, Ha_{1a} is consistent with previous research suggesting traumatized males are likely to experience delinquent outcomes, and traumatized females are more prone to exhibit internalized outcomes, as opposed to delinquency, when compared to males (Manasse & Ganem, 2009; Watts & McNulty, 2013).

- Ha1: Traumatic life experiences in early childhood will be positively correlated with delinquency.
    - Ha_{1a}: The effect of traumatic life experiences on delinquency will vary based on gender.
        - Traumatic life experiences will have a direct effect on the delinquent outcomes of males.
        - Traumatic life experiences will not have a direct effect on the delinquent outcomes of females.

A second hypothesis (Ha2) was developed based on the literature reviewed in the previous chapter. Ha2 is consistent with the wealth of research suggesting traumatic life events stimulate deleterious mental health and behavioral health outcomes (Aseltine et al., 2000; Bender et al., 2010; Day et al., 2013; Lin et al., 2011; Maschi et al., 2008; Schuck & Widom, 2001; Sigfusdottir et al., 2008; Watts & McNulty, 2013; Widom & Kuhns, 1996).

- Ha2: Traumatic life experiences will have a negative effect on mental health and behavioral health.
    - Ha_{2a}: The effect of traumatic life experiences on mental health and behavioral health will be similar across genders.

The final hypothesis (Ha3) is consistent with the main theoretical premise of Agnew's GST (1992, 2001) that strain increases negative affect, which, in turn, increases delinquency. A variety of studies have found support for this premise (Aseltine et al., 2000; Bender et al., 2010; Carson et al., 2009; Lin et al., 2011; Maschi et al., 2008). Also, the final hypothesis (Ha_{3a}) accounts for gendered differences in delinquent outcomes, and this hypothesis is consistent with previous studies finding that males are more likely to display externalizing/delinquent outcomes when compared to females who are more likely to experience internalized/non-delinquent outcomes (Manasse & Ganem, 2009; Watts & McNulty, 2013).

- Ha3: Traumatic life experiences will increase the likelihood of delinquency, and the negative mental health and behavioral health outcomes should mediate the effect of trauma on delinquency.
    - Ha_{3a}: The mediating effect should vary based on gender.

- The effect of traumatic life experiences on delinquency should be mediated by behavioral health for males but not females.
- The effect of traumatic life experiences on delinquency should be mediated by mental health for males but not females.

Summary of Dataset

The hypotheses developed for this dissertation are examined using data drawn from the U.S. Bureau of Labor Statistics (BLS) NLSY97. The NLSY97 is a longitudinal study that first interviewed respondents who were born between the years 1980 to 1984 (ages 12-17 at first interview) in 1997. The ongoing analysis of the sample, which now involves biennial interviews, has resulted in 15 rounds of data collected from 1997 to the year 2011.

The NLSY97 surveys a number of topics that include general categories, such as: (a) education, training, and achievement scores; (b) employment; (c) household, geography and contextual variables; (d) parents, family process, and childhood; (f) dating, marriage, and cohabitation; (f) sexual activity, pregnancy, and fertility; (g) children; (h) income, assets, and program participation; (i) health; (j) attitudes, expectations, non-cognitive tests, and activities; and (k) crime and substance use (U.S. Bureau of Labor Statistics, 2014).

Questions for the NLSY97 were developed by a variety of sources. The BLS provided funding for developing data on youth within the labor force, investments in education, training, government program participation, and various other areas of labor interest. The National Institute of Child Health and Human Development (NICHD) developed questions that assessed factors, such as health, fertility, and social

relationships. The Department of Education collected information from the high schools of youth selected for the sample. The questions that were developed to determine the extent of crime and self-reported criminal activities were sponsored by the Department of Justice, Office of Juvenile Justice and Delinquency Prevention (OJJDP). The Department of Defense (DoD) and the Department of Labor (DOL) contributed to the survey by developing questions relevant to military enlistment tests.

The sample for the NLSY97 was generated by screening 90,957 housing units within the U.S. to produce a sample of youth between the ages 12 to 16. Two probability samples were generated: (1) a cross-sectional sample was designed to represent various segments of the eligible population, and (2) a supplemental sample was drawn to oversample Hispanic and non-Hispanic black youth. After making the appropriate adjustments to the sample, and after determining the eligible participants for the survey, the final weighted sample in the 1997 survey year of the NLSY97 (round 1) involved 8,984 youth between the ages of 12-17 years. By the 2011 survey year of the NLSY97 (round 15), the retention rate was approximately 83 percent (7,423 individuals).

The current dissertation relies on responses in the NLSY97 between the 1997 and 2008 survey years because the questions administered in the NLSY97 are not consistently assessed during each year of the survey. For example, questions assessing whether or not an individual had been bullied were asked only to respondents between the 1997 and 2002 survey years. Also, questions asking respondents whether or not they were violently victimized were asked only in the 2002 and 2007 survey years. A variety of reasons likely underlie NLSY97 administrators' decisions to change the questionnaire between rounds of administration; nevertheless, various years within the NLSY97 questionnaire

between 1997 and 2008 provide enough consistency within the questions to explore the previously stated hypotheses.

Analyses, Samples, and Analytic Strategies for Main Analysis

As noted above, the NLSY97 does not administer the same questions consistently across all rounds of the survey. As a result of this shortcoming, the current dissertation incorporates two separate analyses to fully examine the hypotheses for this project.

The first analysis involves what is referred to as the main analysis. The main analysis utilizes data extracted from the NLSY97 between the 1997 and 2003 survey years because three of the traumatic life event measures used in this dissertation (i.e., bullying, vicarious victimization, and victim of a burglary) are not surveyed in the NLSY97 beyond the 2002 survey year.

The second analysis involves what is referred to as the supplemental analysis. The supplemental analysis relies on data extracted from the NLSY97 between the 2002 and 2008 survey years because these years incorporate three different traumatic event measures (i.e., violent/sexual assault, the incarceration of a close family member, and bereavement) that were not assessed prior to the 2002 survey year. Given the two distinct analyses that are incorporated in this dissertation, the sample, indicators, and analytic strategy for the main analysis are discussed independent of the supplemental analysis in the sections that follow.

Main Analysis Sample

The NLSY97 used a weighted sampling procedure to achieve an over representative sample of Hispanic and non-Hispanic black youth. Based on this weighting procedure, the sample used in the main analysis of this dissertation is not representative

of the general population. Although this limitation in the dataset exists, GST does not make race specific predictions about delinquent outcomes. Thus, the over-representation of Hispanics and non-Hispanic black respondents should not theoretically bias the results.

The sample from the NSLY97 used in the main analysis of this dissertation relies on responses in the NLSY97 between the 1997 and 2003 survey years. The sample retained for the main analysis (N = 2,112) includes only the respondents in the NLSY97 who provided answers to all of the questions used in this analysis at each of the points in time that are assessed. There is a substantial amount of attrition within the sample used in the main analysis (N = 2,112) when compared to the original sample achieved by the NLSY97 in the 1997 survey year (N = 8,984). It is important to note that the decision to not manipulate the data through data imputation was made for this project. Although there is a significant loss of data due to attrition within the sample over time (*see* Appendix A), and within the questionnaire itself (i.e., respondents who were surveyed but failed to answer one or more of the questions used in this dissertation; *see* Appendix B), the decision to not impute data was finalized simply because there does not appear to be any systematic differences in the missing data for the main analysis based on the indicators extracted from the NLSY97. Also, the sample retained for the main analysis (N = 2,112) is ideal because it is relatively large and efficient for the purposes of the models estimated in the main analysis.

Attrition happened in each year of the NLSY97. In the 1997 survey year of the NLSY97, a total 8,984 individuals participated in the survey. By the 2003 assessment, a total of 1,230 individuals were not interviewed leaving a total of 7,754 respondents left in the 2003 survey year of the NLSY97. Appendix A provides a full detailed description of

the reasons for attrition within the NLSY97 on an annual basis between the 1997 and 2003 survey years.

Beyond the loss of individuals in the NLSY97 over survey years (n = 1,230), respondents were removed from the main analysis due to missing data for the questions posed across rounds of the NLSY97. The greatest amount of cases removed in the main analysis come from a failure of respondents to answer the 1997 mental health measure of depression. A total of 3,585 missing responses were observed for this indicator (a total of 5,399 answered). The majority of the respondents lost are due to the fact that most of the individuals were documented as under the age of 14 at a lead-in question. Because the depression question was supposed to be administered only to individuals 14 years of age or greater, the majority of 12 and 13 year olds in the NLSY97 were skipped for this question in 1997 (n = 3,565). Another 20 responses were omitted for the depression question due to either non-response or an invalid skip which resulted in a total of 3,585 respondents in the main analysis removed for this indicator.

The next greatest amount of missing data comes from a lack of responses to the ratio of household income to poverty measure. A total 1,406 more cases were removed from the main analysis for a failure to answer both the 1997 depression question and the lead-in question for the household income to poverty ratio indicator. It is worth noting that the majority of the cases removed for the household income to poverty ratio measure were lost as a result of an invalid skip in the NLSY97.

After accounting for the total number of respondents removed due to attrition over time (n = 1,230), the number of cases removed due to non-response for the depression indicator (n = 3,585), and the number of respondents who also failed to provide answers

for the household income to poverty ratio indicator (n = 1,406), a total of 6,221 cases out of the original 8,984 were removed from the main analysis. After the loss of data observed for these three reasons, a total 2,763 respondents were left for the main analysis. A total of 651 more respondents were subsequently removed from the main analysis for failing to respond to: (a) one of the delinquent measures used in the main analysis during either the 1997, 1998, 2002, and/or 2003 survey years; (b) one of the risky health behavior measures in the 1997 or 2002 survey years; (c) one of the trauma measures in the 1997 or 2002 survey years; (d) one of the delinquent peer measures; and/or (e) whether or not a respondent lives with both biological parents.

The final sample retained for the main analysis (N = 2,112) was produced after accounting for missing responses at each of the times analyzed in the main analysis. Appendix B provides a detailed list of attrition by question type for each year analyzed in this dissertation.

Measures for Main Analysis

Traumatic Life Events

Two additive indices were developed to examine the effects of traumatic life events in the main analysis. The traumatic life event indices incorporate measures that are consistent with previous research on harmed youth and rely on measures of (1) bullying, (2) vicarious victimization, and (3) burglary victimization (Bouffard & Koppel, 2012; Lin et al., 2011; Manasse & Ganem, 2009; Maschi et al., 2008; Topper et al. 2011).

The first traumatic life event index relies on responses in the NLSY97 questionnaire from the 1997 survey year where respondents were asked if they had been the victim of repeated bullying before the age of 12. During the same survey year,

respondents were asked if they had ever seen someone shot with a gun, and whether or not their home had been broken into before the age of 12. The dichotomous responses from these three questions (0 = No; 1 = Yes) are used as indicators of traumatic experiences in the 1997 survey year, and responses from these questions were summed together to formulate a trauma index used in the main analysis.

In the 1999, 2000, 2001, and 2002 survey years, respondents were asked whether or not they were the victim or repeated bullying between the ages 12 and 18, whether or not they had seen someone shot with a gun, and whether or not their home had been broken into between the ages of 12 and 18. The dichotomous responses for these indicators (0 = No; 1 = Yes) were summed to be used as a measure of traumatic experiences in the 2002 survey year of the main analysis.

Mental Health and Behavioral Health Indicators

In the 1997 survey year of the NLSY97, an indicator of mental health was administered to respondents which asked individuals to indicate whether they were unhappy, sad, or depressed. This mental health measure is an indicator of depression and is consistent with previous research analyzing this construct (Aseltine et al., 2000; Bender et al., 2010; Day et al., 2013; Lin et al., 2011; Maschi et al., 2008; Sigfusdottir et al., 2008; Watts & McNulty, 2013). The 1997 depression measure was assessed on a three-point scale (0 = not true, 1 = somewhat/sometimes true, and 2 = often true).

In the 2002 survey year of the NLSY97, respondents were asked how much time during the last month they had felt downhearted and blue. This mental health measure is also used as an indicator of depression. The 2002 question was assessed on a four-point

scale (1 = all of the time; 2 = most of the time; 3 = some of the time; and 4 = none of the time) which was reverse coded in the analysis.

Behavioral health is assessed using an additive index of activities that are consistent with the Centers for Disease Control and Prevention measures of risky health behaviors (*see* Centers for Disease Control and Prevention, 2014), and other research addressing the behavioral outcomes of individuals exposed to traumatic events (Schuck & Widom, 2001; Widom & Kuhns, 1996). This additive index relies on the continuous measures of (1) tobacco use within the past 30 days, (2) the number of alcohol drinks consumed each day a respondent consumed alcohol, and (3) the number of partners that a respondent ever had sex with. The responses to these questions in both the 1997 and 2002 survey years were individually summed to formulate a risky health behavior index for each of the time periods.

Delinquency/Crime Measures

The NLSY97 examined the self-reported delinquent/criminal activities of respondents in each survey year. A variety of questions were administered to respondents regarding their delinquent/criminal activity, and the following indicators from the 1997, 1998, and 2003 survey years were collected and summed to formulate a delinquent index at each of the respective points in time which is consistent with previous tests of GST (Bender et al., 2010; Carson et al., 2009; Maschi et al., 2008; Sigfusdottir et al., 2008; Watts & McNulty, 2013).

A continuous measure for violent crime was administered in each of the aforementioned survey years that asked respondents the number of times they had attacked someone or been in a serious fight in the previous year (or since the date of the

last interview in the survey years that followed the 1997 survey). This continuous measure was extracted from the NLSY97 and integrated into the additive delinquent index.

A variety of questions were administered to respondents to assess property crime involvement. Responses to questions about whether or not a respondent had committed any of the following activities within the past 12 months were included in the additive delinquent/criminal indices: (1) purposely damaged or destroyed property that did not belong to them; (2) ever stole something worth more than 50 dollars; and (3) ever committed other property crimes such as fencing, receiving, possessing or selling stolen property, or cheated someone by selling them something worthless.

A measure for substance use was included in the additive delinquent indices, and this measure relies on responses to how many times a respondent had used marijuana within the 30 days prior to the survey. Similar to the other delinquent measures, this measure was extracted from the NLSY97 in the survey years of 1997, 1998, and 2003, and summed with the other measures to formulate a delinquent index at each of the respective points in time.

Control Variables

Consistent with previous tests of GST (Bender et al., 2010; Carson et al., 2009; Maschi et al., 2008), four indicators were included as control variables in the main analysis. The first is the 1997 additive delinquency index. This variable is controlled for to assess whether exposure to traumatic life events had an effect on future delinquency while controlling for delinquent activities.

An additive delinquent peer index was also incorporated as a control. The delinquent peer index relies on four questions in the 1997 survey year. This index uses the responses to four questions which asked respondents to estimate the percent of their peers who smoke cigarettes, who got drunk 1+ times a month, who belonged to a gang, and who use illegal drugs. Each of the indicators was assessed on a five-point scale (1 = almost none [less than 10%]; 2 = about 25%, 3 = about half [50%], 4 = about 75%, and 5 = almost all [more than 90%]) and these indicators were summed to formulate a delinquent peer index.

A control measure for whether or not a respondent lived with both biological parents in 1997 was included in the main analysis (0 = no and 1 = yes), and a measure of socioeconomic status was included as well. The socioeconomic status measure is a continuous measure that estimates the ratio of household income to poverty in the year prior to the survey administration. There are no negative values for this indicator, and responses less than 100 indicate extreme poverty on the scale.

Analytic Strategy for Main Analysis

This dissertation tests the research hypotheses by implementing a number of descriptive analyses, and by estimating various structural equation models to make causal inferences. LISREL version 9.1 was used to estimate the structural equation models in this dissertation. LISREL uses Maximum Likelihood (ML) as the default estimator which is ideal for the current analysis because the estimates retained are robust even when the normality assumptions are not met. Additionally, ML parameter estimates have been found to be consistent, although perhaps not necessarily efficient, in situations of extreme non-normality (Kline, 2011; Olsson, Foss, Troye, & Howell, 2000; Schermelleh-Engel,

Moosbrugger, & Muller, 2003, p. 26). Moreover, when compared to other estimation techniques, ML has been found to provide the least biased parameter estimates under conditions where non-normality in the data exists (Olsson et al., 2000; Schermelleh-Engel et al., 2003).

The main analysis relies on LISERL version 9.1 to analyze the effects of three forms of traumatic life events (i.e., bullying, vicarious victimization, and victim of a burglary) on the endogenous factors of mental health (i.e., depression), behavioral health (i.e., risky health behaviors), and delinquency/criminality between the 1997 and 2003 survey years of the NLSY97. All of the aforementioned measures are included in the main analysis due to limitations in the NLSY97 that involve inconsistencies in question administration between survey years. The model in Figure 2 provides a depiction of the causal paths that are examined in a structural equation model for the main analysis which is subsequently disaggregated by gender to determine if there are gendered differences in the results.

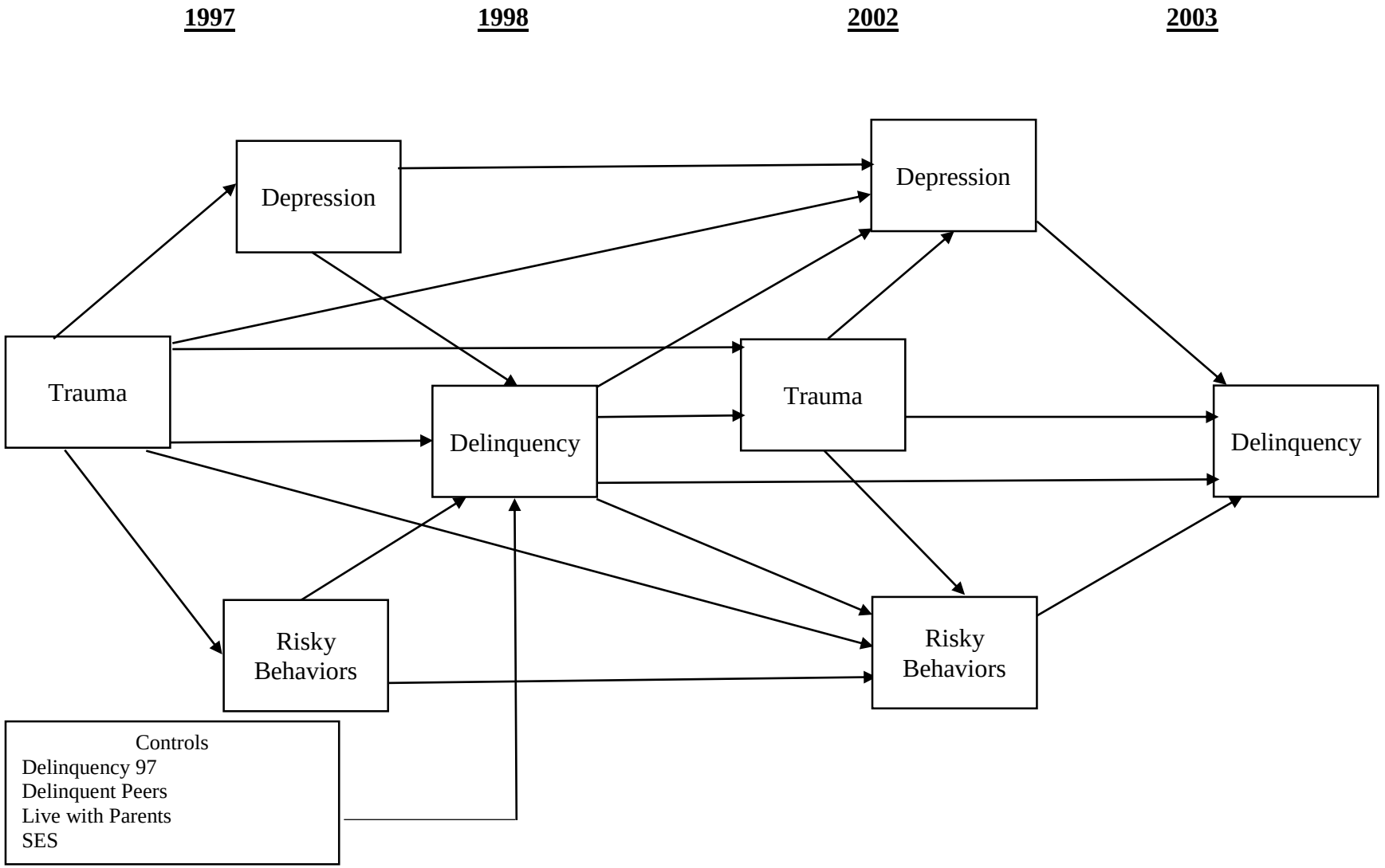

Figure 2: Main Analysis (1997 to 2002)

Each of the paths modeled in Figure 2 are theoretically justified and largely consistent with Agnew's (1992) GST. The paths that lead from traumatic life events to the mediating mental health measures (i.e., depression) and behavioral health measures (i.e., risky health behaviors) to delinquency are consistent with the notion that strain increases negative affect which subsequently increases the likelihood of delinquency (Agnew, 1992, 2001; Aseltine et al., 2000; Bender et al., 2010; Day et al., 2013; Lin et al., 2011; Maschi et al., 2008; Sigfusdottir et al., 2008; Watts & McNulty, 2013). The outcome of the first trauma indicator in 1997 has a path that leads to trauma in 2003. This path is consistent with research indicating that those individuals who are victimized are likely to experience trauma again later in life (Finkelhor, 2008; Widom et al., 2008). Also, opportunity theories suggest that delinquency increases the likelihood of exposure to traumatic life events given the risky lifestyles that underlie such activities (Cuevas et al., 2007). Thus, the path diagram in Figure 2 accounts for these effects by controlling for delinquency, and by analyzing the effects of delinquency on trauma.

Three relevant control variables are included in the main analysis. These variables address theoretical concerns about delinquent peer associations, single parent households, and account for socioeconomic status, all of which can influence delinquent outcomes. Each of these controls are modeled along with delinquency in 1997, on delinquency in 1998, and these controls are consistent with previous tests of GST that examine the effects of traumatic life events on delinquency (Bender et al., 2010; Carson et al., 2009; Maschi et al., 2008).

Analyses, Samples, and Analytic Strategies for Supplemental Analysis

Limitations in the NLSY97 questionnaire pertaining to inconsistencies in question administration provide the motivation to incorporate a supplemental analysis to fully examine the research hypotheses for this project. The supplemental analysis relies on data collected in the NLSY97 between the 2002 and 2008 survey years. The NLSY97 questionnaire between the 2002 and 2008 survey years afford the opportunity to analyze the effects of three different forms of traumatic events (i.e., violent/sexual assault, the incarceration of a close family member, and bereavement) on various mental health, behavioral health, and delinquent outcomes. The following section identifies the sample, indicators, and the analytic strategy for the supplemental analysis.

Supplemental Analysis Sample

The supplemental analysis relies on data collected in the NLSY97 between the 2002 and 2008 survey years. The full sample retained for the supplemental analysis (N = 1,166) includes all of the individuals in the NLSY97 who were not completely lost in the survey over time, and those individuals who did not fail to provide an adequate response to any of the indicators used in the supplemental analysis.

The NLSY97 originally surveyed 8,984 individuals in the 1997 survey year. The 2008 assessment included 7,490 respondents from the original 8,984 sample. Accordingly, a total of 1,494 individuals from the original sample in the NLSY97 did not make it to the 2008 survey year. Appendix A provides the stated reasons for attrition during each year of the NLSY97.

It is important to note that a large number of cases were removed from the supplemental analysis due to attrition within the measures assessed. The largest loss of

data in the supplemental analysis comes from the 2008 delinquency indicators where approximately 6,500 missing values were observed for each of the delinquent indicators except for marijuana use (n = 1,671). This loss of data is due to the fact that beginning in the 2006 survey year of the NLSY97, questions concerning general crime (i.e., property crime, other forms of crime, and/or assault) were administered to individuals only if the respondent had previously been arrested. Thus, the overall sample achieved in the supplemental analysis (N = 1,116) includes only the individuals who answered all of the questions for the indicators discussed in the following sections, and only individuals who had been arrested since 2002. Consequently, the sample used in the supplemental analysis is relegated to this population which systematically differs from the entire weighted sample achieved in the NLSY97. Given this limitation, the decision was made to move forward with the supplemental analysis and note that the sample assessed is not generalizable to the general population given this limitation. Additionally, the decision was made to not impute data given the relatively large sample size achieved, and due to the fact that the limitations have been identified and will be noted again in the limitations section in Chapter 5.

Measures for Supplemental Analysis

Traumatic Life Events

Similar to the main analysis, the supplemental analysis relies on two additive trauma indices comprised of three traumatic life events. A violent victimization question was administered in the 2002 and 2007 survey years of the NLSY97. The violent victimization question asked respondents whether or not they had been the victim of a violent crime, for example, physical or sexual assault, robbery, or arson during the past

five years. This dichotomous measure (0 = No; 1 = Yes) is used as an indicator of trauma that is summed with the following traumatic event indicators.

In the 2002 and 2007 survey years, two other questions regarding traumatic experiences were administered to respondents. The first question asked if a respondent had a close relative die within the past five years (i.e., bereavement), and the second asked whether an adult member of the household had been sent to jail or prison. These dichotomous measures (0 = No; 1 = Yes) were summed along with the violent victimization indicator to be modeled in a traumatic event index at each of the aforementioned periods of time.

Mental Health and Behavioral Health Indicators

In the 2002 and the 2008 survey years of the NLSY97, respondents were asked how much time during the last month they had felt downhearted and blue. The mental health questions were assessed on a four-point scale (1 = all of the time; 2 = most of the time; 3 = some of the time; and 4 = none of the time). These indicators were reverse coded in the analysis and used as mental health indicators of depression.

The questions in the supplemental analysis for risky health behaviors are similar to the main analysis and rely on the continuous measures of (1) tobacco use within the past 30 days, (2) the number of alcohol drinks consumed each day a respondent consumed alcohol, and (3) the number of partners a respondent ever had sex with. The responses to these questions in both the 2002 and 2008 survey years were summed together to formulate a continuous risky health behavior index at each time point.

Delinquency/Crime Measures

The NLSY97 examines the self-reported delinquent/criminal activities of respondents in each survey year; however, the delinquent/criminal measures used in the supplemental analysis differ from the main analysis measures due to limitations in the NLSY97 questionnaire.

The measures for the supplemental delinquency indices use data from the 2002, 2003, and 2008 survey years of the NLSY97. These indices rely on dichotomous indicators of delinquent/criminal behavior (0 = No 1 = Yes). The responses to questions of whether or not a respondent (1) attacked or started a fight since the last interview, (2) damaged or destroyed property that did not belong to them since the last interview, (3) stolen something worth 50 dollars or more since the last interview, (4) committed other property crimes (i.e., fencing, receiving, possessing or selling stolen property) since the last interview, and (5) whether or not an individual smoked marijuana since the date of the last interview were summed to formulate an additive index at each of the aforementioned points in time.

Control Variables

Unlike the main analysis, only two variables were controlled for in the supplemental analysis due to the lack of appropriate measures in the 2002 survey, and due to the increased age (mean age = 20.62) of respondents in the 2002 survey. Nonetheless, the 2002 delinquency index discussed above is controlled for on the 2003 delinquency measure. Also, a measure of socioeconomic status is included as a control variable. This measure is continuous and estimates the ratio of household income to poverty in the prior year.

Analytic Strategy for Supplemental Analysis

The supplemental analysis relies on various descriptive analyses and structural equation models to analyze the collective effects of three forms of traumatic life experiences (i.e., violent/sexual victimization, bereavement, and the incarceration of a close family member). Similar to the main analysis, LISREL version 9.1 was used to estimate the structural equation models in the supplemental analysis. LISREL is ideal for this analysis because it uses ML as its default estimator, and this estimation technique has been found to provide the least biased parameter estimates under conditions where non-normality in the data exists (Olsson et al., 2000; Schermelleh-Engel et al., 2003).

The full structural equation model (N = 1,166) in the supplemental analysis is used to estimate how the abovementioned traumatic events affect mental health (i.e., depression), behavioral health (i.e. risky health behaviors), and delinquency at various points in time. The model in Figure 3 provides the causal paths that are examined in the supplemental analysis. Consistent with the main analysis, the supplemental analysis is disaggregated by gender to assess the gendered differences between the factors analyzed.

Each of the paths modeled in Figure 3 are theoretically justified. The paths that lead from traumatic life events to the mediating mental health measures (i.e., depression) and behavioral health measures (i.e., risky health behaviors) to delinquency are consistent with the notion that strain increases negative affect, which subsequently increases the likelihood of delinquency (Agnew, 1992, 2001). The traumatic event index in 2002 has a path that leads to the traumatic event composite in 2007. This path is consistent with research indicating that individuals who experience traumatic events are likely to experience subsequent trauma (Finkelhor, 2008; Widom et al., 2008). Also, opportunity

theories suggest that delinquency increases the likelihood of exposure to traumatic life events given the risky lifestyles that underlie such activities. Thus, the path diagram in Figure 3 accounts for these effects by controlling for delinquency, and by analyzing the effects of delinquency on trauma.

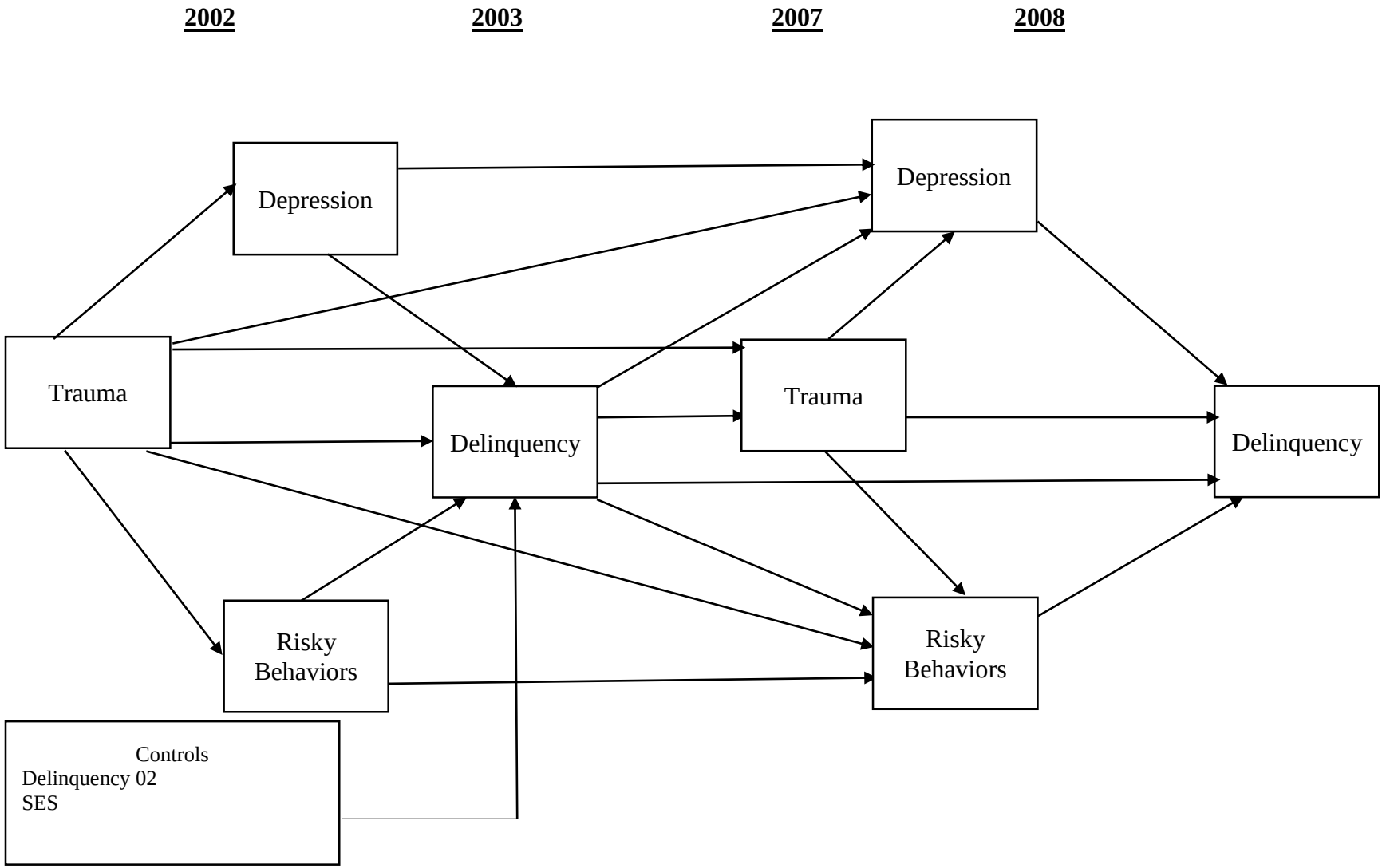

Figure 3: Supplemental Analysis (2002 to 2008)

CHAPTER IV

ANALYSIS

The main goal of this dissertation is to assess the negative mental health (i.e., depression), behavioral health (i.e., risky health behaviors), and delinquent/criminal outcomes associated with youth exposed to traumatic events. The current project draws on Agnew's (1992, 2001) GST which hypothesizes that strain increases negative affect, which, in turn, increases the likelihood of crime. This dissertation is unique because it evaluates more inclusive traumatic experience indices to assess the aforementioned relationships at various points in time and across gender. This chapter provides the results for the main and supplemental analyses that were developed to test the research hypotheses.

This chapter begins with a descriptive overview of the main analysis which is complemented with a structural equation model to examine the effects of traumatic life events on various endogenous factors over time. The main analysis is subsequently disaggregated by gender to analyze the differential effects of traumatic exposure over time and across gender.

Following the main analysis, a supplemental analysis is provided. Similar to the main analysis, the supplemental analysis begins with a descriptive overview of the indicators assessed, and provides the results from a structural equation model for the full supplemental sample. The supplemental sample is disaggregated by gender to examine the differential effects of trauma over time based on this factor.

Descriptive Analysis for Full Model

The descriptive results for the demographics of the main analysis disaggregated by exposure to traumatic events (i.e., bullying, vicarious victimization, and/or victim of a burglary) in 1997 are provided in Table 5. It can be seen that from the sample used in the main analysis (N = 2,112), there is a total of 1,080 (51.14%) males and 1,032 (48.86%) females. Males reported a higher percentage of traumatic exposure in 1997 (40.93%) than females (31.98%). The race/ethnic distribution is fairly mixed, with Black respondents representing 24.48 percent of the sample, Hispanics representing 18.70 percent of the sample, and non-Black/non-Hispanics constituting 56.11 percent of the sample.

Approximately 20.93 percent of the sample reported living in a rural area, 47.68 percent reported living in a metropolitan statistical area (MSA) but not in the central city, and 30.49 percent reported living in the central city of an MSA in the 1997 survey. Approximately 33.03 percent of the rural individuals experienced at least one of the traumatic experiences assessed, 33.37 percent of the non-central city MSA respondents reported experiencing at least one of the traumatic experiences analyzed, and 43.63 percent of the central city MSA respondents reported one or more of the traumatic life events analyzed in the main analysis.

Table 5: Demographic Descriptive Statistics for Main Analysis (N = 2,112)

	No Trauma 1997 (%)	Trauma 1997 (%)	Total (%)
Gender			
Male	638	442	1,080 (51.14)
Female	702	330	1,032 (48.86)
Total	1,340 (63.45)	772 (36.55)	2,112
Race			
Black	277	240	517 (24.48)
Hispanic	259	136	395 (18.70)
Mixed race	11	4	15 (0.71)
Non-Black / Non-Hispanic	793	392	1,185 (56.11)
Total	1,340 (63.45)	772 (36.55)	2,112
City/Rural			
Not in MSA	296	146	442 (20.93)
In MSA, not central City	671	336	1,007 (47.68)
In MSA, in central city	363	281	644 (30.49)
In MSA, not known	10	9	19 (0.90)
Total	1,340 (63.45)	772 (36.55)	2,112

The mean ages for each of the reporting years in the main analysis are provided in Table 6. It can be seen that in 1997 the mean age of all respondents was 14.32 years, through the 2003 survey year where the mean age of the respondents was 20.95 years.

Table 6: Descriptive Statistics for Age in Main Analysis (N = 2,112)

Survey Year	Mean Age (standard deviation)
Survey Year 1997	14.32 (0.608)
Survey Year 1998	15.97 (0.589)
Survey Year 2002	19.99 (0.590)
Survey Year 2003	20.95 (0.586)

Traumatic Life Events Descriptive Statistics

Traumatic life experiences are the main independent variable under investigation in this dissertation. The trauma indicators assessed in the main analysis rely on responses provided in the 1997 and the 2002 survey years of the NLSY97. The 1997 additive

trauma index uses responses to whether or not an individual had been bullied, experienced vicarious victimization, and/or had their home burglarized. Each of the questions for these indicators assessed whether or not a respondent experienced any of these traumatic events before the age of 12. The 2002 trauma index uses the responses to questions for the same traumatic events, and these indicators rely on responses to whether or not these incidents happened between the ages 12 and 18.

Table 7: Trauma Descriptive Statistics for Main Analysis (N = 2,112)

Survey Year (*SY*)	**Frequency (%)**
SY 1997	
0	1,340 (63.45)
1	584 (27.65)
2	161 (7.62)
3	27 (1.28)
SY 2002	
0	1,596 (75.57)
1	412 (19.51)
2	95 (4.50)
3	9 (0.43)

The frequencies for the additive traumatic event indices are provided in Table 7. Approximately 63.45 percent of the sample reported that they experienced none of the traumatic events analyzed in the 1997 survey, 27.65 percent experienced one traumatic event, 7.62 percent experienced two, and roughly 1.28 percent of the sample experienced all three of the traumatic events assessed in 1997. In the 2002 assessment, 75.57 percent of the sample reported none of the targeted traumatic experiences between the ages 12 and 18, approximately 19.51 percent reported one traumatic experience, 4.50 percent reported two, and roughly 0.43 percent of the sample reported experiencing all three of the traumatic events assessed.

The results in Table 8 show the cross tabulations for each of the traumatic events assessed in 1997 (i.e., bullying, vicarious victimization, and victim of a burglary) against the collective trauma score in the additive trauma index. Overall, 1,340 (63.45%) of the total 2,112 respondents did not experience any of the traumatic events. For the 1997 bullying measure, a total of 413 (19.55%) individuals reported at least being bullied if not exposed to another traumatic experience at the same time. The 1997 vicarious victimization indicator shows that 244 (11.55%) respondents at least experienced this traumatic event, and a total of 330 (15.63%) respondents were at least burglarized in the 1997 survey.

Table 8: 1997 Bullying, Vicarious Victimization, and Burglary Cross Tabulations

Trauma 97	**Bully 97**		**Vicarious 97**		**Burglary 97**	
	No	*Yes*	*No*	*Yes*	*No*	*Yes*
0	1,340	0	1,340	0	1,340	0
1	322	262	462	122	384	200
2	37	124	66	95	58	103
3	0	27	0	27	0	27
Total	1,699	413	1,868	244	1,782	330

The 2002 trauma index relies on responses to questions for the same traumatic events, and Table 9 provides the result from the cross tabulations of these traumatic experiences. In the 2002 survey year of the NLSY97, a total of 182 (8.62%) respondents reported that they were at least bullied between the ages 12 and 18 years. A total of 237 (11.22%) respondents reported exposure to vicarious victimization, and 210 (9.94%) individuals reported that they were the victim of a home burglary between the ages 12 and 18 years.

Table 9: 2002 Bullying, Vicarious Victimization, and Burglary Cross Tabulations

Trauma 02	Bully 02		Vicarious 02		Burglary 02	
	No	*Yes*	*No*	*Yes*	*No*	*Yes*
0	1,596	0	1,596	0	1,596	0
1	284	128	254	158	286	126
2	50	45	25	70	20	75
3	0	9	0	9	0	9
Total	1,930	182	1,875	237	1,902	210

Table 10 provides the cross tabulation results for respondents indicating at least one of the traumatic life events assessed in 1997 (i.e. bullying, vicarious victimization, and/or burglary) on whether or not they were delinquent in 1998. The results demonstrate that respondents who experienced one of the traumatic life events assessed in the full sample reported proportionately higher levels of delinquent activity a year later than those respondents who indicated no traumatic exposure. More concisely, 283 (33.66%) of the 772 respondents who experienced trauma reported delinquent activity, and this value is compared to the 317 (23.65%) out of the 1,340 respondents who did not report traumatic exposure but were delinquent. Likewise, 489 (63.34%) of the respondents who reported traumatic experiences in 1997 indicated no delinquency; whereas, 1,023 (76.34%) of the respondents who reported no trauma also reported no delinquent involvement.

The results in Table 10 also account for gendered differences in exposure to trauma and those reporting delinquent activity versus non-delinquents. The results in the gendered outcomes are similar to the full sample. Males that reported one or more of the traumatic experiences assessed (i.e., bullying, vicarious victimization, and/or burglary) also reported greater levels of delinquency (41.18%) than those who indicated none of the traumatic events assessed (27.27%). Also, females who reported traumatic experiences

indicated a greater percentage of delinquency (30.61%) than those who reported no traumatic life events (20.37%).

Table 10: 1997 Trauma and 1998 Delinquency Cross Tabulations Main Analysis

Trauma	Non-Delinquent (%)	Delinquent (%)	Total (%)
No	1,023 (76.34)	317 (23.65)	1,340 (63.45)
Yes	489 (63.34)	283 (36.66)	772 (36.55)
Total	1,512 (71.59)	600 (28.41)	2,112 (100.00)
Males			
No	464 (72.73)	174 (27.27)	638 (59.07)
Yes	260 (58.82)	182 (41.18)	442 (40.93)
Total	724 (67.04)	356 (32.96)	1,080 (100.00)
Females			
No	559 (79.63)	143 (20.37)	702 (68.02)
Yes	229 (69.39)	101 (30.61)	330 (31.98)
Total	788 (76.36)	244 (23.64)	1,032 (100.00)

Table 11 provides the cross tabulation results for those who indicated traumatic exposure in 2002 on delinquent/non-delinquent outcomes in 2003. Results from the full sample indicate that those reporting traumatic life experiences also reported a greater percentage of delinquency (31.98%) than those who indicated no traumatic experiences (20.11%). A total of 351 (68.02%) of the respondents who indicated traumatic exposure also reported no delinquent activity, and this value is compared to the 1,275 (79.89%) respondents who indicated neither traumatic exposure nor delinquency.

The gendered differences for the results of traumatic exposure in 2002 on delinquency in 2003 are also provided in Table 11. The results are similar to the full sample, and it can be observed that a greater portion of males reporting traumatic life events also indicated greater levels of delinquency (36.96%) than those who reported no traumatic experiences (25.23%). Also, females that reported one or more of the traumatic experiences assessed in the main analysis (i.e., bullying, vicarious victimization, and/or

burglary) also indicated a higher percentage of delinquency (24.88%) than those indicating no traumatic exposure (15.26%).

Table 11: 2002 Trauma and 2003 Delinquency Cross Tabulations Main Analysis

Trauma	Non-Delinquent (%)	Delinquent (%)	Total (%)
No	1,275 (79.89)	321 (20.11)	1,596 (75.57)
Yes	351 (68.02)	165 (31.98)	516 (24.43)
Total	1,626 (76.99)	486 (23.01)	2,112 (100.00)
Males			
No	581 (74.77)	196 (25.23)	777 (71.94)
Yes	191 (63.04)	112 (36.96)	303 (28.06)
Total	772 (71.48)	308 (28.52)	1,080 (100.00)
Females			
No	694 (84.74)	125 (15.26)	819 (79.36)
Yes	160 (75.12)	53 (24.88)	213 (20.64)
Total	854 (82.75)	178 (17.25)	1,032 (100.00)

Mental Health and Behavioral Health Descriptive Statistics

Indicators in the 1997 and 2002 survey years of the NLSY97 are used to assess the mediating factor of depression on delinquency. The 1997 questionnaire asked respondents if they were unhappy, sad, or depressed. Greater values on this depression scale indicates greater levels of depression at each point of time.

Results from the 1997 mental health indicator are provided in Table 12, and the majority of respondents (52.79%) reported that they were not unhappy, sad, or depressed. Approximately 39.73 percent of the sample reported that these feelings were somewhat/sometimes true, and roughly 7.48 percent of the sample reported that these feelings were often true.

Table 12: 1997 Depression Frequencies for Main Analysis

Depressed 1997	Frequency (%)
Not true	1,115 (52.79)
Somewhat/sometimes true	839 (39.73)
Often true	158 (7.48)

* *Mean* = 0.547; *Standard Deviation* = 0.631

The 2002 questionnaire asked respondents how much of the time during the last month they felt downhearted and blue. Although this question differs slightly from the 1997 measure of depression, it is a sufficient indicator of depressed mood and addresses the same domain as the 1997 measure of depression. Additionally, the 1997 and 2002 depression scales are categorical measures, and greater numerical values on these variables indicate higher levels of depression. Descriptive statistics for the 2002 mental health scale are provided in Table 13 where it can be seen that approximately 27.79 percent of the sample was depressed none of the time, 58.24 percent was depressed some of the time, and roughly 13 percent of the sample was depressed either most or all of the time.

Table 13: 2002 Depression Frequencies for Main Analysis

Depressed 2002	**Frequency (%)**
None of the time	587 (27.79)
Some of the time	1,230 (58.24)
Most of the time	233 (11.03)
All of the time	62 (2.94)

* *Mean* = 1.891; *Standard Deviation* = 0.703

Two behavioral health, or risky health behavior, indices were incorporated in the analysis because previous research has shown that early traumatic experiences can increase behavioral problems later in life (Schuck & Widom, 2001; Widom & Kuhns, 1996). The results for the descriptive frequencies for the two additive behavioral health indices that rely on the continuous measures of (a) tobacco use in the 30 days prior to the survey administration, (b) alcohol use in the 30 days prior to survey administration, and (c) the number of sexual partners that a respondent ever had intercourse are provided in Tables 14 and 15.

The additive total for the 1997 behavioral health index shows that approximately 75.19 percent of the sample reported no tobacco use, alcohol use, or sexual activity within the appropriate timeframe. Roughly 17.52 percent of the sample had a behavioral health score somewhere between 1 and 5 events, 3.60 percent had a score between 6 and 10 events, 2.37 percent had a score between 11 and 20, and the remaining 1.33 percent reported a relatively high level of behavioral risk indicating between 21 and 198 events.

Table 14: 1997 Tobacco Use, Alcohol Use, and Sexual Activity for Main Analysis

Number of Events	Frequency (%)
0	1,588 (75.19)
1-5	370 (17.52)
6-10	76 (3.60)
11-20	50 (2.37)
21-198	28 (1.33)

* *Mean* = 1.543; *Standard Deviation* = 6.605

The additive total of the 2002 behavioral health index shows that roughly 32.67 percent of the sample reported no risky health behaviors, approximately 32.24 percent reported 1 to 5 events, 15.20 percent reported 6 to 10 events, 12.45 percent reported 11 to 20 events, and 7.43 percent of the sample reported 21 to 159 risky health behavioral events.

Table 15: 2002 Tobacco Use, Alcohol Use, and Sexual Activity for Main Analysis

Number of Events	Frequency (%)
0	690 (32.67)
1-5	681 (32.24)
6-10	321 (15.20)
11-20	263 (12.45)
21-159	157 (7.43)

* *Mean* = 6.557; *Standard Deviation* = 10.874

Delinquency Descriptive Statistics

Delinquency is the primary outcome measure. The delinquency indices rely on self-reported delinquent/criminal activity of assault, various property offenses, and

marijuana use. These continuous measures were summed to develop a control delinquency index at 1997, and to be assessed as endogenous variables in 1998 and 2002. The 1998 and 2002 delinquency indices largely rely on self-reported criminal activity that occurred in the year prior to the survey.

Table 16 provides the results from the additive totals for the delinquency indices at the three points of time assessed. Higher scores reflect greater involvement in delinquency, and it can be seen that over 70 percent of the sample in the main analysis reported no delinquent involvement at each of the three points of time. Roughly 20 percent of the sample reported 1 to 5 delinquent incidents in the 1997 and 1998 survey years, whereas a little over 11 percent reported that many incidents in the 2003 survey questionnaire. Additionally, around 10 percent of the sample in the main analysis reported 6 or more incidents of delinquent involvement in each of the years identified in the main analysis.

Table 16: Frequencies for Additive Delinquency Indices in 1997, 1998, 2002

Index Year		Total (%)
Delinquency 97		
0		1,530 (72.44)
1-5		417 (19.74)
6-10		51 (2.41)
11-20		53 (2.51)
21-279		61 (2.89)
Mean	2.704	
Standard Deviation	14.230	
Delinquency 98		
0		1,512 (71.59)
1-5		396 (18.75)
6-10		68 (3.22)
11-20		54 (2.56)
21-298		82 (3.88)
Mean	3.102	
Standard Deviation	14.937	
Delinquency 03		
0		1,626 (76.99)
1-5		236 (11.17)
6-10		46 (2.18)
11-20		69 (3.27)
21-		135 (6.39)
Mean	3.137	9.866025
Standard Deviation	9.866	

Control Variables Descriptive Statistics

The 1997 delinquency index in Table 16 is used as a control variable in the structural equation model for the main analysis. Along with this index, three other variables were developed from NLSY97 data to be used as control variables in the main analysis. An additive delinquent peer index was formulated which relies on the additive scores of four questions that asked respondents the delinquent involvement of their peers. The results from these questions were summed to create a delinquent peer index at 1997 which ranges from 4 to 20 (mean = 8.073) with greater values equating to greater numbers of delinquent peers.

A control measure for whether or not a respondent lived with both biological parents in 1997 was included in the main analysis. The frequencies for this variable show that approximately half of the sample lived with both biological parents in 1997, whereas the other half did not. Finally, a measure of socioeconomic status was included as the control variable for the main analysis. The continuous measure has no negative values, and responses less than 100 indicate high levels of poverty on the scale. The descriptive frequencies for these three control variables are provided in Table 17.

Table 17: Frequencies for Control Variables in 1997 Survey Year of Main Analysis

Indicator		**Total (%)**
Del. Peers 97		
4 – 8		1,296 (61.36)
9 – 12		531 (25.14)
13 – 16		228 (10.80)
17 – 20		57 (2.70)
Mean	8.073	
Standard Deviation	3.682	
Live parents 97		
No		1,038 (49.15)
Yes		1,074 (50.85)
Mean	0.509	
Standard Deviation	0.500	
Inc/Pov Ratio 97		
0		30 (1.42)
1-99		460 (21.78)
100-199		428 (20.27)
200-299		403 (19.08)
300-399		332 (15.72)
400-499		187 (8.85)
500-599		113 (5.35)
600-699		56 (2.65)
700-799		29 (1.37)
800-899		19 (0.90)
900-999		15 (0.71)
1000-		40 (1.89)
Mean	285.636	
Standard Deviation	264.321	

Main Analysis: Full Model

To test the three main hypotheses (i.e., Ha1, Ha2, and Ha3) for this dissertation, a structural equation model has been integrated into the main analysis. The collective model relies on the sample for the main analysis (N = 2,112). The structural equation model for the main analysis estimates the effects of three traumatic experiences on the mediating factors of depression and risky health behaviors, as well as the main dependent variable delinquency. The correlation matrix with the bivariate correlations for all of the variables that were integrated in the structural equation model for the main analysis is provided in Table 18. Upon observation of the correlation matrix, the directions of the values for all of the indicators are as hypothesized, and the values are consistent with theoretical expectations.

LISREL version 9.1 was used to estimate a structural equation model using the correlation matrix identified in Table 18. The model fit statistics for the structural equation model in the main analysis are located in Figure 4. The model fit statistics are useful for determining the adequacy of the fit of the data to the model. The null hypothesis for the chi-square is that the estimated model does provide an acceptable fit for the data; therefore, it would be desired that the model's chi-square value is not statistically significant. The model chi-squared statistic ($X^2_{(df = 33)} = 319.867$) is statistically significant ($p < .05$), and the null hypothesis would be rejected and it would be concluded that the model does not provide an acceptable fit to the data. This is a common occurrence in structural equation modeling (Kline, 2011), and it is generally expected that the likelihood ratio test will be statistically significant given the large sample size. Consequently, the likelihood ratio test is not ideal for determining the

overall goodness of fit for the data, and it is appropriate to consider the other model fit statistics to determine the adequacy of the current model.

Table 18: Full Trauma Model Correlation Matrix (1997 to 2003)

del03	del97	del98	trauma97	trauma02	dep97	dep02	behav97	behav02	del_peer	parents97	inc97
1.0000											
0.1350*	1.0000										
0.1413*	0.1897*	1.0000									
0.1182*	0.1634*	0.1040*	1.0000								
0.1313*	0.1166*	0.1011*	0.2464*	1.0000							
0.0351	0.0791*	0.0749*	0.1360*	0.0593*	1.0000						
0.0871*	0.0137	0.0432*	0.0531*	0.0715*	0.1879*	1.0000					
0.0777*	0.2637*	0.1040*	0.1242*	0.0518*	0.1267*	0.0534*	1.0000				
0.2528*	0.0632*	0.0665*	0.0995*	0.0873*	0.0295	0.0648*	0.1145*	1.0000			
0.0827*	0.1478*	0.1408*	0.2239*	0.1298*	0.1578*	0.0830*	0.1937*	0.0559*	1.0000		
-0.0423	-0.0662*	-0.0516*	-0.1793*	-0.1361*	-0.0681*	-0.0095	-0.0848*	-0.0348	-0.1727*	1.0000	
-0.0164	-0.0310	-0.0309	-0.1163	-0.0885*	-0.0322	-0.0054	-0.0613*	0.0116	-0.1355*	0.2809*	1.0000

* $p < .05$

Two common descriptive measures of overall model fit in structural equation modeling are the root mean square error of approximation (RMSEA) and the standardized root mean square residual (SRMR). The RMSEA is a measure of approximate fit in the population, and values of less than or equal to .05 would suggest that the model is considered a good fit to the data; whereas values between .05 and .08 would be considered an adequate fit to the data, values between .08 and .10 are considered a mediocre fit to the data, and values greater than .10 would suggest that the model is not acceptable (Browne & Cudeck, 1993; Kline, 2011; Schermelleh-Engel et al., 2003, p. 36). The model in Figure 4 produced an RMSEA value of .0643 (90% confidence interval .058 to .071), and this value suggests that the estimated model does provide an adequate fit for the data.

The standardized root mean square residual (SRMR) is a model fit statistic that utilizes a scale similar to the RMSEA, where a value of 0 would be considered a perfect fit, values less than .05 would be considered a good fit, and values less than .10 would be considered acceptable (Kline, 2011; Schermelleh-Engel et al., 2003). The SRMR for the full model in the main analysis produced a value of .0487 and suggests that the model provides a good fit for the data.

The Normed Fit Index (NFI) is a model fit statistic that is based on a comparison to a baseline model. Values for the NFI range from 0 to 1, and a value of 1 would equate to the best fitting model. NFI values of .90 or greater are considered acceptable (Kline, 2011; Schermelleh-Engel et al., 2003). The NFI for the full model in the main analysis produced a value of .843 which does not meet the NFI criteria of .90 or greater to be considered acceptable.

Other model fit statistics used in structural equation modeling estimate the parsimoniousness of a model, and these statistics can be used to provide a criteria between selecting an alternative model. The Akaike Information Criterion (AIC) is a parsimoniousness fit statistic. The AIC value for the estimated model is compared to a saturated model value, and the model demonstrating the lower value would be considered the better model (Schermelleh-Engel et al., 2003). The model AIC for the structural equation model depicted in Figure 4 indicates a value that is greater than the saturated model value and subsequently does not meet the criteria of a good model based on this model fit statistic.

Overall, the model fit statistics give conflictual findings because some of the fit statistics suggest that the model is adequate while others do not. Nonetheless, the path diagram depicted in Figure 4 provides the estimated path values for each of the indicators listed. The values on the path diagram can be interpreted the same as standardized correlation coefficients in an OLS regression model.

As seen from the results depicted in Figure 4, traumatic experiences in 1997 have a significant effect on delinquency in 1998 (b = .046; t = 2.061) when controlling for delinquency in 1997 (b = .156; t =7.219) and delinquent peers (b = .093; t = 4.202) which are both significantly correlated with delinquency in 1998. This effect supports the first hypothesis that the effect of traumatic life experiences in early childhood will be positively correlated with delinquency. Additionally, traumatic events in 2002 have a direct effect on delinquency in 2003 (b = .095; t = 4.545). This effect is also consistent with the first hypothesis.

Traumatic experiences in 1997 have a direct and significant effect on depression in 1997 (b = .136; t = 6.310) and on risky health behaviors in 1997 (b = .124; t = 5.754). These findings support the second hypothesis that traumatic experiences will have a negative effect on mental health and behavioral health. Traumatic experiences in 1997 also have a significant effect on risky health behaviors in 2002 (b= .068; t = 3.026), but they do not have a significant effect on depression in 2002 (b = .012; t = 0.559). This finding partially supports the second hypothesis. Traumatic experiences in 2002 significantly increase depression in 2002 (b = .055; t = 2.510) and risky health behaviors in 2002 (b = .061; t = 2.753). This finding fully supports the second hypothesis.

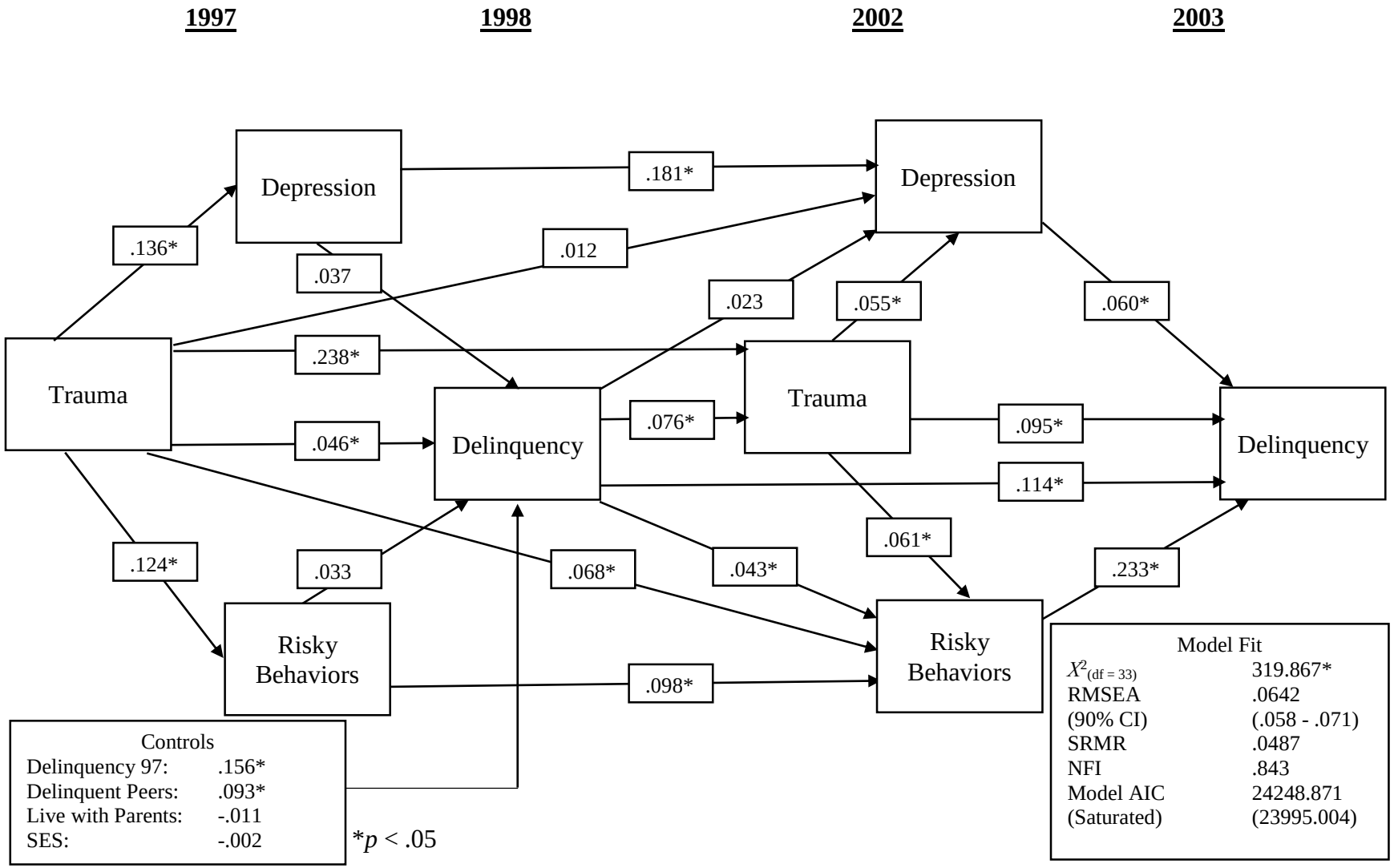

Figure 4: Full Model for Trauma 1997 to 2003 (*N* = 2,112)

Traumatic experiences in 1997 have a significant effect on depression in 1997 (*b* = .136; *t* = 6.310), but depression in 1997 does not significantly mediate the effect of trauma on delinquency in 1998 (*b* = .037; *t* = 1.711). Likewise, traumatic events in 1997 have an effect on risky health behaviors in 1997 (*b* = .124; *t* = 5.754), but risky health behaviors do not mediate the effect of trauma on delinquency in 1998 (*b* = .033; *t* = 1.569). The third hypotheses that traumatic life experiences will increase the likelihood of delinquency, and the negative mental health and behavioral health outcomes should mediate the effect of trauma on delinquency is not supported by this finding. Nonetheless, depression in 2002 significantly mediates the effect of trauma on delinquency in 2003 (*b* = .060; *t* = 2.900), and risky health behaviors in 2002 significantly mediate this relationship (*b* = .233; *t* = 11.185). These findings fully support the third hypothesis.

The complete results for the full model are provided in Table 19, and the standard errors and *t* values for each of the paths in the full model are provided. Additionally, Table 20 provides the estimated values for the correlations between all of the exogenous variables, along with the corresponding *t* values that are not depicted in Figure 4.

Table 19: Full Model for Main Analysis (N = 2,112)

	B	**SE**	***t***
Trauma97→ Del98	.046	.023	2.061
Trauma97→ Trauma02	.238	.021	11.283
Trauma97→ Dep97	.136	.022	6.310
Trauma97→ Dep02	.012	.022	0.559
Trauma97→ Behav97	.124	.022	5.754
Trauma97→ Behav02	.068	.022	3.026
Trauma02 → Del03	.095	.021	4.545
Trauma02 → Dep02	.055	.022	2.510
Trauma02 → Behav02	.061	.022	2.753
Dep97 → Del98	.037	.021	1.711
Dep97 → Dep02	.181	.022	8.416
Dep02 → Del03	.060	.021	2.900
Behav97 → Del98	.033	.021	1.569
Behav97 → Behav02	.098	.022	4.548
Behav02 → Del03	.233	.021	11.185
Del98 → Del03	.114	.021	5.428
Del98 → Trauma02	.076	.021	3.600
Del98 → Dep02	.023	.022	1.054
Del98 → Behav02	.043	.022	1.981
Del97 → Del98	.156	.022	7.219
Del_peer → Del98	.093	.022	4.202
Parents97 → Del98	-.011	.022	-0..494
Inc97 → Del98	-.002	.022	-0.078

Table 20: Full Model Exogenous Correlations for Main Analysis (N = 2,112)

	Del97	**Trauma97**	**Del_peer**	**Parents97**	**Inc97**
Del97	1.000				
Trauma97	.163 (7.413)	1.000			
Del_peer	.148 (6.721)	.224 (10.043)	1.000		
Parents97	-.066 (-3.036)	-.179 (-8.113)	-.173 (-7.823)	1.000	
Inc97	-.031 (-1.424)	-.116 (-5.31)	-.135 (-6.172)	.281 (12.431)	1.000

* *t* values in parentheses

As a next step, the insignificant paths (i.e., Trauma97→ Dep02; Dep97 → Del98; Behav97 → Del98; Del98 → Dep02; Del98 → Behav02; Parents97 → Del98; and Inc97 → Del98) in the full model of the main analysis were removed to assess potential improvements in the model fit statistics. Additionally, two theoretically justified paths were estimated (i.e., the effect of depression in 1997 on risky health behaviors in 1997, and the effect of depression in 2002 on risky health behaviors in 2002) in the adjusted model. The results from the adjusted full model in the main analysis are provided in Figure 5.

The model chi-squared statistic ($X^2_{(df = 38)} = 299.047$) for the adjusted model is statistically significant ($p < .05$). The chi-square statistic suggests that the model does not provide an adequate to the data. Given the large sample size, this finding warrants a closer inspection of other model fit statistics to determine the adequacy of the adjusted model.

The RMSEA for the adjusted full model is .0570 (90% confidence interval .051 to .063). This value is an improvement from the main model before the adjustments, and the RMSEA value suggests that the model provides an adequate fit to the data. The SRMR value of .0484 also suggests a slight improvement to the model fit, and the SRMR value is desirable given the fact that it is less than the .05 rule of thumb (Kline, 2011; Schermelleh-Engel et al., 2003).

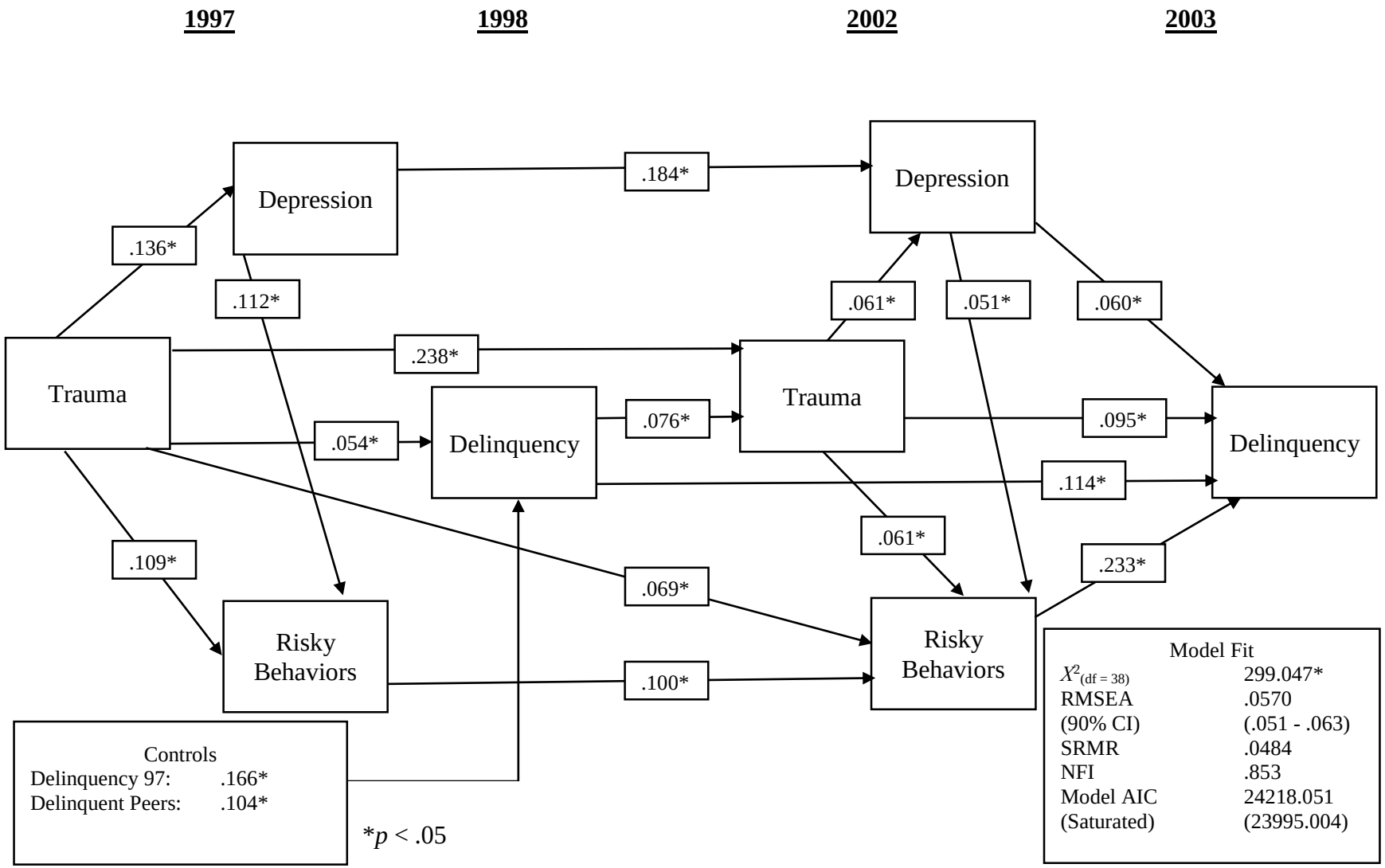

Figure 5: Adjusted Full Model for Trauma 1997 to 2003 (*N* = 2,112)

The NFI value for the adjusted model (.853) is slightly more desirable than the previous model (.843). Nevertheless, the NFI value for the adjusted model does not meet the NFI criteria of .90 or greater which is considered acceptable. Likewise, the model AIC (24218.051) is greater than the saturated model value (23995.004) and suggests that the saturated model provides a better fit to the data than the adjusted model.

As seen from the results depicted in Figure 5, traumatic experiences have a significant effect on delinquency in 1998 (b = .054; t = 2.443). Previous delinquent activity in 1997 (b = .166; t = 7.656) and delinquent peers (b = .104; t = 4.768) are both significantly correlated with delinquency in 1998 in the adjusted model. The direct effect of trauma in 1997 on delinquency in 1998 supports the first hypothesis that the effect of traumatic life experiences in early childhood will be positively correlated with delinquency. Additionally, traumatic events in 2002 have a direct and significant effect on delinquency in 2003 (b = .095; t = 4.544). This effect also supports the first hypothesis.

Traumatic experiences in 1997 have a direct and significant effect on depression in 1997 (b = .136; t = 6.310) and on risky health behaviors in 1997 (b = .109; t = 5.033). These findings support the second hypothesis that traumatic experiences will have a negative effect on mental health and behavioral health. Traumatic experiences in 2002 significantly increase depression in 2002 (b = .061; t = 2.839) and risky health behaviors in 2002 (b = .061; t = 2.768). These findings also support the second hypothesis.

Traumatic experiences in 2002 have a significant effect on depression in 2002 (b = .061; t = 2.839), and depression in 2002 does significantly mediate the effect of trauma in 2002 on delinquency in 2003 (b = .060; t = 2.898). Also, traumatic events in 2002 have

a significant effect on risky health behaviors in 2002 (b = .061; t = 2.768), and risky health behaviors in 2002 do significantly mediate the effect of trauma in 2002 on delinquency in 2003 (b = .233; t = 11.184). These findings support the third hypothesis.

A final point worth noting from the results in the adjusted full model pertains to the two paths that were included which were not observed in the first model. The effect of depression in 1997 has a positive and significant effect on risky health behaviors in 1997 (b = .112; t = 5.167). Additionally, the effect of depression in 2002 on risky health behaviors in 2002 is positive and significant (b = .051; t = 2.388). These effects are consistent with the notion that negative affect increases risky health behaviors.

The complete results for the adjusted full model are provided in Table 21, and the standard errors and t values for each of the paths in the adjusted model are provided. Additionally, Table 22 provides the values for the correlations between all of the exogenous variables, along with the corresponding t values, that are not depicted in Figure 5.

Table 21: Adjusted Full Model for Main Analysis (N = 2,112)

	B	**SE**	***t***
Trauma97→ Del98	.054	.022	2.443
Trauma97→ Trauma02	.238	.021	11.284
Trauma97→ Dep97	.136	.022	6.310
Trauma97→ Behav97	.109	.022	5.033
Trauma97→ Behav02	.069	.022	3.103
Trauma02 → Del03	.095	.021	4.544
Trauma02 → Dep02	.061	.021	2.839
Trauma02 → Behav02	.061	.022	2.768
Dep97 → Behav97	.112	.022	5.167
Dep97 → Dep02	.184	.021	8.637
Dep02 → Del03	.060	.021	2.898
Dep02 → Behav02	.051	.022	2.388
Behav02 → Del03	.233	.021	11.184
Behav97 → Behav02	.100	.022	4.622
Del98 → Del03	.114	.021	5.453
Del98 → Trauma02	.076	.021	3.610
Del97 → Del98	.166	.022	7.656
Del_peer → Del98	.104	.022	4.768

Table 22: Adjusted Full Model Exogenous Correlations for Main Analysis (N = 2,112)

	Del97	**Trauma97**	**Del_peer**	**Parents97**	**Inc97**
Del97	1.000				
Trauma97	.163 (7.413)	1.000			
Del_peer	.148 (6.721)	.224 (10.043)	1.000		
Parents97	-.066 (-3.036)	-.179 (-8.113)	-.173 (-7.823)	1.000	
Inc97	-.031 (-1.424)	-.116 (-5.31)	-.135 (-6.172)	.281 (12.431)	1.000

* *t* values in parentheses

Descriptive Analysis: Male Model

Traumatic Life Events for Male Model

To further investigate the hypotheses (i.e., Ha_{1a}, $Ha_{2a,}$ and Ha_{3a}) that gender can differentially affect the outcomes associated with early traumatization, the full model was disaggregated by gender in order to analyze the effects of traumatic experiences independently. A total of 1,080 males are included in the male model for the main analysis.

The descriptive cross tabulations for the 1997 trauma indicators in the male model (N = 1,080) are provided in Table 23. A total of 638 (59.07%) of the males in the sample indicated that they were not exposed to any of the traumatic events assessed in the 1997 survey year. A total of 235 (21.76%) males reported that they were at least bullied, 152 (14.07%) males were at least exposed to vicarious victimization, and 183 (16.94%) males were at least burglarized.

Table 23: 1997 Bullying, Vicarious Victimization, and Burglary Cross Tabulations Males

Trauma 97	**Bully 97**		**Vicarious 97**		**Burglary 97**	
	No	*Yes*	*No*	*Yes*	*No*	*Yes*
0	638	0	638	0	638	0
1	179	150	253	76	226	103
2	28	70	37	61	33	65
3	0	15	0	15	0	15
Total	845	235	928	152	897	183

The cross tabulation figures for the 2002 trauma index constructed for the male sample are provided in Table 24. A total of 777 (71.94%) males in the sample reported no exposure to the trauma measures assessed during the 2002 survey year. A total of 101 (9.35%) individuals indicated that they had been bullied, 168 (15.56%) reported that they

were exposed to vicarious victimization, and 116 (10.74%) respondents in the male sample reported that they were at least burglarized in the 2002 survey year.

Table 24: 2002 Bullying, Vicarious Victimization, and Burglary Cross Tabulations Males

Trauma 02	Bully 02		Vicarious 02		Burglary 02	
	No	*Yes*	*No*	*Yes*	*No*	*Yes*
0	777	0	777	0	777	0
1	167	60	117	110	170	57
2	35	35	18	52	17	53
3	0	6	0	6	0	6
Total	979	101	912	168	964	116

Mental Health and Behavioral Health Descriptive Statistics for Male Model

The statistics for the 1997 mental health measure of depression are provided in Table 25. Approximately 57.96 percent of the males indicated that it was untrue that they were unhappy, sad or depressed at this point in time. Additionally, 36.57 percent of the males reported that this was somewhat/sometimes true, and a 5.46 percent of the male respondents reported that this was often true.

Table 25: 1997 Depression Frequencies for Male Model

Depressed 1997	Frequency (%)
Not true	626 (57.96)
Somewhat/sometimes true	395 (36.57)
Often true	59 (5.46)

* *Mean* = 0.475; *Standard Deviation* = 0.599

The 2002 mental health measure of depression assessed how much of the time during the last month that a respondent felt downhearted and blue. As depicted in Table 26, approximately 33.98 percent of the male respondents reported none of the time, 54.07 percent reported some of the time, 8.89 percent reported most of the time, and 3.06 percent of the males indicated all of the time.

Table 26: 1997 Depression Frequencies for Male Model

Depressed 2002	Frequency (%)
None of the time	367 (33.98)
Some of the time	584 (54.07)
Most of the time	96 (8.89)
All of the time	33 (3.06)

* *Mean* = 1.810; *Standard Deviation* = 0.718

The frequencies for the additive behavioral health indices are provided in Tables 27 and 28. The 1997 behavioral health index for the male sample shows that roughly 75 percent of the respondents reported no risky health behaviors, approximately 16.39 percent reported 1 to 5 risky health behaviors, and 8.61 percent of the male respondents reported 6 or more incidents of risky health behaviors.

Table 27: 1997 Tobacco Use, Alcohol Use, and Sexual Activity for Male Model

Number of Events	Frequency (%)
0	810 (75.00)
1-5	177 (16.39)
6-10	49 (4.54)
11-20	28 (2.59)
21-103	16 (1.48)

* *Mean* = 1.696; *Standard Deviation* = 6.013

The additive totals for the behavioral health index in the 2002 assessment of the male sample identified in Table 28 shows that 27.96 percent of the sample reported no risky health behaviors, 29.35 percent reported 1 to 5 risky health behaviors, 17.78 percent reported 6 to 10 risky health behaviors, and close to 25 percent of the sample reported 11 or more risky health behaviors.

Table 28: 2002 Tobacco Use, Alcohol Use, and Sexual Activity for Male Model

Number of Events	Frequency (%)
0	302 (27.96)
1-5	317 (29.35)
6-10	192 (17.78)
11-20	151 (13.98)
21-159	118 (10.93)

* *Mean* = 8.257; *Standard Deviation* = 12.744

Delinquency Descriptive Statistics for Male Model

The frequencies for the additive delinquency indices that rely on self-reported delinquent/criminal involvement are provided in Table 29. At each of the three points in time, roughly two-thirds of the male sample reported no delinquent/criminal involvement. The 1997 and 1998 additive totals are fairly similar in that a little over 20 percent of the sample indicated 1 to 5 incidents of delinquency; while 12.04 percent of the sample reported 1 to 5 incidents in the 2003 survey year. The 1997 and 1998 delinquency indices show very few males engage in 6 or more incidents of delinquent/criminal involvement, but the 2003 reports of delinquency/criminality show that almost 10 percent of the sample reported 21 or more incidents.

Table 29: Frequencies for Additive Delinquency Indices in 1997, 1998, 2002 for Males

Index Year		Total (%)
Delinquency 97		
0		720 (66.67)
1-5		248 (22.96)
6-10		31 (2.87)
11-20		35 (3.24)
21-279		46 (4.26)
Mean	4.044	
Standard Deviation	19.036	
Delinquency 98		
0		724 (67.04)
1-5		217 (20.09)
6-10		44 (4.07)
11-20		34 (3.15)
21-298		61 (5.65)
Mean	4.638	
Standard Deviation	19.980	
Delinquency 03		
0		772 (71.48)
1-5		130 (12.04)
6-10		32 (2.96)
11-20		44 (4.07)
21-159		102 (9.44)
Mean	4.570	
Standard Deviation	12.388	

Control Variables Descriptive Statistics for Male Model

The descriptive values for the control variables are provided in Table 30. It can be seen that 66.48 percent of the male sample reported low delinquent peer involvement, 22.69 percent reported marginally higher levels of delinquent peer activity, and about 11 percent of the sample reported that a large number of their peers were delinquent. Additionally, 47.78 percent of the sample reported that they do not live with both biological parents, and the results from the household income to poverty ratio in 1997 are also provided.

Table 30: Frequencies for Control Variables in the 1997 Male Analysis

Indicator		Total (%)
Del. Peers 97		
4 – 8		718 (66.48)
9 – 12		245 (22.69)
13 – 16		92 (8.52)
17 – 20		25 (2.31)
Mean	7.648	
Standard Deviation	3.528	
Live parents 97		
No		516 (47.78)
Yes		564 (52.22)
Mean	0.522	
Standard Deviation	0.500	
Inc/Pov Ratio 97		
0		14 (1.30)
1-99		233 (21.57)
100-199		205 (18.98)
200-299		219 (20.28)
300-399		162 (15.00)
400-499		106 (9.82)
500-599		54 (5.00)
600-699		30 (2.78)
700-799		17 (1.57)
800-899		10 (0.93)
900-999		7 (0.65)
1000-		23 (2.13)
Mean	292.303	
Standard Deviation	273.665	

Main Analysis: Male Model

The correlation matrix with the bivariate correlations for all of the variables assessed in the male model is provided in Table 31. Overall, the directions of all of the variables in the correlation matrix are theoretically justified and consistent with hypothetical expectations. LISREL version 9.1 was used to estimate a structural equation model with the aforementioned correlation matrix. The results for the model are depicted in Figure 6, and the model chi-squared statistic ($X^2_{(df = 33)} = 198.179$) is statistically

significant ($p < .05$) suggesting that the model is not an adequate fit to the data. Nonetheless, similar to the full model, the large sample size makes it difficult to fail to reject the null hypothesis of the likelihood ratio test in the model estimated here.

The RMSEA for the male model is .0681 (90% confidence interval .0591 to .0774) which suggests that the model provides an adequate to the data. The SRMR value of .0524 also indicates that the model is a good fit to the data. The NFI value of .827 does not exceed the .90 rule of thumb and does not meet the criteria for this model fit statistic. Likewise, the model AIC (12404.634) is greater than the saturated model value (12272.455) suggesting that the saturated model is a better fit for the data.

Table 31: Male Model Correlation Matrix

del03	del97	del98	trauma97	trauma02	dep97	dep02	behav97	behav02	del_peer	parents97	inc97
1.0000											
0.1188*	1.0000										
0.1065*	0.1616*	1.0000									
0.1114*	0.1702*	0.0988*	1.0000								
0.1168*	0.1293*	0.1017*	0.2573*	1.0000							
0.0451	0.0751*	0.0921*	0.1472*	0.0744*	1.0000						
0.1348*	0.0241	0.0634*	0.0651*	0.0867*	0.1796*	1.0000					
0.0838*	0.3321*	0.0824*	0.1307*	0.0915*	0.0658*	0.0145	1.0000				
0.2494*	0.0480	0.0359	0.0996*	0.0852*	0.0403	0.0919*	0.1309*	1.0000			
0.0990*	0.1870*	0.1618*	0.2503*	0.1561*	0.0866*	0.0018	0.2121*	0.0755*	1.0000		
-0.0544	-0.0765*	-0.0583	-0.2034*	-0.1481*	-0.0802*	-0.0076	-0.0801*	-0.0414	-0.1937*	1.0000	
-0.0486	-0.0384	-0.0472	-0.1404*	-0.1077*	-0.0151	0.0007	-0.0840*	-0.0142	-0.1218*	0.2699*	1.0000

*$p < .05$

The male model (N = 1,080) analyzes the collective effects of three traumatic experiences in 1997 on the mediating depression and behavioral health indices on delinquency at various points in time. Figure 6 provides a depiction of the estimated path values for each of the indicators assessed.

As depicted in Figure 6, the 1997 trauma index does not have a significant effect on delinquency in 1998 (b = .033; t = 1.027). This is contrary to Ha_{1a} which postulates that traumatic life experiences will have a direct effect on the delinquent outcomes of males. Traumatic experiences in 2002 have a positive and significant effect on delinquency in 2003 (b = .080; t = 2.722). This is consistent with the aforementioned hypothesis.

Traumatic experiences in 1997 have a significant effect on depression in 1997 (b = .147; t = 4.893) and on risky health behaviors in 1997 (b = .131; t = 4.334). These findings support the second hypothesis that traumatic life experiences will negatively affect mental health and behavioral health. Traumatic experiences in 2002 significantly increase depression in 2002 (b = .065; t = 2.104), but they do not significantly affect risky health behaviors in 2002 (b = .050; t = 1.782). These findings only partially support the second hypothesis.

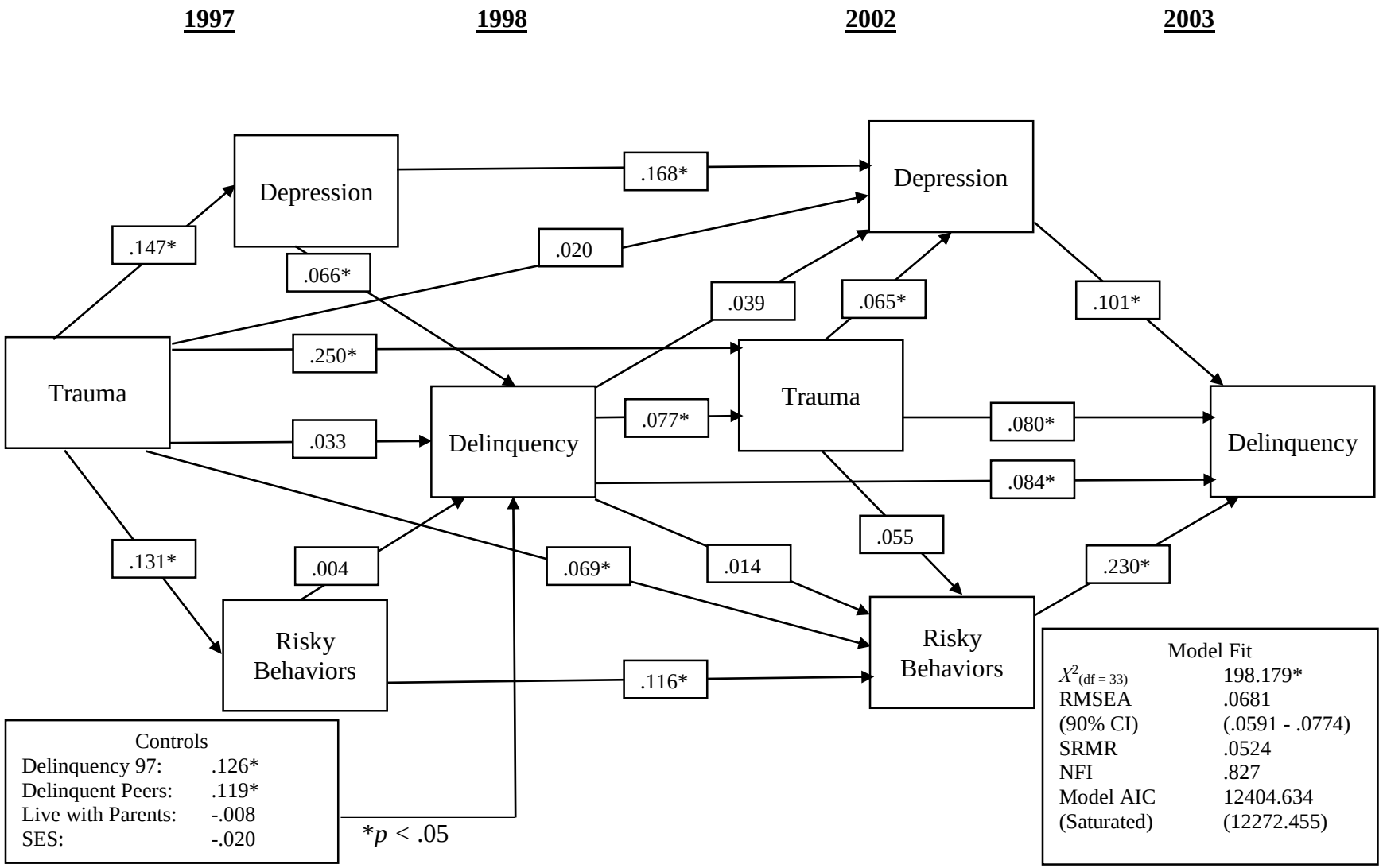

Figure 6: Male Model for Trauma 1997 to 2003 (*N* = 1,080)

Traumatic experiences in 1997 have a significant effect on depression in 1997 (*b* = .147; *t* = 4.893) which has a significant effect on delinquency in 1998 (*b* = .066; *t* = 2.722). Traumatic experiences in 1997 also have a significant effect on risky health behaviors in 1997 (*b* = .131; *t* = 4.334) which do not significantly mediate delinquency in 1998 (*b* = .004; *t* = 0.144). These results partially support Ha_{3a} that traumatic life experiences on delinquency should be mediated by mental health and behavioral health for males. Additionally, traumatic events in 2002 significantly increase depression in 2002 (*b* = .065; *t* = 2.104), which subsequently increases delinquency in 2003 (*b* = .080; *t* = 2.722). The effect of traumatic experiences in 2002 do not significantly affect risky health behaviors for males. These results provide partial support for Ha_{3a} that the effect of traumatic life experiences on delinquency should be mediated by mental health and behavioral health for males.

The standardized coefficient values, standard errors, and *t* values for each of the paths listed in Figure 6 are provided in Table 32. Also, Table 33 provides the standardized coefficient values and *t* statistics for the exogenous correlations that are not depicted in the model diagram.

Table 32: Full Male Model (N = 1,080)

	B	**SE**	***t***
Trauma97→ Del98	.033	.032	1.027
Trauma97→ Trauma02	.250	.029	8.481
Trauma97→ Dep97	.147	.030	4.893
Trauma97→ Dep02	.020	.031	0.631
Trauma97→ Behav97	.131	.030	4.334
Trauma97→ Behav02	.069	.031	2.193
Trauma02 → Del03	.080	.029	2.722
Trauma02 → Dep02	.065	.031	2.104
Trauma02 → Behav02	.055	.031	1.782
Dep97 → Del98	.066	.030	2.212
Dep97 → Dep02	.168	.030	5.571
Dep02 → Del03	.101	.029	3.476
Behav97 → Del98	.004	.030	0.144
Behav97 → Behav02	.116	.030	3.823
Behav02 → Del03	.230	.029	7.904
Del98 → Del03	.084	.029	2.860
Del98 → Trauma02	.077	.029	2.613
Del98 → Dep02	.039	.030	1.305
Del98 → Behav02	.014	.030	0.460
Del97 → Del98	.126	.030	4.138
Del_peer → Del98	.119	.031	3.811
Parents97 → Del98	-.008	.032	-0.250
Inc97 → Del98	-.020	.031	-0.673

Table 33: Exogenous Correlations for the Male Model (N = 1,080)

	Del97	**Trauma97**	**Del_peer**	**Parents97**	**Inc97**
Del97	1.000				
Trauma97	0.17 (5.517)	1.000			
Del_peer	0.187 (6.044)	0.25 (7.983)	1.000		
Parents97	-0.076 (-2.508)	-0.203 (-6.553)	-0.194 (-6.252)	1.000	
Inc97	-0.038 (-1.262)	-0.14 (-4.571)	-0.122 (-3.975)	0.27 (8.567)	1.000

* *t* values in parentheses

Descriptive Analysis: Female Model

Traumatic Life Events for Female Model

In accordance with the research hypotheses (i.e., Ha_{1a}, $Ha_{2a,}$ and Ha_{3a}) that gender will differentially affect the outcomes associated with early traumatization, the current section examines the effects of three traumatic experiences (i.e., bullying, vicarious victimization, and victim of a burglary) for the females from the full sample (N = 1,032). The descriptive cross tabulations for the 1997 traumatic event variables are provided in Table 34. Overall, approximately 68.02 percent of the females indicated no exposure to the traumatic event measures assessed, 17.25 percent of the females reported that they were at least bullied, 8.91 percent of the females indicated that they were exposed to vicarious victimization, and 14.24 percent of the females reported that they had been burglarized.

Table 34: 1997 Bullying, Vicarious Victimization, and Burglary Cross Tabulations Females

Trauma 97	**Bully 97**		**Vicarious 97**		**Burglary 97**	
	No	*Yes*	*No*	*Yes*	*No*	*Yes*
0	702	0	702	0	702	0
1	143	112	209	46	158	97
2	9	54	29	34	25	38
3	0	12	0	12	0	12
Total	854	178	940	92	885	147

Table 35 provides the values for the cross tabulations of the various traumatic experiences assessed in the 2002 survey year. Approximately 79.36 percent of the respondents reported that they did not experience any of the traumatic events assessed, 7.85 percent reported that they were at least bullied, 6.69 percent reported exposure to vicarious victimization, and 9.11 percent of the respondents indicated that they were burglarized.

Table 35: 2002 Bullying, Vicarious Victimization, and Burglary Cross Tabulations Females

Trauma 02	Bully 02		Vicarious 02		Burglary 02	
	No	*Yes*	*No*	*Yes*	*No*	*Yes*
0	819	0	819	0	819	0
1	117	68	137	48	116	69
2	15	10	7	18	3	22
3	0	3	0	3	0	3
Total	951	81	963	69	938	94

Mental Health and Behavioral Health Descriptive Statistics for Female Model

The descriptive values for the 1997 mental health indicator of depression are provided in Table 36. From the 1,032 females in this sample, 47.38 percent indicated that it was not true that they were unhappy, sad, or depressed, 43.02 percent reported that this was somewhat/sometimes true, and 9.59 percent reported that this was often true.

Table 36: 1997 Depression Frequencies for Female Model

Depressed 1997	Frequency (%)
Not true	489 (47.38)
Somewhat/sometimes true	444 (43.02)
Often true	99 (9.59)

* *Mean* = 0.622; *Standard Deviation* = 0.654

The 2002 mental health measure of depression asked respondents how much of the time during the last month they felt downhearted and blue. The results in Table 37 indicate that 21.32 percent of the respondents believed this was the case none of the time, 62.60 percent noted some of the time, 13.28 percent indicated most of the time, and the remaining 2.81 percent said they felt downhearted and blue all of the time during the month prior.

Table 37: 2002 Depression Frequencies for Female Model

Depressed 2002	Frequency (%)
None of the time	220 (21.32)
Some of the time	646 (62.60)
Most of the time	137 (13.28)
All of the time	29 (2.81)

* *Mean* = 1.976; *Standard Deviation* = 0.677

The frequencies for the 1997 risky health behaviors index are provided in Table 38. It can be seen that 75.39 percent of the sample indicated no risky health behaviors, 18.70 percent of the sample reported 1 to 5 risky health behaviors, 2.62 percent indicated 6 to 10 risky health behaviors, and over 3 percent of the sample indicated that they had committed 11 or more risky health behaviors in the 1997 survey year.

Table 38: 1997 Tobacco Use, Alcohol Use, and Sexual Activity for Female Model

Number of Events	Frequency (%)
0	778 (75.39)
1-5	193 (18.70)
6-10	27 (2.62)
11-20	22 (2.13)
21-198	12 (1.16)

* *Mean* = 1.383; *Standard Deviation* = 7.171

The frequencies for the 2002 behavioral health index are provided in Table 39. Approximately 37.60 percent of the respondents indicated no risky health behaviors, 35.27 percent reported 1 to 5 risky health behaviors, 12.5 percent indicated 6 to 10 risky health behaviors, and almost 15 percent of the sample indicated 11 or more risky health behaviors in the 2002 survey year.

Table 39: 2002 Tobacco Use, Alcohol Use, and Sexual Activity for Female Model

Number of Events	Frequency (%)
0	388 (37.60)
1-5	364 (35.27)
6-10	129 (12.50)
11-20	112 (10.85)
21-99	39 (3.78)

* *Mean* = 4.777; *Standard Deviation* = 8.121

Delinquency Descriptive Statistics for Female Model

The frequency values for each of the delinquency indices are provided in Table 40. At each point in time, over 75 percent of the females indicated no delinquent/criminal involvement.

Table 40: Frequencies for Additive Delinquency Indices in 1997, 1998, 2002 for Females

Index Year		Total (%)
Delinquency 97		
0		810 (78.49)
1-5		169 (16.38)
6-10		20 (1.94)
11-20		18 (1.74)
21-279		15 (1.45)
Mean	1.301	
Standard Deviation	5.611	
Delinquency 98		
0		788 (76.36)
1-5		179 (17.34)
6-10		24 (2.33)
11-20		20 (1.94)
21-92		21 (2.03)
Mean	1.495	
Standard Deviation	5.831	
Delinquency 03		
0		854 (82.75)
1-5		106 (10.27)
6-10		14 (1.36)
11-20		25 (2.42)
21-60		33 (3.20)
Mean	1.637	
Standard Deviation	5.856	

The majority of those reporting delinquent/criminal involvement indicated less than 6 incidents in 1997, 1998, and 2003. Less than 8 percent of the females reported 6 or more incidents of delinquent/criminal involvement at each of the time points assessed.

Control Variable Descriptive Statistics for Female Model

The descriptive values of the control variables are provided in Table 41. Roughly 56.01 percent of the females reported low delinquent peer activity, 27.71 percent reported that a slight number of peers take part in delinquent activities, and approximately 16.28 percent of the sample indicated that a large number of their peers are delinquent.

Table 41: Frequencies for Control Variables in the 1997 Female Analysis

Indicator		Total (%)
Del. Peers 97		
4 – 8		578 (56.01)
9 – 12		286 (27.71)
13 – 16		136 (13.18)
17 – 20		32 (3.10)
Mean	8.517	
Standard Deviation	3.789	
Live parents 97		
No		522 (50.58)
Yes		510 (49.42)
Mean	0.494	
Standard Deviation	0.500	
Inc/Pov Ratio 97		
0		16 (1.55)
1-99		227 (22.00)
100-199		223 (21.61)
200-299		184 (17.83)
300-399		170 (16.47)
400-499		81 (7.85)
500-599		59 (5.72)
600-699		26 (2.52)
700-799		12 (1.16)
800-899		9 (0.87)
900-999		8 (0.78)
1000-		16 (1.55)
Mean	278.659	
Standard Deviation	254.120	

Additionally, the sample of females analyzed is almost split on living with both biological parents (50.28 percent answered no and 49.42 percent indicated yes), and the continuous measure for the household income to poverty ratio in 1997 is provided in Table 41.

Main Analysis: Female Model

The correlation matrix with the bivariate correlations for the indicators assessed in the female model is provided in Table 42. The directions of the variables in the correlation matrix are consistent with theoretical and hypothetical expectations, and LISREL 9.1 was used to estimate a structural equation model with the correlation matrix provided. The results from the LISREL model are depicted in Figure 7, and it can be seen that the model chi-square value ($X^2_{(df = 33)} = 208.320$) is statistically significant ($p < .05$) suggesting that the model is not an adequate fit for the data. Given the large sample size, other model fit statistics need to be accounted for to determine the appropriateness of the model.

The RMSEA value for the female model of .0717 (90% confidence interval: .0626 to .0812) indicates that the model does provide an adequate fit to the data. The SRMR value of .0594 also indicates that the model is a good fit to the data. The NFI value of .853 does not exceed the .90 rule of thumb and suggests that the model is not a good fit for the data. Likewise, the model AIC value (11659.459) is greater than the saturated model value (11517.139) which indicates that the saturated model provides a better fit to the data than the model estimated.

Table 42: Female Model Correlation Matrix

del03	del97	del98	trauma97	trauma02	dep97	dep02	behav97	behav02	del_peer	parents97	inc97
1.0000											
0.1633*	1.0000										
0.3021*	0.4222*	1.0000									
0.1116*	0.1861*	0.1353*	1.0000								
0.1313*	0.0552	0.0818*	0.2149*	1.0000							
0.0829*	0.2082*	0.1384*	0.1501*	0.0723*	1.0000						
0.0580	0.0443	0.0618*	0.0634*	0.0834*	0.1744*	1.0000					
0.0799*	0.2615*	0.2424*	0.1170*	0.0053	0.1825*	0.0964*	1.0000				
0.1917*	0.0645*	0.1471*	0.0671*	0.0451	0.0667*	0.0781*	0.0993*	1.0000			
0.1320*	0.1851*	0.2409*	0.2245*	0.1328*	0.1992*	0.1410*	0.1869*	0.0839*	1.0000		
-0.0400	-0.0859*	-0.0770*	-0.1593*	-0.1311*	-0.0512	-0.0047	-0.0909*	-0.0397	-0.1484*	1.0000	
0.0431	-0.0339	-0.0008	-0.0931*	-0.0697*	-0.0443	-0.0059	-0.0421	0.0465	-0.1465*	0.2925*	1.0000

*$p < .05$

The results from the structural equation model for the female analysis (N = 1,032) in Figure 7 indicate that traumatic events in 1997 do not have a significant effect on delinquency in 1998 (b = .021; t = 0.705). This result is consistent with Ha_{1a} which states that traumatic life events will not have a direct effect on the delinquent outcomes of females. Nevertheless, traumatic experiences in 2002 have a positive and significant effect on delinquency in 2003 (b = .101; t = 3.438) which is contrary to Ha_{1a}.

Traumatic experiences in 1997 have a positive and significant effect on depression in 1997 (b = .150; t = 4.880) and risky health behaviors in the same year (b = .117; t = 3.786). These effects are consistent with the second hypothesis that traumatic life events will have a negative effect on mental health and behavioral health. Traumatic experiences in 2002 for females significantly increase depression in the same year (b = .065; t = 2.064), but traumatic experiences in 2002 do not significantly increase risky health behaviors in 2002 (b = .027; t = 0.87). These results partially support the second hypothesis that traumatic life events will have a negative effect on both mental health and behavioral health.

Traumatic experiences in 1997 have a positive and significant effect on depression in 1997 (b = .150; t = 4.880), but depression does not mediate the effect of trauma in 1997 on delinquency in 1998 (b = .011; t = 0.385). Likewise, traumatic experiences in 2002 significantly increase depression in the same year (b = .065; t = 2.064), but depression in 2002 does not mediate the relationship between traumatic experiences in 2002 and delinquency in 2003 (b = .021; t = 0.734). These results support Ha_{3a} which states that the effect of traumatic life experiences on delinquency will not be mediated by depression for females.

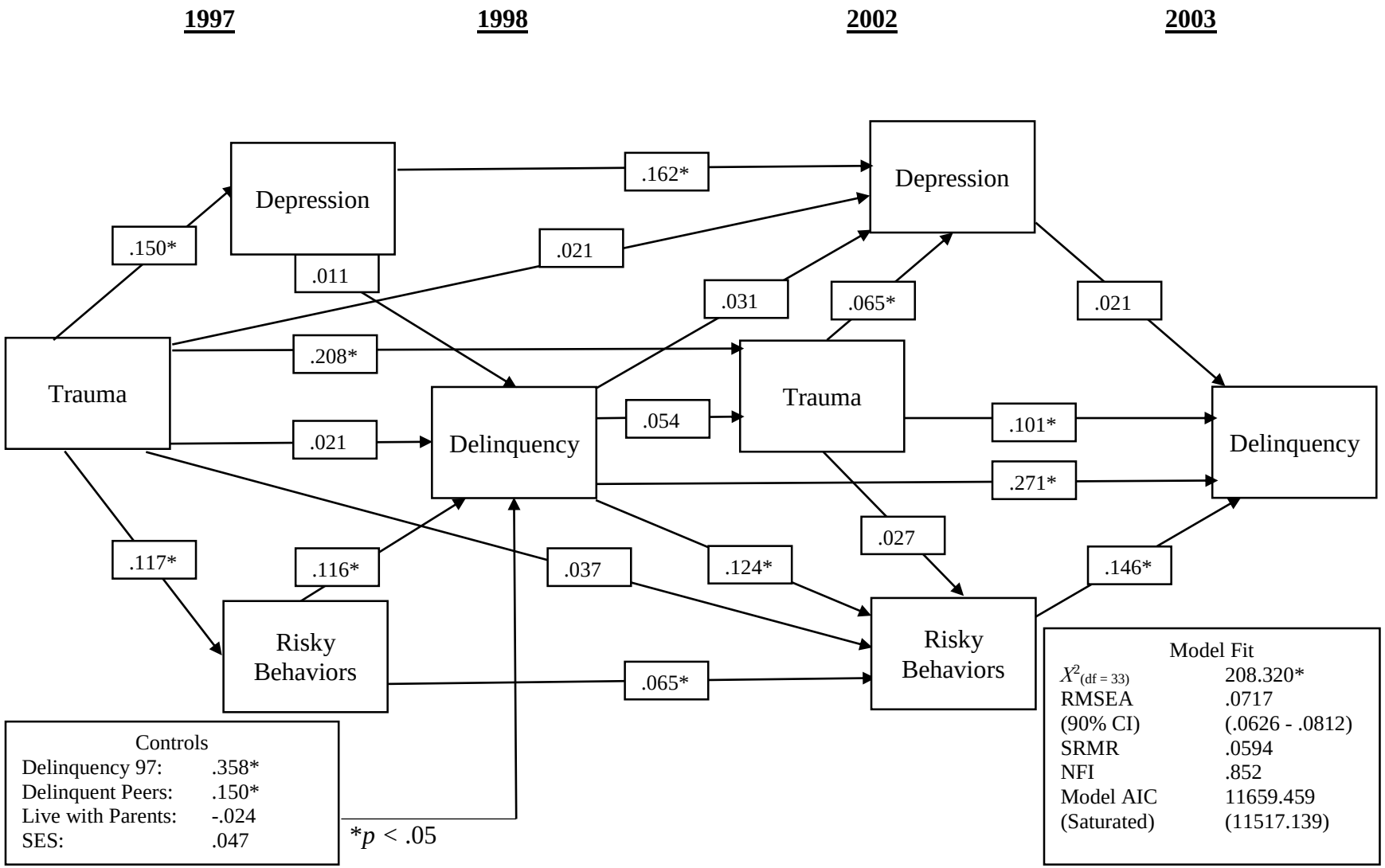

Figure 7: Female Model for Trauma 1997 to 2003 (*N* = 1,032)

Traumatic experiences in 1997 have a significant effect on risky health behaviors in 2002 (b = .117; t = 3.786), and risky health behaviors significantly mediate the effect of trauma in 1997 on delinquency in 1998 (b = .116; t = 4.211). This finding is contrary to Ha_{3a} which states that the effects of traumatic events on delinquency should not be mediated by behavioral health for females.

Table 43: Full Female Model (N =1,032)

	B	**SE**	***t***
Trauma97→ Del98	.021	.029	0.705
Trauma97→ Trauma02	.208	.031	6.778
Trauma97→ Dep97	.150	.031	4.880
Trauma97→ Dep02	.021	.032	0.658
Trauma97→ Behav97	.117	.031	3.786
Trauma97→ Behav02	.037	.032	1.163
Trauma02 → Del03	.101	.029	3.438
Trauma02 → Dep02	.065	.031	2.064
Trauma02 → Behav02	.027	.031	0.847
Dep97 → Del98	.011	.028	0.385
Dep97 → Dep02	.162	.031	5.254
Dep02 → Del03	.021	.029	0.734
Behav97 → Del98	.116	.028	4.211
Behav97 → Behav02	.065	.031	2.081
Behav02 → Del03	.146	.029	4.944
Del98 → Del03	.271	.030	9.060
Del98 → Trauma02	.054	.031	1.729
Del98 → Dep02	.031	.031	0.997
Del98 → Behav02	.124	.032	3.922
Del97 → Del98	.358	.028	12.640
Del_peer → Del98	.150	.029	5.193
Parents97 → Del98	-.024	.029	-0.808
Inc97 → Del98	.047	.028	1.641

The collective standardized coefficient values, standardized errors, and *t* values for each of the paths listed in Figure 7 are provided in Table 43. The standardized coefficient values and the *t* statistics for the exogenous correlations in the female model are provided in Table 44.

Table 44: Exogenous Correlations for the Female Model (N = 1,032)

	Del97	**Trauma97**	**Del_peer**	**Parents97**	**Inc97**
Del97	1.000				
Trauma97	0.186 (5.88)	1.000			
Del_peer	0.185 (5.85)	0.225 (7.04)	1.000		
Parents97	-0.086 (-2.751)	-0.159 (-5.056)	-0.148 (-4.718)	1.000	
Inc97	-0.034 (-1.089)	-0.093 (-2.979)	-0.147 (-4.659)	0.292 (9.023)	1.000

* *t* values in parentheses

Supplemental Analysis

The purpose of this dissertation is to assess the negative mental health (i.e., depression), behavioral health (i.e., risky health behaviors), and delinquent/criminal outcomes associated with traumatic life events. Secondary analyses were conducted to supplement the full model and further examine the hypotheses for this dissertation. A supplemental analysis was incorporated in order to examine the effects of different traumatic experiences (i.e., violent/sexual assault, the incarceration of a close family member, and bereavement) that were not included in the main analysis because the NLSY97 does not evaluate the same questions consistently during each year of the survey.

The supplemental analysis relies on data extracted from the NLSY97 between the 2002 and 2008 survey years, and this analysis incorporates three unique traumatic life event measures (i.e., violent/sexual assault, the incarceration of a close family member, and bereavement). The full sample for the supplemental analysis (N = 1,166) involves the

respondents remaining within the NLSY97 who were not lost due to attrition between the 2002 and 2008 survey years, as well as those respondents who were not lost due to non-response between indicators (*see* Appendix A and Appendix B for a detailed list of attrition by year and by indicator). It is important to note that the sample used in the supplemental analysis systematically differs from the entire sample of youth assessed in the NLSY97. This is because the individuals included in the supplemental analysis were arrested at some point in time. Nonetheless, the results from the supplemental analysis are useful to help further examine the research hypotheses, and the results are beneficial for extending the empirical basis consistent with the theoretical framework offered in Agnew's (1992) GST.

This following section begins with a descriptive analysis of the indicators used in the supplemental sample. A structural equation model is estimated with the indicators described to further examine the effects of traumatic experiences on various endogenous factors over time. The full supplemental model is then disaggregated by gender to analyze the differential effects of traumatic life events over time based on gender alone.

Descriptive Analysis for Full Supplemental Sample

The descriptive demographic values for the supplemental analysis are provided in Table 45, and these values differ from the main analysis because the supplemental analysis relies on a different sample than the main analysis. Additionally, the supplemental analysis relies on different measures of traumatic life events (i.e., violent/sexual assault, the incarceration of a close family member, and bereavement), and it incorporates different measures of delinquent activity due to limitations in the NLSY97 questionnaire.

The demographic characteristics highlighted in Table 45 are disaggregated by the 2002 traumatic event indicator (i.e., violent/sexual assault, the incarceration of a close family member, and bereavement). From the sample in the supplemental analysis (N = 1,166), it can be seen that there is a total of 714 (61.23%) males and 452 (38.77%) females. The racial distribution indicates that black respondents constitute 23.24 percent of the sample, Hispanics account for 20.15 percent of the sample, non-Black/non-Hispanics constitute 55.32 percent of the sample. A total of 234 respondents (20.84%) reported that they do not live in an MSA, 541 (46.40%) live in an MSA but not the central city, 370 (31.73%) respondents indicated that the live in an MSA in the central city, and 12 (1.03%) of the respondents were in an MSA but it was not known where.

Table 45: Demographic Descriptive Statistics for Supplemental Analysis (N = 1,166)

	No Trauma (%)	**Trauma (%)**	**Total (%)**
Gender			
Male	295	419	714 (61.23)
Female	167	285	452 (38.77)
Total	462 (39.62)	704 (60.38)	1,166
Race			
Black	90	181	271 (23.24)
Hispanic	101	134	235 (20.15)
Mixed race	9	6	15 (1.29)
Non-Black / Non-Hispanic	262	383	645 (55.32)
Total	462 (39.62)	704 (60.38)	1,166
City/Rural			
Not in MSA	92	151	243 (20.84)
In MSA, not central City	222	319	541 (46.40)
In MSA, in central city	144	226	370 (31.73)
In MSA, not known	4	8	12 (1.03)
Total	462 (39.62)	704 (60.38)	1,166

The mean age of the respondents for each of the years analyzed in the supplemental analysis is reported in Table 46. The mean age of the full supplemental

sample (*N* = 1,166) in 2002 is 20.62 years, and the mean age in the 2008 survey year for this sample is 26.50 years.

Table 46: Supplemental Sample Age Descriptive Statistics (N = 1,166)

	Mean Age (standard deviation)
Survey Year 2002	20.62 (1.363)
Survey Year 2003	21.57 (1.362)
Survey Year 2007	25.49 (1.361)
Survey Year 2008	26.50 (1.356)

Traumatic Life Events Supplemental Analysis

The traumatic life event measures assessed in the supplemental analysis include measures that were administered in the NLSY97 during the 2002 and 2007 survey years. The trauma indices developed are the additive scores for responses to whether or not a respondent was violently/sexually victimized, whether or not a close relative of the respondent had died within the previous five years, and whether or not an adult member of the household had been sent to jail or prison within the previous five years. The exact questions from the NLSY97 for all of the supplemental measures are located in Appendix C. The frequencies for trauma exposure in the 2002 and 2007 survey years are provided in Table 47.

Table 47: Supplemental Sample Traumatic Event Frequencies

Survey Year (*SY*)	Frequency (%)
SY 1997	
0	462 (39.62)
1	587 (50.34)
2	104 (8.92)
3	13 (1.11)
SY 2002	
0	487 (41.77)
1	592 (50.77)
2	77 (6.60)
3	10 (0.86)

The cross tabulations for the each form of trauma with the number of trauma exposures for the 2002 survey year are depicted in Table 48. From the full supplemental sample (N = 1,166), a total of 462 (39.62%) respondents reported none of the traumatic experiences assessed. Additionally, 106 (9.09%) individuals indicated that they had been exposed to violent victimization, 635 (54.46%) respondents indicated that they had experienced bereavement, and 93 (7.98%) individuals reported that a family member from within the household had been incarcerated.

Table 48: 2002 Violent Victimization, Bereavement, Family Incarceration Cross Tabulations

Trauma 02	Violent Vic 02		Bereavement 02		Family Jail 02	
	No	*Yes*	*No*	*Yes*	*No*	*Yes*
0	462	0	462	0	462	0
1	549	38	67	520	558	29
2	49	55	2	102	53	51
3	0	13	0	13	0	13
Total	1060	106	531	635	1073	93

The cross tabulation figures for traumatic experiences in 2007 are provided in Table 49. It can be seen that 487 (41.77%) individuals reported none of the traumatic experiences assessed. A total of 89 (7.63%) individuals were exposed to violent

victimization, 607 (52.06%) respondents indicated that they had experienced bereavement, and 80 (6.86%) individuals reported that a household family member was incarcerated.

Table 49: 2007 Violent Victimization, Bereavement, Family Incarceration Cross Tabulations

Trauma 07	Violent Vic 07		Bereavement 07		Family Jail 07	
	No	*Yes*	*No*	*Yes*	*No*	*Yes*
0	487	0	487	0	487	0
1	552	40	72	520	560	32
2	38	39	0	77	39	38
3	0	10	0	10	0	10
Total	1077	89	559	607	1086	80

Table 50 provides the cross tabulation results for individuals who reported one or more of the traumatic life events analyzed in 2002 (i.e., violent victimization, bereavement, and/or the incarceration of an adult member of the household) on whether or not they were delinquent in 2003. The results indicate that those respondents who experienced one or more of the traumatic life events identified in the full supplemental sample reported proportionately greater levels of delinquent activity than those who did not report any of the traumatic experiences assessed. Accordingly, 299 (42.47%) of the respondents who indicated traumatic exposure also reported delinquent activity, and 179 (38.74%) respondents who reported no traumatic experiences indicated delinquent activities. Additionally, 405 (57.53%) of the respondents who indicated traumatic exposure reported no delinquent activity; whereas, 283 (61.26%) of the respondents who reported no trauma also reported no delinquent involvement.

Table 50: 2002 Trauma and 2003 Delinquency Cross Tabulations Supplemental Analysis

Trauma	Non-Delinquent (%)	Delinquent (%)	Total (%)
No	283 (61.26)	179 (38.74)	462 (39.62)
Yes	405 (57.53)	299 (42.47)	704 (60.38)
Total	688 (59.00)	478 (41.00)	1,166 (100.00)
Males			
No	171 (57.97)	124 (42.03)	295 (41.32)
Yes	223 (53.22)	196 (46.78)	419 (58.68)
Total	394 (55.18)	320 (44.82)	714 (100.00)
Females			
No	112 (67.07)	55 (32.93)	167 (36.95)
Yes	182 (63.86)	103 (36.14)	285 (63.05)
Total	294 (65.04)	158 (34.96)	452 (100.00)

The results in Table 50 also account for gendered differences in traumatic exposure and delinquent/non-delinquent activity. The gendered results are consistent with the results in the full supplemental sample. Males reporting one or more of the traumatic experiences assessed also reported a greater percentage of delinquent activity (46.78%) than those reporting no traumatic experiences (42.03%). Additionally, females who reported traumatic life events also reported a greater percentage of delinquent activity (36.14%) than those reporting no traumatic events (32.93%).

Table 51: 2007 Trauma and 2008 Delinquency Cross Tabulations Supplemental Analysis

Trauma	Non-Delinquent (%)	Delinquent (%)	Total (%)
No	347 (71.25)	140 (28.75)	487 (41.77)
Yes	446 (65.68)	233 (34.32)	679 (58.23)
Total	793 (68.01)	373 (31.99)	1,166 (100.00)
Males			
No	204 (69.39)	90 (30.61)	294 (41.18)
Yes	269 (64.05)	151 (35.95)	420 (58.82)
Total	473 (66.25)	241 (33.75)	714 (100.00)
Females			
No	143 (74.09)	50 (25.91)	193 (42.70)
Yes	177 (68.34)	82 (31.66)	259 (57.30)
Total	320 (70.80)	132 (29.20)	452 (100.00)

Table 51 provides the cross tabulation results for those who indicated traumatic exposure in 2007 on delinquent/non-delinquent outcomes in 2008. Results from the full supplemental sample indicate that those reporting traumatic life experiences also reported a greater percentage of delinquency (34.32%) than those who reported none of the traumatic experiences assessed (28.75%). A total of 446 (65.68%) of the respondents who indicated traumatic experiences also indicated no delinquent activity, and 347 (71.25%) of the respondents who were classified as not being exposed to trauma were documented as non-delinquent.

The gendered differences for the results of traumatic exposure in 2007 on delinquency in 2008 are also provided in Table 51. The results are consistent with the full supplemental sample, and it can be seen that males reporting traumatic life events also reported greater involvement in delinquency (35.95%) than those indicated no traumatic experiences (30.61%). Likewise, females who reported one or more of the traumatic experiences assessed in the supplemental analyses (i.e., violent victimization, bereavement, and/or the incarceration of an adult member of the household) also indicated a greater percentage of delinquent involvement (31.66%) than those indicating no traumatic exposure (25.91%).

Mental Health and Behavioral Health Descriptive Statistics: Supplemental Analysis

The mental health measures in the 2002 and 2008 survey years were questions of how much time within the last month a respondent felt downhearted and blue. These measures were assessed on a four-point scale that ranged from none of the time to all of the time. The descriptive statistics for these measures are provided in Tables 52 and 53.

Table 52: 2002 Depression Frequencies for Supplemental Analysis

Depressed 2002	Frequency (%)
None of the time	298 (25.56)
Some of the time	658 (56.43)
Most of the time	152 (13.04)
All of the time	58 (4.97)

* *Mean* = 1.974; *Standard Deviation* = 0.765

From the 2002 survey year, 25.56 percent of the sample indicated that they were depressed none of the time, 56.43 percent indicated that they were depressed some of the time, 13.04 percent stated that they were depressed most of the time, and 4.97 percent indicated that they were depressed all of the time.

The 2008 mental health scale produced similar results, and 32.50 percent of the sample was depressed none of the time, 56.69 percent was depressed some of the time, 9.26 percent was depressed most of the time, and 1.54 percent indicated that they were depressed all of the time.

Table 53: 2008 Depression Frequencies for Supplemental Analysis

Depressed 2008	Frequency (%)
None of the time	379 (32.50)
Some of the time	661 (56.69)
Most of the time	108 (9.26)
All of the time	18 (1.54)

* *Mean* = 1.799; *Standard Deviation* = 0.663

The behavioral health measure in the supplemental analysis relies on responses to questions administered in the 2002 and 2008 survey years of the NLSY97. The indices developed to assess behavioral health (i.e., risky health behaviors) are additive indices which rely on measures of (1) how many cigarettes a respondent usually smoked each day during the past 30 days, (2) the number of drinks an individual usually had on the days they drank in the last 30 days, and (3) the number of individuals that the respondent had sexual intercourse with in their life time.

Table 54: 2002 Tobacco Use, Alcohol Use, and Sexual Activity for Supplemental Analysis

Number of Events	Frequency (%)
0	234 (20.07)
1-5	340 (29.16)
6-10	226 (19.38)
11-20	221 (18.95)
21-159	145 (12.44)

* *Mean* = 9.467; *Standard Deviation* = 12.077

The descriptive statistics for the 2002 behavioral risk index are provided in Table 54. Roughly 20.07 percent of the sample indicated no risky health behaviors, 29.16 percent indicated 1 to 5 risky health behaviors, 19.38 percent indicated 6 to 10 risky health behaviors, and over 30 percent of the sample indicated 11 or more risky health behaviors in the 2002 survey year.

Table 55: 2008 Tobacco Use, Alcohol Use, and Sexual Activity for Supplemental Analysis

Number of Events	Frequency (%)
0	2 (0.17)
1-5	449 (38.51)
6-10	244 (20.93)
11-20	249 (21.36)
21-1034	222 (19.04)

* *Mean* = 17.740; *Standard Deviation* = 70.793

Table 55 provides the results for the behavioral risk index for the 2008 survey year. Less than 1 percent indicated no risky health behaviors, roughly 38.51 percent indicated 1 to 5 risky health behaviors, over 20 percent noted 6 to 10 risky health behaviors, and over 40 percent of the sample indicated 11 or more risky health behaviors.

Delinquency and Control Variables Descriptive Statistics: Supplemental Analysis

The delinquency measures used in the supplemental analysis differ from the main analysis measures given limitations in the NLSY97 questionnaire. Due to the significant loss of data in the delinquency measures at the 2008 assessment of the NLSY97, the

measures for the additive delinquency indices in the 2002, 2003, and 2008 time periods in this analysis rely on dichotomous indicators of criminal behavior (0 = No 1 = Yes).

Table 56: Frequencies for Supplemental Delinquency Measures 2002, 2003, and 2008

Index Year		Total (%)
Delinquency 02		
0		632 (54.20)
1		394 (33.79)
2		91 (7.80)
3		34 (2.92)
4		12 (1.03)
5		3 (0.26)
Mean	0.636	
Standard Deviation	0.859	
Delinquency 03		
0		688 (59.01)
1		365 (31.30)
2		82 (7.03)
3		19 (1.63)
4		8 (0.69)
5		4 (0.34)
Mean	0.547	
Standard Deviation	0.799	
Delinquency 08		
0		793 (68.01)
1		330 (28.30)
2		35 (3.00)
3		5 (0.43)
4		3 (0.26)
5		
Mean	0.366	
Standard Deviation	0.591	

The responses to questions of whether or not an individual (a) committed an assault, (b) committed various property offenses, and/or (c) smoked marijuana were summed to formulate an index at each of the aforementioned points in time. The frequencies for each of the delinquency indices are provided in Table 56. Additionally,

the frequencies for the household income to poverty ratio which is used as a control variable are provided in Table 57.

Table 57: Household Income/Poverty Ratio Control Frequency

Inc/Pov Ratio		Total (%)
0		46 (3.95)
1-99		286 (24.53)
100-199		216 (18.52)
200-299		189 (16.21)
300-399		135 (11.58)
400-499		90 (7.72)
500-599		73 (6.26)
600-699		40 (3.43)
700-799		29 (2.49)
800-899		21 (1.80)
900-999		10 (0.86)
1000-		31 (2.66)
Mean	291.274	
Standard Deviation	290.126	

Supplemental Analysis: Full Model

In order to further examine the hypotheses (i.e., Ha1, Ha2, and Ha3) for this dissertation, a structural equation model was integrated into the supplemental analysis. The model relies on the supplemental sample previously discussed (N = 1,166), and the correlation matrix with the bivariate correlations for the indicators in the supplemental analysis is provided in Table 58.

The results from the LISREL model in Figure 8 indicate that the chi-square value ($X^2_{(df = 21)}$ = 165.997) is statistically significant ($p < .05$) and suggests that the model does not provide a good fit to the data. Given the large sample size, this finding warrants a closer inspection of the other model fit statistics to determine the adequacy of the model.

The RMSEA value for the supplemental model of .0769 (90% confidence interval: .0663 to .0880) indicates that the model does provide an adequate fit to the data.

The SRMR value of .0537 also indicates that the model is a good fit to the data. The NFI value of .839 is less than the .90 rule of thumb and suggests that the model does not provide a good fit to the data. Also, the model AIC value (11002.344) is greater than the saturated model value (10878.367) and suggests that the saturated model would be the more desirable model.

The results from the structural equation model in Figure 8 indicate that traumatic experiences in 2002 do not have a significant effect on delinquency in 2003 (b = .004; t = 0.152). This finding is contrary to the first hypothesis which states that traumatic life experiences in early childhood will be positively correlated with delinquency. Nevertheless, traumatic experiences in 2007 have a positive and significant effect on delinquency in 2008 (b = .062; t = 2.319) which is consistent with the first hypothesis.

Traumatic experiences in 2002 have a positive and significant effect on depression in 2002 (b = .125; t = 4.293) and on risky health behaviors in 2002 (b = .092; t = 3.142). These effects are consistent with the second hypothesis that traumatic life experiences will have a negative effect on mental health and behavioral health. Traumatic life events in 2007 have a positive and significant effect on depression in 2008 (b = .065; t = 2.274), but they do not have a significant effect on the risky health behaviors in 2008 (b = -.015; t = -0.497). These results only partially support the second hypothesis.

Traumatic experiences in 2002 have a positive and significant effect on both depression in 2002 (b = .125; t = 4.293) and risky health behaviors in 2002 (b = .092; t = 3.142), but neither depression (b = -.015; t = -0.583) nor risky health behaviors (b = .046; t = 1.763) mediate the effect of traumatic life events on delinquency. This finding does not support the third hypothesis that traumatic life experiences will increase the

likelihood of delinquency, and the negative mental health and behavioral health outcomes should mediate the effect of trauma on delinquency. Only traumatic experiences in 2007 are significantly mediated by depression on delinquency in 2008 (b = .162; t = 6.085) in the full model of the supplemental analysis.

Table 58: Full Supplemental Model Correlation Matrix (2002 to 2008)

del08	del02	del03	trauma02	trauma07	dep02	dep08	behav02	behav08	inc02
1.0000									
0.2699*	1.0000								
0.3846*	0.4561*	1.0000							
0.0858*	0.1431*	0.0700*	1.0000						
0.1158*	0.0734*	0.1119*	0.1325*	1.0000					
0.0570	0.1294*	0.0470	0.1247*	0.0228	1.0000				
0.1843*	0.0382	0.0431	0.0639*	0.0760*	0.2743*	1.0000			
0.0469	0.2744*	0.1671*	0.0916*	0.0680*	0.0926*	0.0251	1.0000		
0.0713*	0.1116*	0.0837*	0.0935*	0.0108	0.0014	0.0667*	0.1333*	1.0000	
0.0108	0.0163	0.0119	-0.0229	0.0059	-0.1221*	-0.1085*	0.0535	-0.0290	1.0000

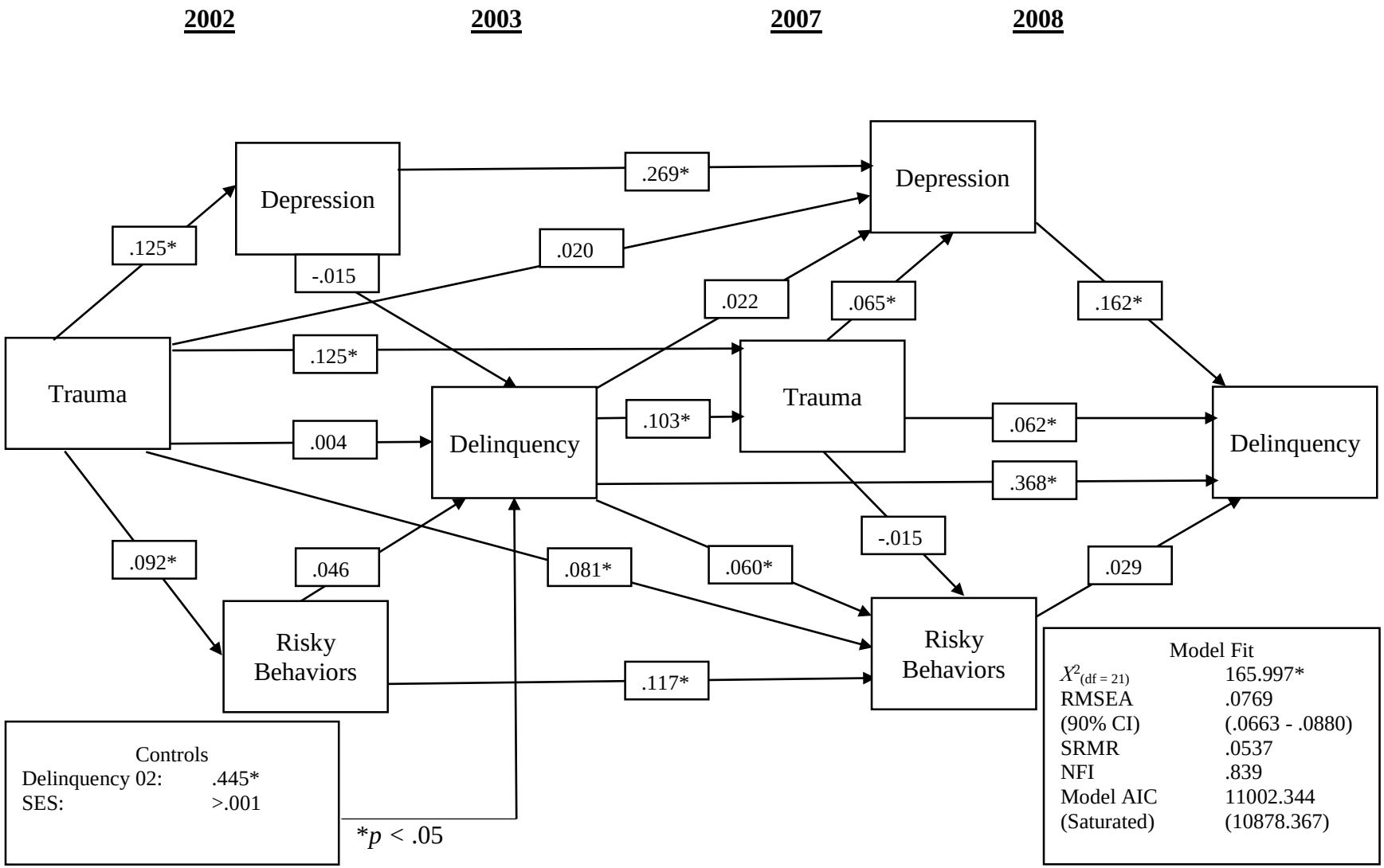

Figure 8: Full Supplemental Model for Trauma 2002 to 2008 (*N* = 1,166)

The collective standardized coefficient values, standardized errors, and *t* values for each of the paths listed in Figure 8 are provided in Table 59. The standardized coefficient values and the *t* statistics for the exogenous correlations not modeled in Figure 8 are provided in Table 60.

Table 59: Full Supplemental Model (N = 1,116)

	B	**SE**	***t***
Trauma02 → Del03	.004	.027	0.152
Trauma02 → Trauma07	.125	.029	4.331
Trauma02 → Dep02	.125	.029	4.293
Trauma02 → Dep08	.020	.029	0.707
Trauma02 → Behav02	.092	.029	3.142
Trauma02 → Behav08	.081	.029	2.750
Trauma07 → Del08	.062	.027	2.319
Trauma07 → Dep08	.065	.028	2.274
Trauma07 → Behav08	-.015	.029	-0.497
Dep02 → Del03	-.015	.026	-0.583
Dep02 → Dep08	.269	.028	9.520
Dep08 → Del08	.162	.027	6.085
Behav02 → Del03	.046	.026	1.763
Behav02 → Behav08	.117	.029	4.028
Behav08 → Del08	.029	.027	1.092
Del03 → Del08	.368	.027	13.713
Del03 → Trauma07	.103	.029	3.549
Del03 → Dep08	.022	.028	0.767
Del03 → Behav08	.060	.029	2.057
Del02 → Del03	.445	.026	16.920
Inc02 → Del03	<.001	.026	0.016

Table 60: Full Supplemental Model Exogenous Correlations (N = 1,116)

	Trauma02	Del02	Inc02
Trauma02	1.000		
Del02	0.143 (4.839)	1.000	
Inc02	-0.023 (-0.782)	0.016 (0.557)	1.000

* *t* values in parentheses

Supplemental Analysis: Male Model

Similar to the main analysis, the full supplemental model was disaggregated by gender and assessed independently to estimate whether there are differential effects from traumatic experiences on the various endogenous factors (i.e. mental health, behavioral health, and delinquency) when accounting for gender. The current section provides the results from the structural equation model which estimated the effects of traumatic life events on various endogenous factors for the males in the supplemental sample. The results from the descriptive analyses for the supplemental male model (N = 714) are provided in Appendix D.

The correlation matrix with the bivariate correlations for all of the variables used in the structural equation model for the supplemental male analysis is provided in Table 61. The correlation matrix was used to estimate the structural equation model depicted in Figure 9. The chi-square value ($X^2_{(df = 21)}$ = 111.986) for the model is statistically significant ($p < .05$) which suggests that the model does not provide an adequate fit to the data. Given the fact that the sample for the male model is relatively large, this finding warrants a closer inspection of other model fit statistics to determine the overall adequacy of the model.

The RMSEA value for the supplemental male model of .0779 (90% confidence interval: .0641 to .0924) indicates that the model is a good fit for the data. The SRMR

value of .0558 also suggests that the model is a good fit to the data. The NFI value of .803 does not exceed the .90 rule of thumb and suggests that the model does not provide an adequate fit to the data. The model AIC value (6826.178) exceeds the saturated model value (6756.192) and indicates that the saturated model would be the more desirable model for this analysis.

Table 61: Male Supplemental Model 2002 to 2008 Correlation Matrix

del08	del02	del03	trauma02	trauma07	dep02	dep08	behav02	behav08	inc02
1.0000									
0.2488*	1.0000								
0.3192*	0.4498*	1.0000							
0.0379	0.1200*	0.0463	1.0000						
0.0868*	0.0702	0.1044*	0.1352*	1.0000					
0.0388	0.1685*	0.0712	0.1224*	0.0021	1.0000				
0.2046*	0.0779*	0.0949*	0.0460	0.0947*	0.2277*	1.0000			
0.0161	0.2678*	0.1609*	0.1045*	0.0540	0.1181*	0.0269	1.0000		
0.0608	0.1015*	0.0473	0.0999*	0.0140	-0.0137	0.0887*	0.1219*	1.0000	
0.0084	-0.0009	-0.0269	0.0013	-0.0140	-0.0857*	-0.1098*	0.0294	-0.0537	1.0000

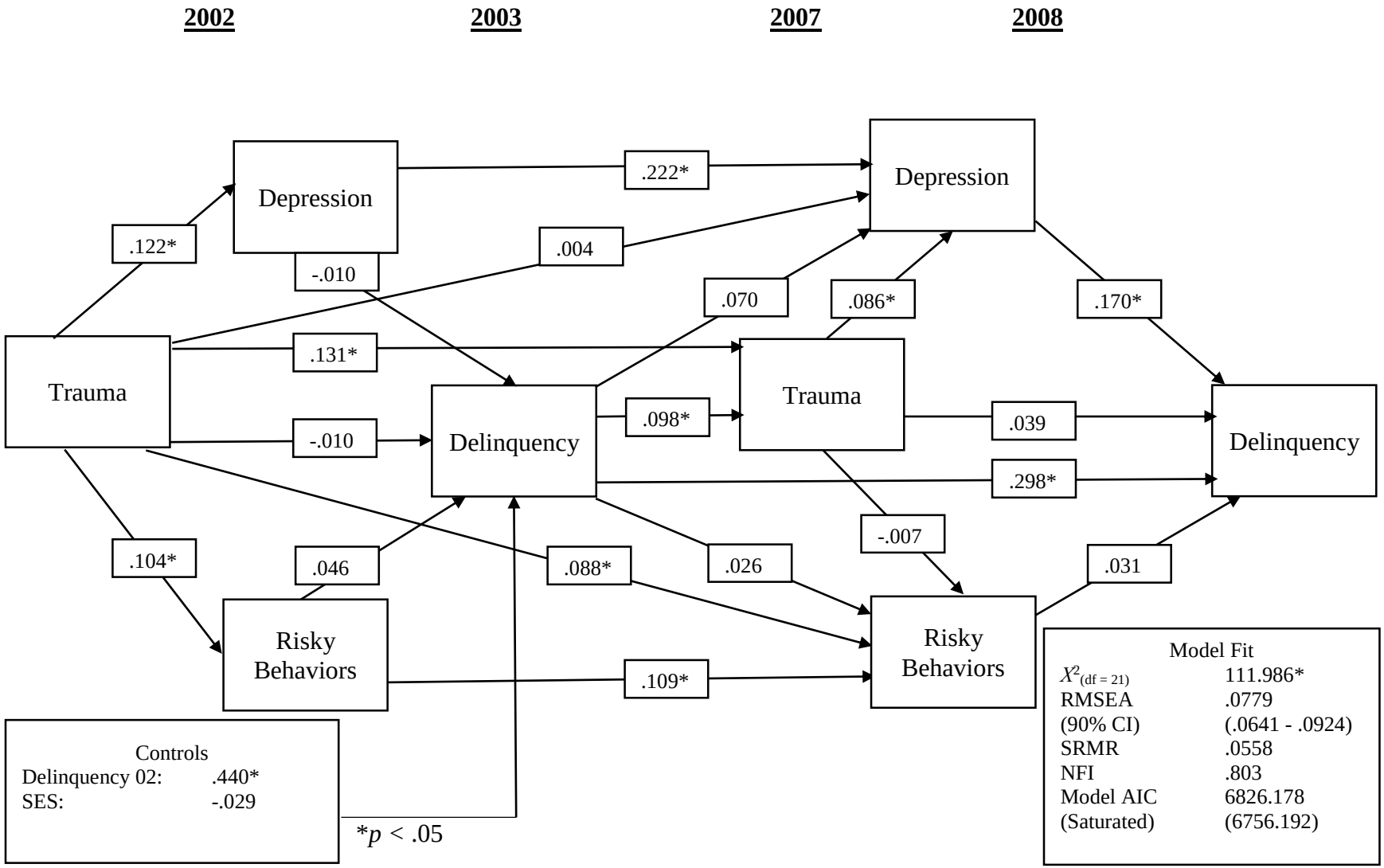

Figure 9: Male Supplemental Model 2002 to 2008 (*N* = 714)

The results from the LISREL model depicted in Figure 9 indicate that traumatic experiences in 2002 do not have a significant effect on delinquency in 2003 for males (*b* = -.010; *t* = -0.298). Likewise, traumatic experiences in 2007 do not have a significant effect on delinquency in 2008 for males (*b* = .039; *t* = 1.117). These results are not consistent with Ha_{1a} which states that traumatic life experiences will have a direct effect on the delinquent outcomes of males.

Traumatic events in 2002 have a positive and significant effect on depression in 2002 (*b* = .122; *t* = 3.298) and risky health behaviors in 2002 (*b* = .104; *t* = 2.810) for males. These effects are consistent with the second hypothesis that traumatic life experiences will have a negative effect on mental health and behavioral health. Traumatic experiences in 2007 significantly increase depression in 2008 (*b* = .086; *t* = 2.357), but traumatic experiences in 2007 do not effect risky health behaviors in 2008 (*b* = -.007; *t* = -0.175). These findings provide partial support for the second hypothesis.

Neither depression in 2002 (*b* = -.010; *t* = -0.287) nor risky health behaviors in 2002 (*b* = .046; *t* = 1.373) mediate the effect of traumatic experiences in 2002 on delinquency in 2003. These findings do not support Ha_{3a} which states that the mental health and behavioral health outcomes of males should mediate the effect of traumatic experiences on delinquency. Traumatic experiences in 2007 significantly increase depression in 2008 (*b* = .086; *t* = 2.357), and depression at this point in time significantly mediates the effect of trauma on delinquency (*b* = .170; *t* = 4.845) partially supporting Ha_{3a}.

The complete results from the supplemental male model with the standardized coefficient values, standardized errors, and *t* values for each of the paths listed in Figure 9

are provided in Table 62. Additionally, the standardized coefficient values and the *t* statistics for the exogenous correlations not modeled in Figure 9 are provide in Table 63.

Table 62: Supplemental Male Model (N = 714)

	B	**SE**	***t***
Trauma02 → Del03	-.010	.034	-0.298
Trauma02 → Trauma07	.131	.037	3.539
Trauma02 → Dep02	.122	.037	3.298
Trauma02 → Dep08	.004	.037	0.106
Trauma02 → Behav02	.104	.037	2.810
Trauma02 → Behav08	.088	.038	2.351
Trauma07 → Del08	.039	.035	1.117
Trauma07 → Dep08	.086	.037	2.357
Trauma07 → Behav08	-.007	.037	-0.175
Dep02 → Del03	-.010	.034	-0.287
Dep02 → Dep08	.222	.036	6.096
Dep08 → Del08	.170	.035	4.845
Behav02 → Del03	.046	.034	1.373
Behav02 → Behav08	.109	.037	2.924
Behav08 → Del08	.031	.035	0.894
Del03 → Del08	.298	.035	8.445
Del03 → Trauma07	.098	.037	2.653
Del03 → Dep08	.070	.037	1.913
Del03 → Behav08	.026	.037	0.706
Del02 → Del03	.440	.034	13.109
Inc02 → Del03	-.029	.033	-0.860

Table 63: Supplemental Male Model Exogenous Correlations (N = 714)

	Trauma02	**Del02**	**Inc02**
Trauma02	1.000		
Del02	0.120 (3.186)	1.000	
Inc02	0.001 (0.035)	-0.001 (-0.024)	1.000

**t* values in parentheses

Supplemental Analysis: Female Model

The supplemental female model relies on the 452 female respondents from the full supplemental model. The descriptive statistics for the indicators assessed in the supplemental female model (N = 452) are provided in Appendix D. The correlation matrix located in Table 64 provides the bivariate correlations for the indicators assessed in the structural equation model depicted in Figure 10.

The results from the LISERL model in Figure 10 indicate that the chi-square value ($X^2_{(df = 21)}$ = 65.568) for the model is statistically significant ($p < .05$). Given the fact that the sample is relatively large, this finding of significance warrants a closer inspection of the other model fit statistics.

The RMSEA value for the supplemental female model of .0685 (90% confidence interval: .0501 to .0876) indicates that the model is a good fit for the data. The SRMR value of .0573 also suggests that the model is a good fit for the data. The NFI value (.873) is less than the .90 rule of thumb and suggests that the model does not provide an adequate fit to the data. The model AIC value (4222.752) is greater than the saturated model value (4199.184) indicating that the saturated model would be a more desirable model for this analysis.

From the results depicted in Figure 10, it can be seen that traumatic life events in 2002 do not have a significant effect on delinquency in 2003 (b = .004; t = 1.030). This finding is consistent with Ha_{1a} which states that traumatic life experiences will not have a direct effect on the delinquent outcomes of females. Traumatic events in 2007 have a positive and significant effect on delinquency in 2008 (b = .086; t = 2.148). This finding is contrary to Ha_{1a}.

Table 64: Female Supplemental Model Correlation Matrix

del08	del02	del03	trauma02	trauma07	dep02	dep08	behav02	behav08	inc02
1.0000									
0.3037*	1.0000								
0.5034*	0.4558*	1.0000							
0.1567*	0.2014*	0.1351*	1.0000						
0.1578*	0.0808	0.1293*	0.1297*	1.0000					
0.1053*	0.1166*	0.0680	0.0929*	0.0535	1.0000				
0.1801*	0.0179	0.0126	0.0503	0.0510	0.2665*	1.0000			
0.1129*	0.2772*	0.1457*	0.1176*	0.1116*	0.1477*	0.1242*	1.0000		
0.0986*	0.1317*	0.1766*	0.1081*	0.0049	0.0802	0.0606	0.1518*	1.0000	
0.0007	0.0116	0.0442	-0.0261	0.0436	-0.1030*	-0.0185	0.0418	0.0096	1.0000

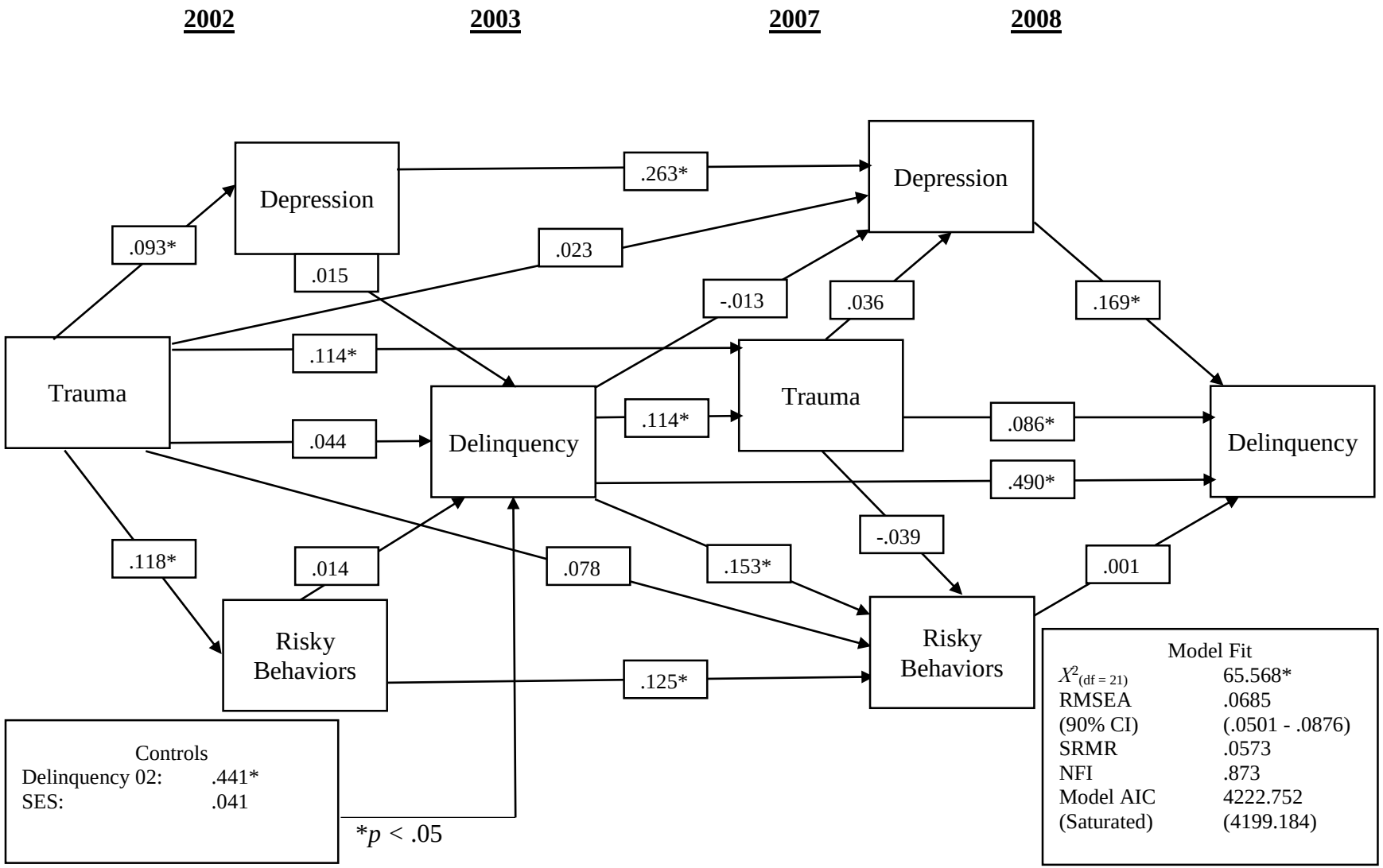

Figure 10: Female Supplemental Model 2002 to 2008: (*N* = 452)

Traumatic life events in 2002 have a positive and significant effect on depression in 2002 (b = .093; t = 1.986) and on risky health behaviors in 2002 (b = .118; t = 2.520). However, traumatic experiences in 2007 do not significantly increase depression in 2008 (b = .036; t = 0.776) or risky health behaviors in 2008 (b = -.039; t = -0.838). These findings show only partial support for the second hypothesis which states that traumatic life events will have a negative effect on both mental health and behavioral health.

Traumatic life events in 2002 have a positive and significant effect on depression in 2002 (b = .093; t = 1.986) and on risky health behaviors in 2002 (b = .118; t = 2.520), and neither depression (b = .015; t = 0.348) nor the risky health behaviors (b = .014; t = 0.344) significantly mediate the effect of trauma in 2002 on delinquency in 2003. These effects are consistent with Ha_{3a} which state that the effect of traumatic life experiences on delinquency will not be mediated by mental health or behavioral health for females. Additionally, traumatic experiences in 2007 do not significantly increase depression in 2008 (b = .036; t = 0.776) or risky health behaviors in 2008 (b = -.039; t = -0.838); therefore, neither of these endogenous factors mediate the effect of traumatic experiences in 2007 on delinquency in 2008.

The complete results from the supplemental female model with the standardized coefficient values, standardized errors, and t values for each of the paths listed in Figure 10 are provided in Table 65. Additionally, the standardized coefficient values and the t statistics for the exogenous correlations not modeled in the above Figure 10 are provided in Table 66.

Table 65: Supplemental Female Model (N =452)

	B	**SE**	***t***
Trauma02 → Del03	.004	.043	1.030
Trauma02 → Trauma07	.114	.047	2.447
Trauma02 → Dep02	.093	.047	1.986
Trauma02 → Dep08	.023	.046	0.498
Trauma02 → Behav02	.118	.047	2.520
Trauma02 → Behav08	.078	.047	1.665
Trauma07 → Del08	.086	.040	2.148
Trauma07 → Dep08	.036	.046	0.776
Trauma07 → Behav08	-.039	.046	-0.838
Dep02 → Del03	.015	.042	0.348
Dep02 → Dep08	.263	.045	5.796
Dep08 → Del08	.169	.040	4.279
Behav02 → Del03	.014	.042	0.344
Behav02 → Behav08	.125	.046	2.710
Behav08 → Del08	.001	.040	0.035
Del03 → Del08	.490	.041	12.084
Del03 → Trauma07	.114	.047	2.432
Del03 → Dep08	-.013	.046	-0.283
Del03 → Behav08	.153	.047	3.287
Del02 → Del03	.441	.043	10.346
Inc02 → Del03	.041	.042	0.986

Table 66: Supplemental Female Model Exogenous Correlations (N =452)

	Trauma02	**Del02**	**Inc02**
Trauma02	1.000		
Del02	0.201 (4.202)	1.000	
Inc02	-0.026 (-0.555)	0.012 (0.247)	1.000

* *t* values in parentheses

CHAPTER V

DISCUSSION

The purpose of this dissertation is to assess the negative mental health, behavioral health, and delinquent/criminal outcomes associated with traumatic life experiences. The current project relies on propositions from Agnew's (1992) GST to examine how these relationships unfold over time and across gender. The main analysis for this project estimated the collective effects of three traumatic life events (i.e., bullying, vicarious victimization, and victim of a burglary) on mediating mental health (i.e., depression) and behavioral health (i.e., risky health behaviors) indicators to examine how these factors affect delinquent/criminal outcomes. The various outcomes evaluated were analyzed in both the short- and long-term. Also, these effects were examined across gender to account for differential outcomes.

A supplemental analysis was conducted to examine the effects of three different forms of trauma (i.e., violent/sexual victimization, bereavement, and the incarceration of a close family member) on the same endogenous factors mentioned above (i.e., mental health, behavioral health, and delinquency). The supplemental analysis was integrated into this project because of inconsistencies in the traumatic event measures between survey years in the NLSY97. Similar to the main analysis, the supplemental analysis evaluated the traumatic life event, mental health, behavioral health, and delinquent/criminal causal processes in both the short- and long-term and across gender in order to thoroughly examine the research hypotheses stated below:

- Ha1: Traumatic life experiences in early childhood will be positively correlated with delinquency.

    - Ha_{1a}: The effect of traumatic life experiences on delinquency will vary based on gender.
        - Traumatic life experiences will have a direct effect on the delinquent outcomes of males.
        - Traumatic life experiences will not have a direct effect on the delinquent outcomes of females.
- Ha2: Traumatic life experiences will have a negative effect on mental health and behavioral health.
    - Ha_{2a}: The effect of traumatic life experiences on mental health and behavioral health will be similar across genders.
- Ha3: Traumatic life experiences will increase the likelihood of delinquency, and the negative mental health and behavioral health outcomes should mediate the effect of trauma on delinquency.
    - Ha_{3a}: The mediating effect should vary based on gender.
        - The effect of traumatic life experiences on delinquency should be mediated by behavioral health for males but not females.
        - The effect of traumatic life experiences on delinquency should be mediated by mental health for males but not females.

Data from the NLSY97 were used to test the aforementioned hypotheses. It is important to note that the NLSY97 used a weighted sampling procedure to oversample Hispanic and non-Hispanic black youth. Because of this procedure, the final sample achieved in the NLSY97 is not representative of the general population due to the oversampling of minorities. The oversampling of minorities in the NLSY97 is not

necessarily harmful to the results determined here. This is true because GST does not make race specific predictions about delinquent outcomes; thus, the overrepresentation of minorities does not theoretically bias the results.

Based on the analyses conducted in the previous chapter, the current chapter provides a discussion of the results achieved in both the main and supplemental analyses. The implications for this project are also discussed, and this chapter concludes with a dialogue pertaining to the limitations of the analyses conducted in this dissertation.

Discussion of Main Analysis

The results from the full model in the main analysis depicted in Figure 11 support all predictions from the first hypothesis. The traumatic events analyzed in the main analysis (i.e., bullying, vicarious victimization, and victim of a burglary) have a collective and direct effect on delinquency at each point in time. This finding is of interest given the fact that the traumatic events assessed in 1997 have a significant effect on delinquency in 1998 while controlling for other theoretically relevant predictors of crime (i.e., delinquency in 1997 and delinquent peer associations). The significant relationship between traumatic life events and delinquency are consistent with Agnew's (1992, 2001) GST, which hypothesizes that strain(s) increases the likelihood of delinquency. This finding is important because it suggests that multiple traumatic experiences are a relevant predictor of crime and should be investigated further. Based on the results, traumatic events create strain, which enhances the likelihood of delinquent outcomes. This finding may be a function of the lack of normative coping opportunities for many individuals.

Results from the full model in the main analysis entirely support the second research hypothesis, which states that traumatic events have a negative effect on both mental health and behavioral health. Traumatic events in 1997 have a positive and significant effect on depression and risky health behaviors in the same year, and traumatic experiences in 2002 have a positive and significant effect on depression and risky health behaviors in 2002. These findings are consistent with research showing that exposure to traumatic events increase depression and/or negative behavioral outcomes (Brener et al., 1999; Day et al., 2013; Widom & Kuhns, 1996). The collective effects of all three traumatic experiences play a fundamental role in the deleterious health outcomes observed. The negative health outcomes identified in the full model are likely a result of inadequate intervention to address the harmful events of the youth in this sample.

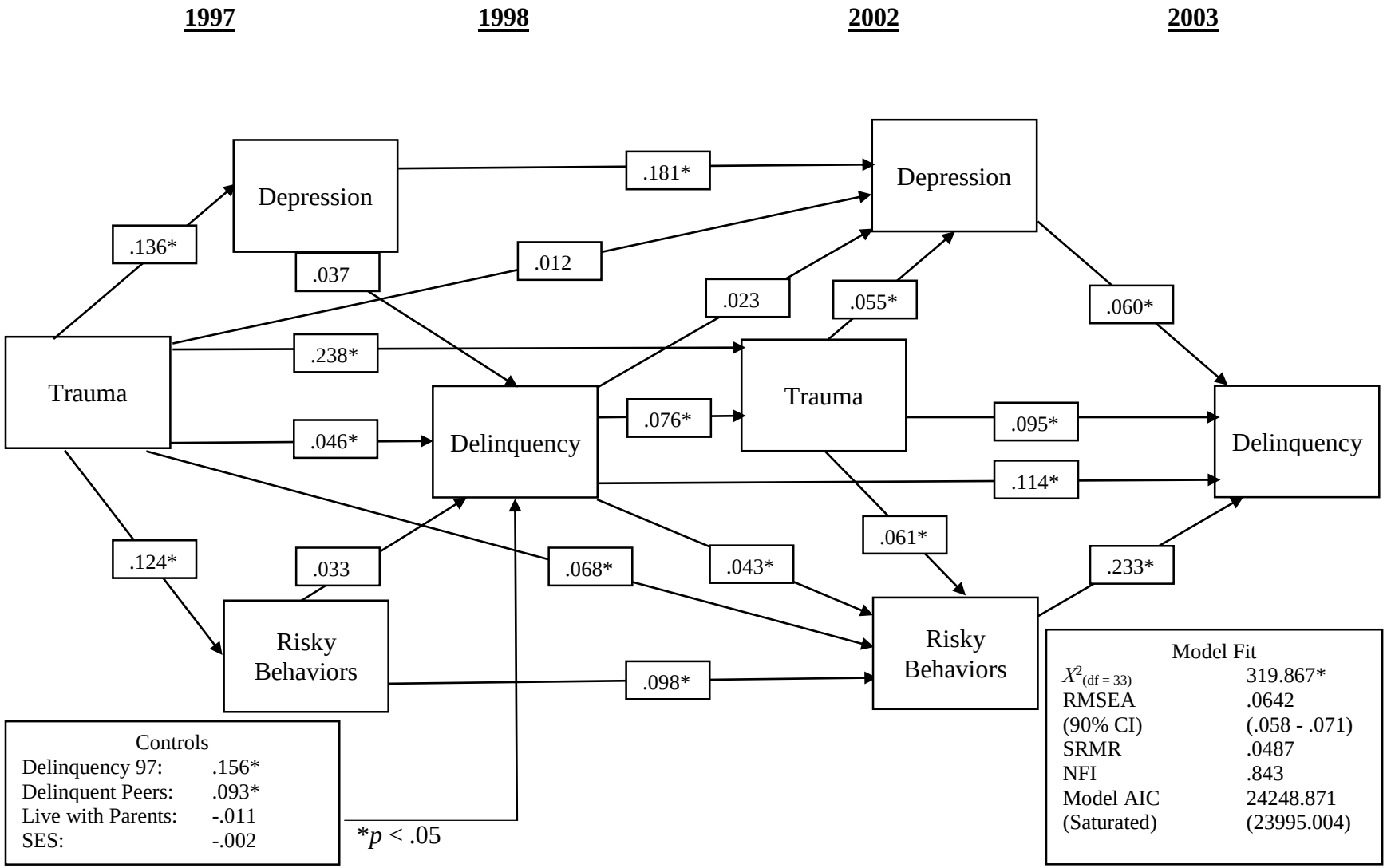

Figure 11: Full Model for Trauma 1997 to 2003 (*N* = 2,112)

The third hypothesis contends that exposure to trauma increases delinquency, and the negative mental and behavioral health outcomes resulting from traumatic events will mediate the relationship between trauma and delinquency. Results show only partial support for the third hypothesis in the full model. While traumatic experiences in 1997 have a positive and significant effect on depression, risky health behaviors, and delinquency in the short-term, neither depression nor risky health behaviors in 1997 have a significant effect on delinquency in 1998. In contrast, traumatic experiences in 2002 have a positive and significant short-term effect on depression, risky health behaviors, and delinquency, and these outcomes have a positive and significant effect on delinquency in 2003. This finding is of interest because it suggests that traumatic experiences later in life have a significant effect on all of the endogenous factors, and that depression and risky health behaviors significantly contribute to delinquency/criminality later in life. The timing of this relationship is perhaps largely due to differences in the sample regarding the age of the respondents in 1997 (mean age = 14.32) and 2002 (mean age = 19.99). Between the ages 14 and 20, youth transition from adolescence to young adulthood, and the results appear to be consistent with the notion that there are differential outlets for individuals exposed to trauma later in life due to differences in the opportunity structure based on age. More concisely, the majority of the sample in 1997 lives in an environment that is under some form of adult supervision, while in 2002 (mean age = 19.99) a significant portion of the sample is free to function consistent with young adult status. As a result, the freedoms from regulation consistent with adult supervision may change the opportunity structure of individuals and enhance the likelihood of criminal coping.

Main Analysis Male Model

Because it is suggested that the effects of traumatic events operate differently across gender (Broidy & Agnew, 1997; Ford et al., 2013; Gange et al., 2005; Widom et al., 2006), the full model in the main analysis was disaggregated by gender to examine differential outcomes. The results for the males from the main analysis are provided in Figure 12. The estimates provide partial support for the first research hypothesis, which states that traumatic events will significantly increase the delinquent/criminal outcomes of males. It can be seen that exposure to traumatic events in 1997 do not have a direct effect on delinquency in 1998. Based on this finding, it appears that delinquency is not a significant coping mechanism for males at this point in time. This result is likely associated with the age of the male respondents at this time point, and the lack of opportunity to be delinquent given the status of adolescence. Nevertheless, traumatic experiences in 2002 have a significant effect on delinquency in 2003 for the males, and this finding is consistent with Agnew's (1992, 2001) GST. The young adult status associated with the males in the sample are a logical rationale for this outcome, and the traumatic events assessed (i.e., bullying, vicarious victimization, and victim of a burglary) perhaps impose a level of strain conducive to criminality because of their young adult status.

The male model largely supports the second research hypothesis that traumatized males will experience negative mental health and behavioral health outcomes. Traumatic events in 1997 increase both depression and risky health behaviors. In addition, traumatic events in 2002 increase depression but demonstrate no significant effect on risky health behaviors.

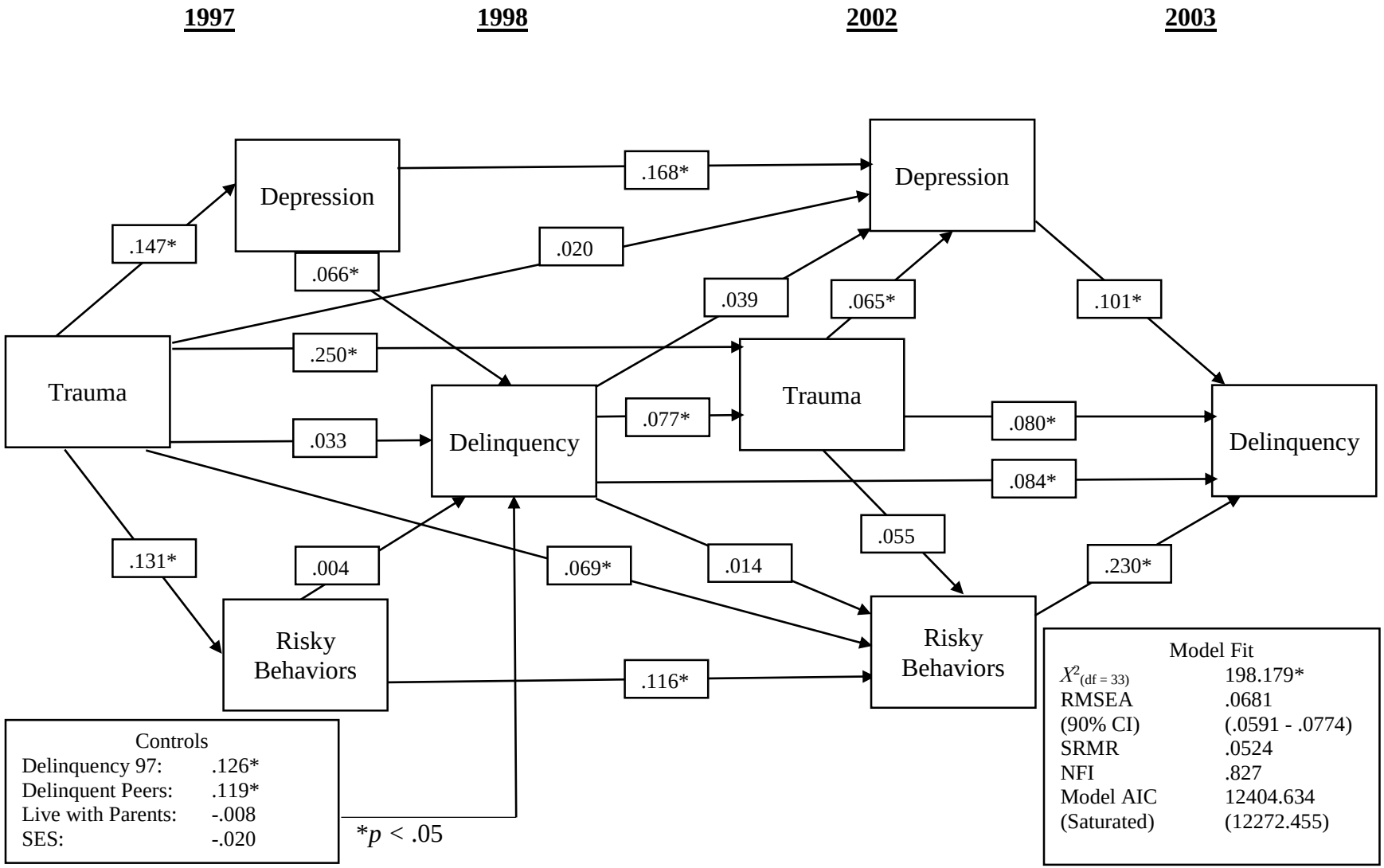

Figure 12: Male Model for Trauma 1997 to 2003 (*N* = 1,080)

The negative health outcomes are consistent with research suggesting traumatic experiences increase negative mental health and behavioral health outcomes (Aseltine et al., 2000; Watts & McNulty, 2013). The aforementioned relationships are also consistent with the idea that strain increases negative affect (Agnew, 1992, 2001).

The third research hypothesis for the males in the main analysis is partially supported by the results depicted in Figure 12. Risky health behaviors of males do not mediate the effect of traumatic experiences on delinquency/criminality at any point in time. Depression mediates the effect of traumatic events in 1997 on delinquency in 1998 for males. Similarly, traumatic experiences in 2002 have an effect on delinquency in 2003, and this relationship is mediated by depression for males. The mediating effects here are consistent with Watts and McNulty (2013) who found that traumatized males had significant levels of depression, and depression fully mediated the effect of traumatization on delinquency. Accordingly, depression is a significant path which mediates the traumatic experience/delinquent relationship for males.

Main Analysis Female Model

The final model in the main analysis examined the effects of three traumatic experiences (i.e. bullying, vicarious victimization, and victim of a burglary) for the females in the full sample. The findings show partial support for the first hypothesis that traumatic events will not have a direct effect on the delinquent/criminal outcomes of females. Traumatic experiences in 1997 have no direct association with delinquency in 1998, and this finding supports the first hypothesis.

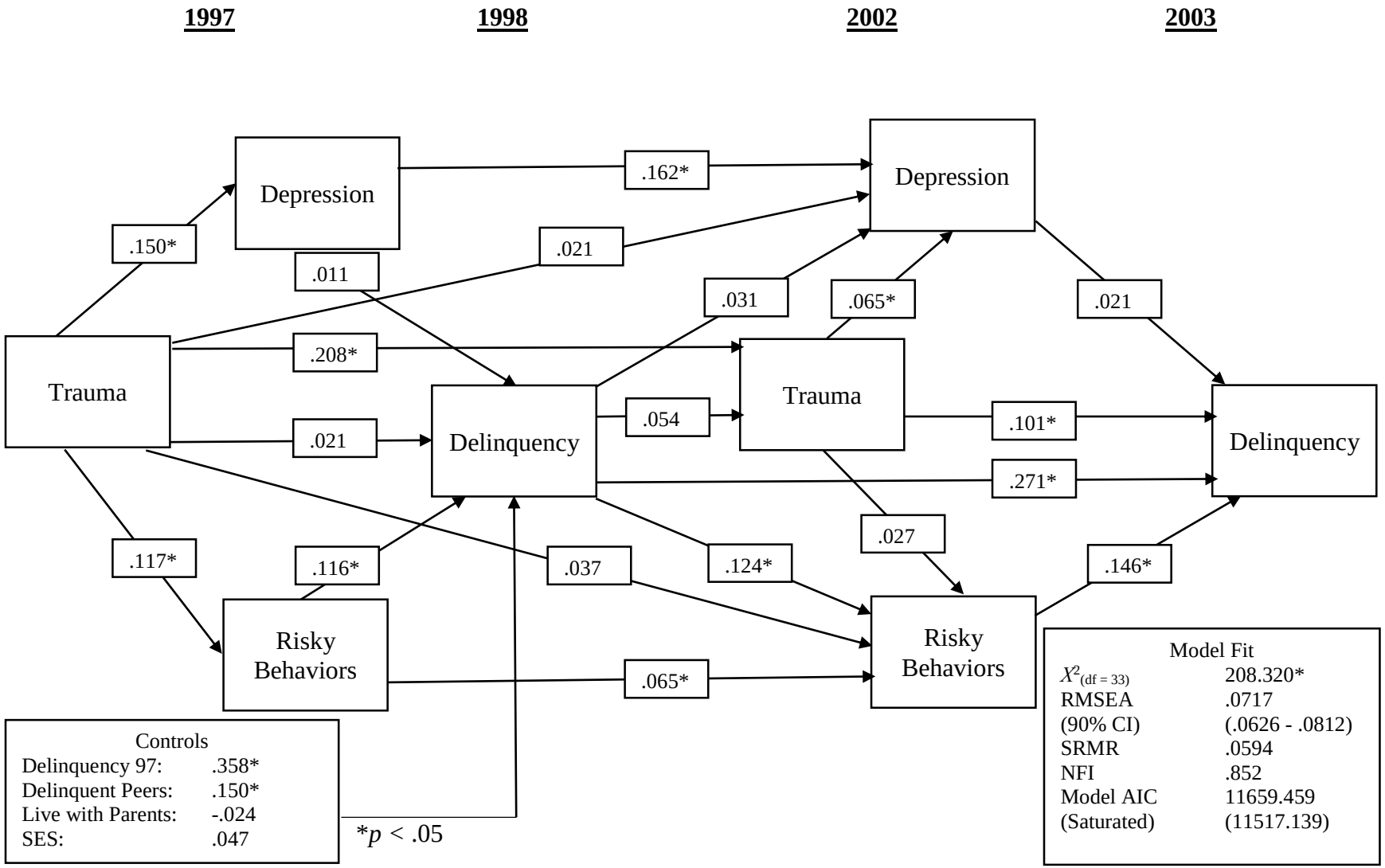

Figure 13: Female Model for Trauma 1997 to 2003 (*N* = 1,032)

The non-significant effect is also consistent with prior research that suggests females differ from males in their response to traumatic life events (Broidy & Agnew, 1997; Ford et al., 2013; Watts & McNulty, 2013; Widom et al., 2006), and supports the contention that females and males respond to traumatic life events with different coping mechanisms. Traumatic experiences in 2002 have a significant effect on criminal behaviors in 2003, and this finding does not support the first hypothesis. In 2002 and 2003, females in the sample have reached the developmental stage of young adulthood, which is marked by increased independence and less supervision. Consequently, females have more opportunity to engage in criminal activities.

The results from the female model depicted in Figure 13 strongly support the second research hypothesis that posits trauma will increase depression and risky health behaviors for females. Traumatic experiences in both 1997 and 2002 increase depression; however, only traumatic events in 1997 increased the risky health behaviors of females. The three findings of significance support prior research that suggests females rely on internal rather than external coping mechanisms, and that traumatized females are at an increased risk of displaying risky health behaviors (Broidy & Agnew, 1997; Schuck & Widom, 2001; Widom & Kuhns, 1996; Widom et al., 2006; Widom & Kuhns, 1996).

The third research hypothesis that the negative mental health and behavioral health consequences associated with traumatic experiences will not mediate the effect of trauma on delinquency for females is partially supported. Early exposure to trauma increases both depression and risky health behaviors for females, but contrary to the third hypothesis, risky health behaviors mediate the relationship of trauma on delinquency. The risky health behaviors at an earlier age suggest that risky lifestyles for female

adolescents who report one or more types of traumatic experiences are more likely to be delinquent. The significant relationship in adolescence for females is of interest because the results from approximately five years later do not suggest that behavioral health is a mediating factor in the traumatic event/criminal relationship. The finding of non-significance in young adulthood for females is consistent with hypothetical expectations.

In the end, the results from all of the models in the main analysis provide a number of key points worth discussing in further detail. The overall results demonstrate that traumatic experiences (i.e., bullying, vicarious victimization, and victim of a burglary) have significant effects on delinquent/criminal outcomes, and the greatest effects are observed during young adulthood rather than adolescence. The criminal outcomes stemming from traumatic experiences in 2002 are likely the result of a number of reasons, and two of plausible explanations are further discussed here.

The first plausible explanation for why traumatic events increase delinquent/criminal outcomes at older ages and not younger ages deals with the opportunity structure conducive to criminal activity. There may be more barriers for adolescents to use delinquent/criminal coping based on environmental factors (i.e., family structure or parental supervision) that prevent and limit delinquent activity when all of the other factors assessed are taken into account. The idea that the advanced age of the sample during the second traumatic event assessment is likely living away from adult guardianship probably increases the lack of informal control mechanisms that prevent delinquent behaviors.

A second plausible explanation for why the young adults in the sample use criminal coping while the adolescents do not is related to the amount of trauma

experienced. The use of criminal activity later in life may be the result of multiple traumatic experiences over the life course for young adults. Prolonged and multiple exposure(s) to traumatic events could have a compounded effect on criminal behaviors. Each of the models in the main analysis demonstrated a significant relationship between the traumatic events analyzed in 1997 and the traumatic events assessed in 2002. Moreover, these effects suggest that individuals who were exposed to traumatic events in adolescence have an increased likelihood of experiencing traumatic episodes in young adulthood. This relationship is consistent with previous work on victimization which shows individuals who are victimized are at an increased risk of victimization later in life (Finkelhor, 2008; Widom et al., 2008). The criminal outcomes observed during young adulthood may be the consequence of a lifetime of exposure to traumatic experiences.

Discussion of Supplemental Analysis

The supplemental analysis (N = 1,166) relies on a different sample of youth than the main analysis because of inconsistencies within the questions asked in the NLSY97 across survey years. The supplemental analysis examines the effects of three different forms of trauma (i.e., violent/sexual victimization, bereavement, and the incarceration of a close family member) at different points in time than the main analysis. The model depicted in Figure 14 provides the results for the full supplemental model.

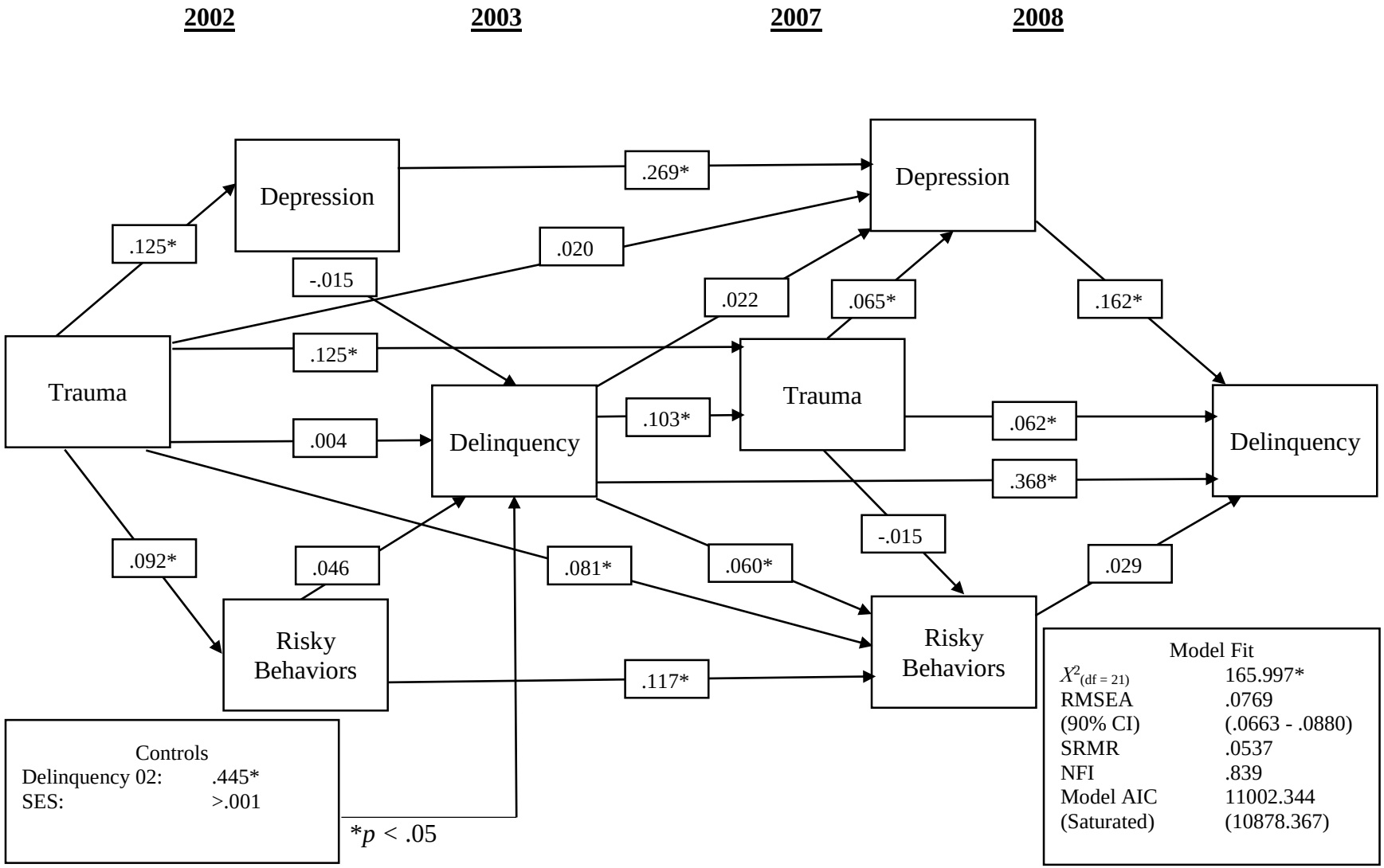

Figure 14: Full Supplemental Model for Trauma 2002 to 2008 (*N* = 1,166)

Results from the supplemental analysis partially support the first hypothesis that traumatic events will have a significant effect on delinquency/criminality. Traumatic experiences in 2002 do not effect delinquency in 2003; however, traumatic experiences in 2007 increase delinquency/criminality in the year following. This finding is consistent with the observations in the main analysis that traumatic experiences affect criminal outcomes in young adulthood but not during adolescence when accounting for the other factors in the model. Similar to the main analysis, these results are likely a function of either the age of the sample and/or the cumulative effect of multiple traumatic experiences over the respondents' life course.

The results in the supplemental analysis show partial support for the second hypothesis that traumatic events will have a negative effect on mental health and behavioral health. Traumatic experiences in 2002 significantly increase depression and risky health behaviors in 2002. Traumatic events in 2007 significantly increase depression in 2008, but exposure to the traumatic events examined (i.e., violent/sexual victimization, bereavement, and the incarceration of a close family member) have no effect on behavioral health in 2008. The mental health and behavioral health outcomes are similar to the observations in the main analysis, and these results are consistent with the wealth of research that identifies traumatic experiences as a cause of negative mental health and/or behavioral health outcomes (Aseltine et al., 2000; Brener et al., 1999; Day et al., 2013; Lin et al., 2011; Maschi et al., 2008; Schuck & Widom, 2001; Sigfusdottir et al., 2008; Widom & Kuhns, 1996). The results here support the notion that people who are affected by traumatic life events will likely demonstrate negative mental health and behavioral health symptoms based on their experiences.

The third hypothesis is marginally supported in the full supplemental model. The only variable that mediated the effect of traumatic experiences in 2007 on delinquent/criminal behaviors in 2008 was depression. This finding is likely the result of limitations in the sample, and due to the fact that the full model analyzes both females and males simultaneously, reducing the magnitude of the effects because of gendered differences in the outcomes observed (Broidy & Agnew, 1997; Widom et al., 2006).

Supplemental Analysis Male Model

The results from the male supplemental model are provided in Figure 15. The results do not support the first hypothesis that trauma will increase the delinquent/criminal outcomes of males. Neither traumatic events in 2002 nor in 2007 have a direct effect on the delinquent/criminal outcomes in the years following those measures. The null findings are contrary to hypothetical expectations, and the findings may be indicative of limitations – which will be discussed later in this chapter – in the sample used for this analysis.

The supplemental male model shows partial support for the second hypothesis that traumatic events will have a negative effect on mental health and behavioral health. Only traumatic experiences in 2007 do not have a significant effect on behavioral health in 2008. The effects of traumatic events on mental health and behavioral health are consistent with the observations in the main analysis for the males. The observed relationships further the research suggesting that traumatic events influence deleterious mental health and behavioral health outcomes (Aseltine et al., 2000; Bender et al., 2010; Day et al., 2013; Lin et al., 2011), and these relationships are consistent with Agnew's

GST (1992, 2001) which proposes that strain increases negative affect (Agnew, 1992, 2001).

The third hypothesis states that traumatic life events will increase the likelihood of delinquency and that this relationship should be mediated by both mental health and behavioral health. Only the effect of depression from traumatic experiences in 2007 mediates the relationship between traumatic events and criminal outcomes for males. As a result, the results show only marginal support for the third hypothesis in the male model, and this may be the result of limitations within the data, which are discussed later in this chapter.

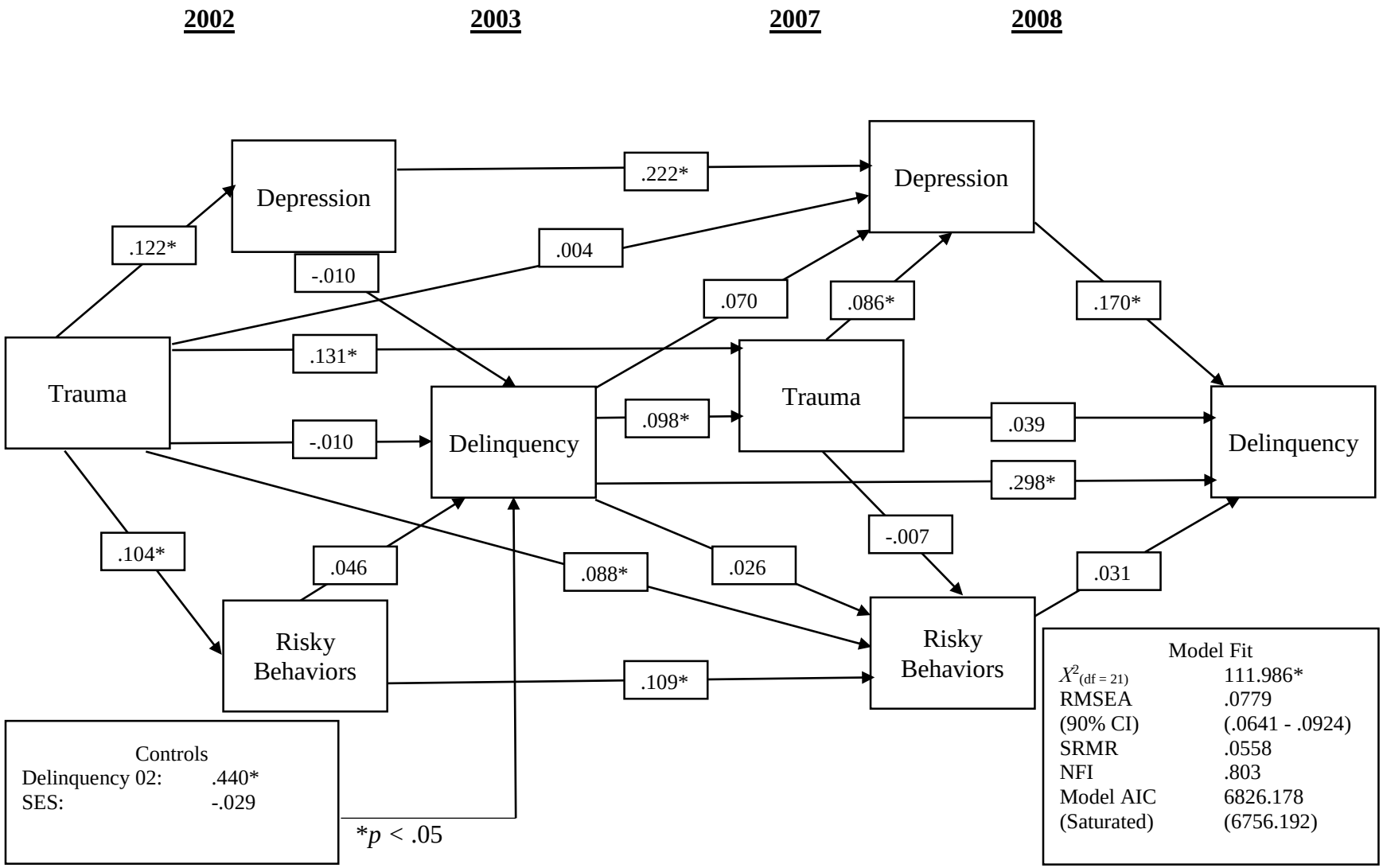

Figure 15: Male Supplemental Model 2002 to 2008 (*N* = 714)

Supplemental Analysis Female Model

The final supplemental model depicted in Figure 16 accounts for the differential effects of traumatic experiences on various endogenous factors for females. The results from the supplemental female model indicate partial support for the first hypothesis, which states that traumatic experiences will not have a direct effect on the delinquent/criminal outcomes of females. Traumatic events in 2002 demonstrate no significant effect on delinquency in 2003 consistent with this hypothesis; nevertheless, traumatic experiences in 2007 have a direct effect on criminality in 2008. The significant finding of traumatic experiences in 2007 on criminal behaviors in 2008 is similar to the results identified in the main analysis. The results may be linked to a differential opportunity structure of crime for females in young adulthood. Additionally, the direct effects of traumatic experiences in 2007 on criminal behaviors in 2008 may be the result of multiple traumatic experiences over the life course. Traumatic experiences in 2002 have a significant effect on traumatic experiences in 2007. The later traumatic events possibly create a compounding effect which increase the likelihood of criminal coping.

The second hypothesis that trauma will result in increased mental health and behavioral health symptoms for females is supported only for traumatic experiences in 2002. Both depression and risky health behaviors significantly increased as the result of traumatic exposure in 2002, but these effects were not observed in the 2007 trauma measure. The null finding in the later assessment of traumatic experiences is unexpected. Perhaps there are contextual factors in young adulthood for females that afford different opportunities to address traumatic experiences as opposed to earlier in adolescence.

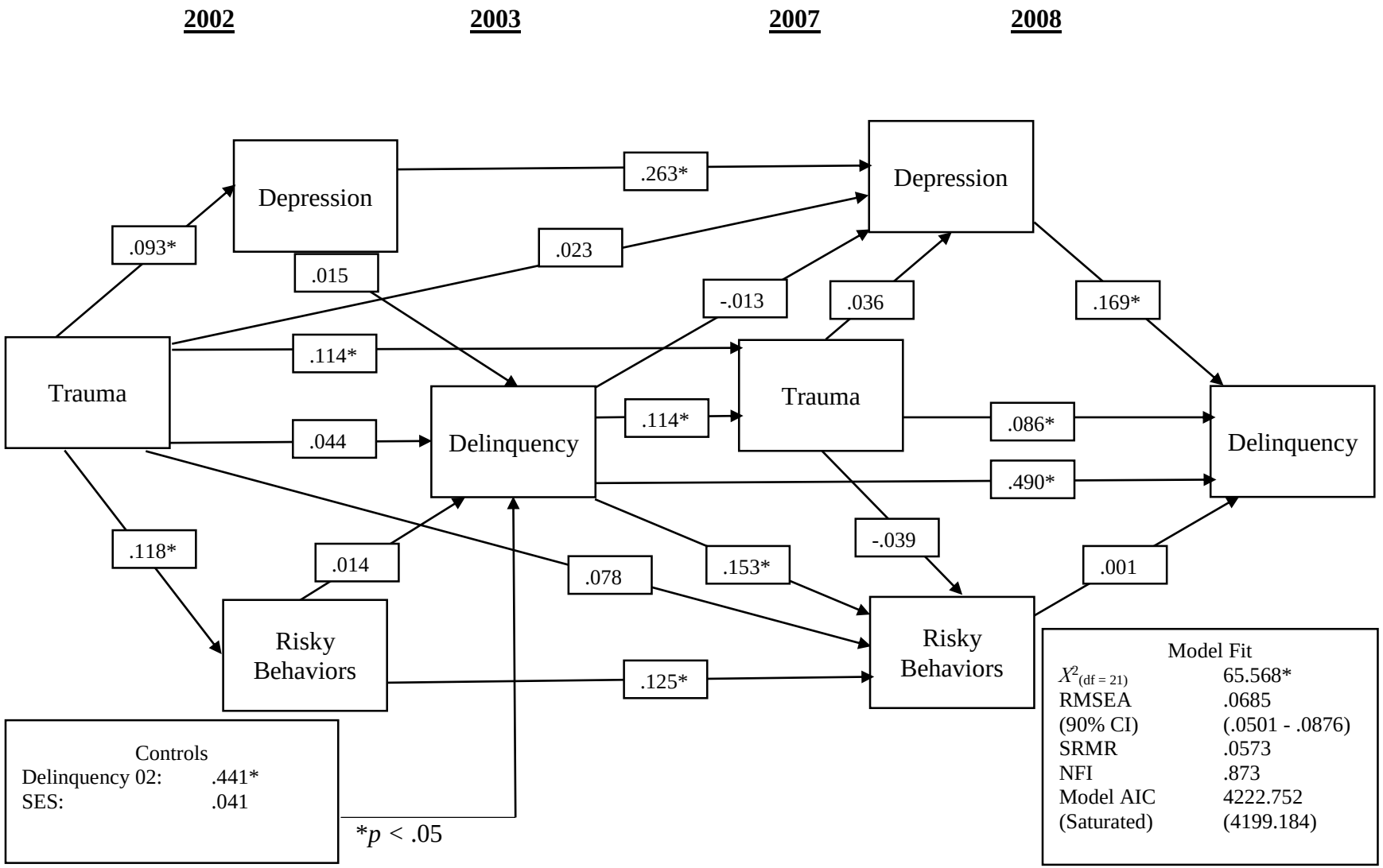

Figure 16: Female Supplemental Model 2002 to 2008: (*N* = 452)

The third hypothesis that mental health and behavioral health should not mediate the effect of traumatic events on delinquency/criminality for females shows full support. As noted above, the effect of traumatic experiences increase depression and risky health behaviors for females in adolescence, but neither of these indicators have a significant effect on delinquency in the year following. This finding is consistent with other studies that analyzed the mediating health effects of traumatic events on delinquency for females (Manasse & Ganem, 2009; Watts & McNulty, 2013). The finding supports the notion that females are less likely to use delinquency/criminality in order to cope with traumatic experiences.

Implications for Policy and Future Research

Overall, the results demonstrate a complex relationship underlying the effects of traumatic experiences on depression, risky health behaviors, and delinquency/criminality. Based on the analyses conducted in this dissertation, there are a number of important policy implications.

First and foremost, the full model in the main analysis shows that traumatic events have a significant effect on delinquent/criminal outcomes. As a result, it is in the collective interest of society to adequately address significant traumatic events for youth when they occur because these events can stimulate a path conducive to criminal lifestyles. Additionally, early exposure to traumatic events, if left unacknowledged, can be more costly not only to the individual suffering from various negative effects, but also to society which eventually bears the brunt of the long-term consequences (i.e., criminal activity).

Next, results from the main analysis show that traumatic experiences are significantly correlated with depression and risky health behaviors in the short-term. The short-term mental health and behavioral health factors are also related to increased levels of depression and risky health behaviors five years later. The long-term health effects suggest that many of the individuals who experienced trauma did not receive appropriate intervention over the course of a five-year period resulting in a sustained state of negative affect. Additionally, for each of the models in the main analysis, with the exception of depression in 2002 on delinquency in 2003 for females, the health outcomes that stemmed from traumatic experiences in adolescence resulted in significant effects on criminality in young adulthood. The most important implication of this finding is that proper intervention is necessary immediately after a traumatic experience occurs. A rapid response is imperative because the negative health outcomes that result from trauma can remain for an extended period of time. Additionally, letting negative outcomes of trauma go unacknowledged for a lengthy period of time is costly and may cause criminal involvement years after a traumatic incident transpires.

Finally, the supplemental analysis produced an important implication for future studies of traumatized individuals. The supplemental analysis relies on measures of trauma that differ from the trauma measures in the main analysis. The bereavement measures used in the trauma composites for the supplemental analysis indicate that a large portion of the respondents in the supplemental sample (over 54 percent) reported that they had experienced the loss of a close family member. This large portion could be responsible for the lack of significant findings in the various structural equation models that were estimated. The lack of significant findings in the supplemental models could

also mean that because such a large number of individuals reported bereavement, this traumatic experience could be more acceptable in society thus offering more suitable outlets to cope. Future studies that lack the appropriate relational information for bereavement but want to integrate this factor in collective trauma indices should perhaps consider this factor as a moderating variable in the analysis.

Limitations

There are a number of limitations for this project, many of which are related to the data used from the NLSY97. First, the NLSY97 used a weighted sampling procedure to achieve an over representative sample of Hispanic and non-Hispanic black youth. The samples analyzed in this dissertation do not necessarily reflect the general population. The results achieved, however, are useful because they are largely consistent with Agnew's (1992) GST which does not make race specific assertions about delinquent outcomes. Also, the NLSY97 recommends that complex analyses using NLSY97 data should not account for weighted differences in the sample (U.S. Bureau of Labor Statistics, 2014). Thus, the analyses in this dissertation did not account for the over-sampling of minorities based on NLSY97 recommendations and due to the fact that GST does not make race specific assertions about delinquent outcomes.

Another limitation for this dissertation comes from the main analysis. A number of cases were removed from the sample due to attrition that occurred either over time or between indicators in the NLSY97 (*see* Appendix A and B for a detailed description of attrition). It is important to note that there does not appear to be any systematic differences between those in the sample produced by NLSY97 from those that were excluded in the main analysis due to attrition. The largest amount of missing data in the

main analysis comes from the fact that the 1997 depression question was supposed to be administered to respondents 14 years of age or older. Due to this criteria, over 3,500 respondents were removed from the original NLSY97 sample (N = 8,984) to be used in the main analysis. The removal of respondents younger than the age 14 does not necessarily bias the results, and it only reduces the age range of the individuals analyzed in the main analysis.

The next limitation involves the supplemental analysis and the sample retained. The sample analyzed in the supplemental analysis systematically differs from the rest of the respondents due to the fact that beginning in the 2006 survey year, questions in the NLSY97 concerning general crime (i.e., property crime, other forms of crime, and/or assault) were administered to individuals only if they had previously been arrested. Thus, the overall sample achieved in the supplemental analysis only included individuals who had been arrested previously, and the respondents analyzed in the supplemental analysis systematically different from the other respondents in the NLSY97 (*see* Appendix C for questions in the NLSY97 and the universe that the questions were administered).

Two final limitations of this project are associated with the survey questions specifically and the interval of time between the question administration. The questions that assessed the concepts analyzed here (i.e., traumatization, behavioral health, mental health, and delinquency) do not assess the full breadth and depth of these concepts. This limitation is a likely a function of all surveys; thus, it is noted that these problems exist in the current analysis as well.

The interval of time between question administrations is a concern as well. A number of the questions that assessed traumatic events analyzed these factors over an

extended length of time (i.e., some questions involve retrospective self-reports of approximately 5 years). The extended recall period for these questions can inhibit accurate responses. Similar to question development, recall periods (i.e., telescoping) are a concern for all surveys.

CHAPTER VI

CONCLUSION

The current project examined the delinquent outcomes of youth exposed to various traumatic life events and assessed how mental health and behavioral outcomes mediated the relationship overtime and across gender. This project relied on propositions stated in Agnew's (1992, 2001) GST to examine the research hypotheses identified earlier in this dissertation. Data from the NLSY97 were used in both the main analysis and supplemental analysis, which integrated descriptive statistics and multiple structural equation models. A number of important findings were determined in the analyses, and a variety of conclusions can be taken from this project.

The main finding derived from this project is that traumatic life events have an effect on delinquent/criminal outcomes. The traumatic events observed had both direct and indirect effects on delinquent/criminal outcomes across all of the structural equation models estimated in this dissertation. The traumatic event/delinquent outcomes were observed even while controlling for other theoretically relevant predictors of crime (i.e., previous delinquent activity, delinquent peers, single parent households, and socioeconomic status). The direct effect of traumatic experiences on delinquency/criminality were observed for adolescents in the full model of the main analysis, and this relationship was observed for young adults in all but one of the structural equation models estimated. The aforementioned relationships are consistent with Agnew's (1992, 2001) GST which postulates that strain increases the likelihood of a delinquent/criminal response. Additionally, the results from the main and supplemental analyses are consistent with previous research that has found traumatic events influence

later delinquency (Bender et al., 2010; Carson et al., 2009; Maschi et al., 2008; Sigfusdottir et al., 2008; Watts & McNulty, 2013). Based on these conclusions, future research should account for the effects of multiple traumatic experiences when analyzing the delinquent/criminal outcomes of individuals. Likewise, future studies need to account for multiple traumatic events when attempting to make causal inferences pertaining to delinquent/criminal outcomes. A wealth of empirical evidence has come forward over the last two decades to suggest that traumatic events are relevant predictors of crime, and the findings determined here suggest no different.

The next important conclusion is associated with the deleterious mental health and behavioral health outcomes linked to traumatic life events. A range of health factors stemming from traumatic experiences have been identified as influential to delinquent/criminal outcomes (Aseltine et al., 2000; Bender et al., 2010; Brener et al., 1999; Day et al., 2013; Lin et al., 2011; Maschi et al., 2008; Sigfusdottir et al., 2008; Watts & McNulty, 2013; Widom & Kuhns, 1996). The results from the structural equation models in the main and supplemental analyses are consistent with previous research in regard to health outcomes. Given the high portion of the incarcerated population within the United States displaying symptoms of various mental disorders when compared to the general population (De Lisi & Conis, 2011), the findings from this dissertation should not be taken for granted. The effects of traumatic experiences extend well beyond any short-term consequences, as indicated in the main and supplemental analyses. Measures need to be developed to adequately address the deleterious health consequences before they manifest as delinquent/criminal behaviors later in life.

The next conclusion to be taken from the results identified here is associated with the gendered differences identified in the various structural equation models. The gendered models in the main and supplemental analyses show different outcomes for males and females and support previous research on gendered effects of traumatic experiences (Ford et al., 2013; Gange et al., 2005; Manasse & Ganem, 2009; Watts & McNulty, 2013; Widom et al., 2006). The findings here are consistent with the notion of gendered pathways to crime, and they highlight the importance of accounting for differences between females and males in future analyses of traumatic life event outcomes.

Finally, future research within the realm of victimology needs to account for the confounding effects of multiple traumas when making causal inferences. Although individual traumatic events can have both short- and long-term consequences for mental health, behavioral health, and delinquency/criminality, the confounding effects of multiple forms of trauma can have an enhanced effect. Likewise, there may be underlying traumas that are responsible for the observed outcomes that may not necessarily attributed to the traumatic experience being studied. This is compounded by the fact that individuals exposed to traumatic events are more likely to experience multiple forms of trauma and/or future traumas. Thus, isolating singular events may diminish the collective nature of multiple traumas and future research needs to account for this nuance.

Overall, the implications from the findings achieved in this dissertation suggest that traumatized persons need adequate intervention as quickly as possible. Additionally, the mental health, behavioral health, and delinquent/criminal outcomes should be attended to collectively. Proper intervention at an early age can inhibit both the short- and

long-term effects of trauma, and it is in society's best interest to address the range of problems sooner rather than pay for them later.

APPENDIX SECTION

APPENDIX A

Table 67: NLSY97 Interview and Attrition Totals 1998

Reason		Total
Completed in person	8386	
Total Interviewed		8386
Deceased	0	
Unlocatable	104	
Very Hostile Refusal	14	
Technical problem	6	
Language Barrier	1	
Respondent too Ill	6	
Respondent Unavailable Entire Field Period	42	
Refusal	335	
Hostile Refusal	79	
NIR/Deceased	7	
Other Non-interview	4	
Total Non-interviewed		598
Total		8984

Table 68: NLSY97 Interview and Attrition Totals 1999

Reason		Total
Completed in person	7584	
Completed by phone	398	
Comp in person/conv	111	
Comp by phone/conv	108	
Compy by proxy parent/R disabled	6	
Comp by proxy nonparent/R disabled	1	
Total Interviewed		8208
OOS/Deceased	7	
Unlocatable	193	
Very hostile refusal	32	
Technical problem	2	
Language barrier	0	
Respondent too ill	1	
Respondent unavailable entire field period	51	
Refusal	383	
Hostile refusal	95	
NIR/Deceased	9	
Other Non-interview	3	
Total Non-interviewed		776
Total		8984

Table 69: NLSY97 Interview and Attrition Totals 2000

Reason		Total
Completed in person	7288	
Completed by phone	473	
Comp in person/conv	179	
Comp by phone/conv	133	
Compy by proxy parent/R disabled	6	
Comp by proxy nonparent/R disabled	1	
Total Interviewed		8080
OOS/Deceased	10	
Unlocatable	173	
Very hostile refusal	55	
Technical problem	6	
Language barrier	1	
Respondent too ill	6	
Respondent unavailable entire field period	80	
Refusal	475	
Hostile refusal	82	
NIR/Deceased	5	
Other Non-interview	11	
Total Non-interviewed		904
Total		8984

Table 70: NLSY97 Interview and Attrition Totals 2001

Reason		Total
Completed in person	7132	
Completed by phone	505	
Comp in person/conv	135	
Comp by phone/conv	99	
Compy by proxy parent/R disabled	9	
Comp by proxy nonparent/R disabled	2	
Total Interviewed		7882
OOS/Deceased	15	
NIR Blocked	27	
Final Unlocatable	279	
Very hostile refusal	45	
Technical problem	0	
Language barrier	0	
Respondent too ill/handicapped	1	
Respondent unavailable entire field period	77	
Refusal	575	
Hostile refusal	71	
NIR/Deceased	10	
Other Non-interview	2	
Total Non-interviewed		1102
Total		8984

Table 71: NLSY97 Interview and Attrition Totals 2002

Reason		Total
Completed in person	6542	
Completed by phone	908	
Comp in person/conv	162	
Comp by phone/conv	276	
Compy by proxy parent/R disabled	7	
Comp by proxy nonparent/R disabled	1	
Total Interviewed		7896
OOS/Deceased	25	
NIR Blocked	48	
Unlocatable	253	
Very hostile refusal	20	
Technical problem	0	
R inaccessible - military	21	
Respondent too ill	4	
Respondent unavailable entire field period	4	
Refusal	621	
Hostile refusal	76	
NIR/Deceased	5	
Other Non-interview	11	
Total Non-interviewed		1088
Total		8984

Table 72: NLSY97 Interview and Attrition Totals 2003

Reason		Total
Completed in person	6779	
Completed by phone	723	
Comp in person/conv	83	
Comp by phone/conv	160	
Compy by proxy parent/R disabled	8	
Comp by proxy nonparent/R disabled	1	
Total Interviewed		7754
Prior Deceased	30	
Blocked		
NIR blocked	31	
Final unlocatable	256	
Very hostile refusal	32	
Gatekeeper Refusal	144	
R inaccessible - military	28	
Respondent too ill	2	
Respondent unavailable entire field period	26	
Refusal	601	
Hostile refusal	50	
OOS/Deceased	7	
Other Non-interview	23	
Total Non-interviewed		1230
Total		8984

Table 73: NLSY97 Interview and Attrition Totals 2004

Reason		Total
Completed in person	6491	
Completed by phone	698	
Comp in person/conv	138	
Comp by phone/conv	166	
Compy by proxy parent/R disabled	7	
Comp by proxy nonparent/R disabled	2	
Total Interviewed		7502
Prior Deceased	38	
Blocked		
NIR blocked	36	
Unlocatable	277	
Very hostile refusal	18	
Gatekeeper Refusal	158	
R inaccessible - military	62	
Respondent too ill	6	
Respondent unavailable entire field period	146	
Refusal	687	
Hostile refusal	35	
OOS/Deceased	7	
Other Non-interview	12	
Total Non-interviewed		1482
Total		8984

Table 74: NLSY97 Interview and Attrition Totals 2005

Reason		Total
Completed in person	6291	
Completed by phone	811	
Comp in person/conv	99	
Comp by phone/conv	130	
Compy by proxy parent/R disabled	6	
Comp by proxy nonparent/R disabled	1	
Total Interviewed		7338
Prior deceased blocked	44	
NIR blocked	55	
Unlocatable	418	
Very hostile refusal	11	
Gatekeeper refusal	148	
R inaccessible - military	51	
Respondent too ill	5	
Respondent unavailable entire field period	41	
Refusal	785	
Hostile refusal	55	
OOS/Deceased	15	
Other Non-interview	18	
Total Non-interviewed		1646
Total		8984

Table 75: NLSY97 Interview and Attrition Totals 2006

Reason		Total
Completed in person	6550	
Completed by phone	710	
Comp in person/conv	99	
Comp by phone/conv	117	
Compy by proxy parent/R disabled	7	
Comp by proxy nonparent/R disabled	1	
Comp in person/incarcerated	29	
Comp by phone/incarcerated	46	
Total Interviewed		7559
Prior deceased blocked	60	
NIR blocked	53	
Final unlocatable	191	
Very hostile refusal	18	
Gatekeeper Refusal	251	
R - inaccessible	86	
Respondent too ill/handicapped	7	
Respondent unavailable entire field period	0	
Refusal	670	
Hostile refusal	46	
Deceased	17	
Other Non-interview	26	
Total Non-interviewed		1425
Total		8984

Table 76: NLSY97 Interview and Attrition Totals 2007

Reason		Total
Completed in person	6396	
Completed by phone	791	
Comp in person/conv	63	
Comp by phone/conv	90	
Comp by proxy parent/R disabled	6	
Comp by proxy nonparent/R disabled	1	
Comp in person/incarcerated	27	
Comp by phone/incarcerated	41	
Interview Complete	3	
Total Interviewed		7418
Prior deceased blocked	77	
NIR blocked	109	
Final unlocatable	320	
Very hostile refusal	15	
Gatekeeper Refusal	143	
R - inaccessible	40	
Respondent too ill/handicapped	6	
Respondent inaccessible - prison	37	
Refusal	727	
Hostile refusal	43	
Deceased	13	
Other Non-interview	36	
Total Non-interviewed		1566
Total		8984

Table 77: NLSY97 Interview and Attrition Totals 2008

Reason		Total
Completed in person	6301	
Completed by phone	830	
Comp in person/conv	86	
Comp by phone/conv	170	
Compy by proxy parent/R disabled	8	
Comp by proxy nonparent/R disabled	1	
Comp in person/incarcerated	34	
Comp by phone/incarcerated	60	
Total Interviewed		7490
Prior deceased blocked	90	
NIR blocked	187	
Final unlocatable	274	
Very hostile refusal	13	
Gatekeeper Refusal	189	
Inaccessible - military	21	
Respondent too ill/handicapped	0	
Inaccessible - prison	75	
Refusal	567	
Hostile refusal	41	
Deceased	13	
Other Non-interview	24	
Total Non-interviewed		1494
Total		8984

APPENDIX B

Table 78: Missing Data 1997

Indicator	Total Missing
Trauma	
Bullying	151
Burglary	163
Vicarious Victimization	150
Mental Health	
Depression	3585
Risky Behaviors	
Tobacco	31
Alcohol	40
Sex	3692
Controls	
Delinquency	
Marijuana	41
Destroy property	27
Stole more than $50	28
Other property crimes	30
Assault	31
Delinquent peers	389
Live with parents	0
Household income ratio	2423

Table 79: Missing Data 1998

Indicator	Total Missing
Delinquency	
Marijuana	646
Destroy property	624
Stole more than $50	620
Other property crimes	621
Assault	620

Table 80: Missing Data 2002

Indicator	Total Missing
Trauma	
Bullying	2331
Burglary	2331
Vicarious Victimization	2330
Mental Health	
Depression	1118
Risky Behaviors	
Tobacco	1096
Alcohol	1102
Sex	1112

Table 81: Missing Data 2003

Indicator	Total Missing
Delinquency	
Marijuana	1270
Destroy property	1257
Stole more than $50	1255
Other property crimes	1256
Assault	1254

Table 82: Missing Data 2002

Indicator	Total
Trauma	
Violence	1098
Bereavement	1101
Fam. Jail	1096
Mental Health	
Depression	1118
Risky Behaviors	
Tobacco	1106
Alcohol	1118
Sex	1162
Controls	
Delinquency	
Marijuana	1133
Destroy property	1121
Stole more than $50	1120
Other property crimes	1123
Assault	1121
Household income ratio	3032

Table 83: Missing Data 2003

Indicator	Total
Delinquency	
Marijuana	1270
Destroy property	1257
Stole more than $50	1255
Other property crimes	1256
Assault	1254

Table 84: Missing Data 2007

Indicator	Total
Trauma	
Violence	1577
Bereavement	1590
Fam. Jail	1578

Table 85: Missing Data 2008

Indicator	Total
Mental Health	
Depression	1689
Risky Behaviors	
Tobacco	1604
Alcohol	1623
Sex	1846
Delinquency	
Marijuana	1602
Destroy property	6571
Stole more than $50	6567
Other property crimes	6576
Assault	6578

APPENDIX C

Table 86: Trauma Measures: NLSY97 (1997)

Before you turned age 12, did you ever have your house or apartment broken into?
UNIVERSE: All
1 YES
0 NO

Before you turned age 12, were you ever the victim of repeated bullying?
UNIVERSE: All
1 YES
0 NO

Before you turned age 12, did you ever see someone get shot or shot at with a gun?
UNIVERSE: All
1 YES
0 NO

Table 87: Trauma Measures: NLSY97 (1999 - 2002)

Between these ages, did you ever have your house or apartment broken into?
UNIVERSE: Respondent >= 18 at end of previous year prior to survey
1 YES
0 NO

Between the ages of 12 and 18, were you ever the victim of repeated bullying?
UNIVERSE: Respondent >= 18 at end of previous year prior to survey
1 YES
0 NO

Between the ages of 12 and 18, have you ever been shot at, or seen someone get shot or shot at with a gun?
UNIVERSE: Respondent >= 18 at end of previous year prior to survey
1 YES
0 NO

Table 88: Continuous Delinquency Measures: NLSY97 (1997)

On how many days have you used marijuana in the last 30 days?
UNIVERSE: All

How many times have you purposely damaged or destroyed property that did not belong to you in the last 12 months?
UNIVERSE: All

How many times have you stolen something from a store, person or house, or something that did not belong to you worth 50 dollars or more including stealing a car in the last 12 months?
UNIVERSE: All

How many times have you committed other property crimes in the last 12 months?
UNIVERSE: All

How many times have you attacked someone or have had a situation end up in a serious fight or assault of some kind in the last 12 months?
UNIVERSE: All

Table 89: Continuous Delinquency Measures: NLSY97 (1998)

On how many days have you used marijuana in the last 30 days?
UNIVERSE: All

You indicated earlier that you had purposely damaged or destroyed property that did not belong to you. How many times have you purposely damaged or destroyed property that did not belong to you since the last interview?
UNIVERSE: All

How many times have you stolen something from a store, person or house, or something that did not belong to you worth 50 dollars or more including stealing a car since the last interview on [date of last interview]?
UNIVERSE: All

You indicated earlier that you had committed other property crimes such as fencing, receiving, possessing or selling stolen property, or cheating someone by selling them something that was worthless or worth much less than what you said. How many times have you committed other property crimes since the last interview on [date of last interview]?
UNIVERSE: All

You indicated earlier that you attacked someone with the idea of seriously hurting them or have had a situation end up in a serious fight or assault of some kind. How many times have you attacked someone or have had a situation end up in a serious fight or assault of some kind since the last interview on [date of last interview]?
UNIVERSE: All

Table 90: Continuous Delinquency Measures: NLSY97 (1998)

On how many days have you used marijuana in the last 30 days?
UNIVERSE: All

How many times have you purposely damaged or destroyed property that did not belong to you since the last interview?
UNIVERSE: All

Since the last interview on [date of last interview], have you stolen something from a store, person or house, or something that did not belong to you worth 50 dollars or more including stealing a car?
UNIVERSE: All

Since the last interview on [date of last interview], have you committed other property crimes such as fencing, receiving, possessing or selling stolen property, or cheated someone by selling them something that was worthless or worth much less than what you said it was?
UNIVERSE: All

Since the last interview on [date of last interview], have you attacked someone with the idea of seriously hurting them or have had a situation end up in a serious fight or assault of some kind?
UNIVERSE: All

Table 91: Depression Measure: NLSY97 (1997)

You are unhappy, sad, or depressed.
UNIVERSE: Respondent >= 14 at end of previous year
0 NOT TRUE
1 SOMEWHAT/SOMETIMES TRUE
2 OFTEN TRUE

Table 92: Depression Measure: NLSY97 (2002)

How much of the time during the last month have you felt downhearted and blue?
UNIVERSE: All
1 All of the time
2 Most of the time
3 Some of the time
4 None of the time

Table 93: Tobacco Use, Alcohol Use, and Sexual Activity: NLSY97 (1997)

Tobacco Use

When you smoked a cigarette during the past 30 days, how many cigarettes did you usually smoke each day?

UNIVERSE: All

Alcohol Use

In the past 30 days, on the days you drank alcohol, about how many drinks did you usually have?

UNIVERSE: All

Sexual Activity

How many partners have you EVER had intercourse with? This includes any person you had intercourse with, even if it was only once, or if you did not know him or her well?

UNIVERSE: Respondent >= 14 at end of previous year

Table 94: Tobacco Use, Alcohol Use, and Sexual Activity: NLSY97 (2002)

Tobacco Use

When you smoked a cigarette during the past 30 days, how many cigarettes did you usually smoke each day?

UNIVERSE: All

Alcohol Use

In the past 30 days, on the days you drank alcohol, about how many drinks did you usually have?

UNIVERSE: All

Sexual Activity

How many partners have you EVER had intercourse with? This includes any person you had intercourse with, even if it was only once, or if you did not know him or her well.

UNIVERSE: All

Table 95: Control Variables: NLSY97 (1997)

PERCENT OF PEERS WHO SMOKE
... [smoke /smoked] cigarettes?
UNIVERSE: Respondent has been enrolled in regular school
1 Almost none (less than 10%)
2 About 25%
3 About half (50%)
4 About 75%
5 Almost all (more than 90%)

PERCENT OF PEERS WHO GET DRUNK 1+ TIMES A MONTH
... [get /got] drunk at least once a month?
UNIVERSE: Respondent has been enrolled in regular school
1 Almost none (less than 10%)
2 About 25%
3 About half (50%)
4 About 75%
5 Almost all (more than 90%)

PERCENT OF PEERS BELONG TO A GANG
... [belong /belonged] to a gang that does illegal activities?
UNIVERSE: Respondent has been enrolled in regular school
1 Almost none (less than 10%)
2 About 25%
3 About half (50%)
4 About 75%
5 Almost all (more than 90%)

PERCENT PEERS USE ILLEGAL DRUGS
... [have /ever] used marijuana, inhalants, or other drugs?
UNIVERSE: Respondent has been enrolled in regular school
1 Almost none (less than 10%)
2 About 25%
3 About half (50%)
4 About 75%
5 Almost all (more than 90%)

Table 95: ***Cont.***

YOUTH, DOES RESPONDENT LIVE WITH BOTH BIO PARENTS?
Universe: All
1 Yes 0 No

RATIO OF HOUSEHOLD INCOME TO POVERTY LEVEL
Universe: All

NLSY97 Questions for Supplemental Analysis

Table 96: Supplemental Trauma Measures: NLSY97 (2002)

In the last five years, have you been the victim of a violent crime, for example, physical or sexual assault, robbery, or arson?

UNIVERSE: All

1 YES

0 NO

In the last five years, that is since you were [R's age 5 yrs ago] years old, has a close relative of yours died?

UNIVERSE: All

1 YES

0 NO

In the last five years, has an adult member of your household (other than yourself) been sent to jail or prison?

UNIVERSE: All

1 YES

0 NO

Table 97: Supplemental Trauma Measures: NLSY97 (2007)

In the last five years, have you been the victim of a violent crime, for example, physical or sexual assault, robbery, or arson?

UNIVERSE: All

1 YES

0 NO

In the last five years, has a close relative of yours died?

UNIVERSE: All

1 YES

0 NO

In the last five years, has an adult member of your household (other than yourself) been sent to jail or prison?

UNIVERSE: All

1 YES

0 NO

Table 98: Supplemental Depression Measure: NLSY97 (2002)

How much of the time during the last month have you felt downhearted and blue?
UNIVERSE: All
1 All of the time
2 Most of the time
3 Some of the time
4 None of the time

Table 99: Supplemental Depression Measure: NLSY97 (2008)

How much of the time during the last month have you felt downhearted and blue?
UNIVERSE: All
1 All of the time
2 Most of the time
3 Some of the time
4 None of the time

Table 100: Supplemental Tobacco Use, Alcohol Use, and Sexual Activity Measures: NLSY97 (2002)

Tobacco Use

When you smoked a cigarette during the past 30 days, how many cigarettes did you usually smoke each day?

UNIVERSE: All

Alcohol Use

In the past 30 days, on the days you drank alcohol, about how many drinks did you usually have?

UNIVERSE: All

Sexual Activity

How many partners have you EVER had intercourse with? This includes any person you had intercourse with, even if it was only once, or if you did not know him or her well.

UNIVERSE: All

Table 101: Supplemental Tobacco Use, Alcohol Use, and Sexual Activity Measures: NLSY97 (2008)

Tobacco Use
When you smoked a cigarette during the past 30 days, how many cigarettes did you usually smoke each day?
UNIVERSE: All
Alcohol Use
In the past 30 days, on the days you drank alcohol, about how many drinks did you usually have?
UNIVERSE: All except prisoners in an insecure environment
Sexual Activity
How many PARTNERS have you had sexual intercourse with since the last interview on [date of last interview]?
UNIVERSE: All except prisoners in an insecure environment

Table 102: Supplemental Delinquency Measures: NLSY97 (2002)

Since the date of last interview, have you used marijuana, even if only once, for example: grass or pot?
UNIVERSE: All
1 YES
0 NO

Since the last interview on [date of last interview], have you purposely damaged or destroyed property that did not belong to you?
UNIVERSE: All
1 YES
0 NO

Since the last interview on [date of last interview], have you stolen something from a store, person or house, or something that did not belong to you worth 50 dollars or more including stealing a car?
UNIVERSE: All
1 YES
0 NO

Since the last interview on [date of last interview], have you committed other property crimes such as fencing, receiving, possessing or selling stolen property, or cheated someone by selling them something that was worthless or worth much less than what you said it was?
UNIVERSE: All
1 YES
0 NO

Since the last interview on [date of last interview], have you attacked someone with the idea of seriously hurting them or have had a situation end up in a serious fight or assault of some kind?
UNIVERSE: All
1 YES
0 NO

Table 103: Supplemental Delinquency Measures: NLSY97 (2003)

Since the date of last interview, have you used marijuana, even if only once, for example: grass or pot?
UNIVERSE: All
1 YES
0 NO

Since the last interview on [date of last interview], have you purposely damaged or destroyed property that did not belong to you?
UNIVERSE: All
1 YES
0 NO

Since the last interview on [date of last interview], have you stolen something from a store, person or house, or something that did not belong to you worth 50 dollars or more including stealing a car?
UNIVERSE: All
1 YES
0 NO

Since the last interview on [date of last interview], have you committed other property crimes such as fencing, receiving, possessing or selling stolen property, or cheated someone by selling them something that was worthless or worth much less than what you said it was?
UNIVERSE: All
1 YES
0 NO

Since the last interview on [date of last interview], have you attacked someone with the idea of seriously hurting them or have had a situation end up in a serious fight or assault of some kind?
UNIVERSE: All
1 YES
0 NO

Table 104: NLSY97 Delinquency Questions (2008): Supplemental Models

Since the date of last interview, have you used marijuana, even if only once, for example: grass or pot?

UNIVERSE: All except prisoners in an insecure environment

1 YES

0 NO

Since the last interview on [date of last interview], have you purposely damaged or destroyed property that did not belong to you?

UNIVERSE: All except prisoners in an insecure environment; been arrested since Round 4

1 YES

0 NO

Since the last interview on [date of last interview], have you stolen something from a store, person or house, or something that did not belong to you worth 50 dollars or more including stealing a car?

UNIVERSE: All except prisoners in an insecure environment; been arrested since Round 4

1 YES

0 NO

Since the last interview on [date of last interview], have you committed other property crimes such as fencing, receiving, possessing or selling stolen property, or cheated someone by selling them something that was worthless or worth much less than what you said it was?

UNIVERSE: All except prisoners in an insecure environment; been arrested since Round 4

1 YES

0 NO

Since the last interview on [date of last interview], have you attacked someone with the idea of seriously hurting them or have had a situation end up in a serious fight or assault of some kind?

UNIVERSE: All except prisoners in an insecure environment; been arrested since Round 4

1 YES

0 NO

Table 105: Control Variables: NLSY97 (1997)

RATIO OF HOUSEHOLD INCOME TO POVERTY LEVEL Universe: All

APPENDIX D

Table 106: 2002 Violent Victimization, Bereavement, Family Incarceration Cross Tabulations for Males

Trauma 02	**Violent Vic 02**		**Bereavement 02**		**Family Jail 02**	
	No	*Yes*	*No*	*Yes*	*No*	*Yes*
0	295	0	295	0	295	0
1	337	26	41	322	348	15
2	27	26	1	52	25	28
3	0	3	0	3	0	3
Total	659	55	337	377	668	46

Table 107: 2007 Violent Victimization, Bereavement, Family Incarceration Cross Tabulations for Males

Trauma 07	Violent Vic 07		Bereavement 07		Family Jail 07	
	No	*Yes*	*No*	*Yes*	*No*	*Yes*
0	294	0	294	0	294	0
1	348	22	40	330	352	18
2	23	23	0	46	23	23
3	0	4	0	4	0	4
Total	665	49	334	380	669	45

Table 108: 2002 Depression Frequencies for Supplemental Male Analysis

Depressed 2002	Frequency (%)
None of the time	233 (32.63)
Some of the time	387 (54.20)
Most of the time	63 (8.82)
All of the time	31 (4.34)

* *Mean* = 1.849; *Standard Deviation* = 0.752

Table 109: 2008 Depression Frequencies for Supplemental Male Analysis

Depressed 2008	Frequency (%)
None of the time	285 (39.92)
Some of the time	371 (51.96)
Most of the time	51 (7.14)
All of the time	7 (0.98)

* *Mean* = 1.692; *Standard Deviation* = 0.645

Table 110: 2002 Tobacco Use, Alcohol Use, and Sexual Activity for Supplemental Male Analysis

Number of Events	Frequency (%)
0	122 (17.09)
1-5	197 (27.59)
6-10	152 (21.29)
11-20	138 (19.33)
21-159	105 (14.71)

* *Mean* = 10.748; *Standard Deviation* = 13.692

Table 111: 2008 Tobacco Use, Alcohol Use, and Sexual Activity for Supplemental Male Analysis

Number of Events	Frequency (%)
0	2 (0.28)
1-5	231 (32.35)
6-10	154 (21.57)
11-20	166 (23.25)
21-1034	161 (22.55)

* *Mean* = 20.608; *Standard Deviation* = 81.030

Table 112: Delinquency Frequencies for Supplemental Male Model 2002, 2003, and 2008

Index Year		Total (%)
Delinquency 02		
0		365 (51.12)
1		252 (35.29)
2		63 (8.82)
3		24 (3.36)
4		7 (0.98)
5		3 (0.42)
Mean	0.691	
Standard Deviation	0.891	
Delinquency 03		
0		394 (55.18)
1		238 (33.33)
2		59 (8.26)
3		14 (1.96)
4		6 (0.84)
5		3 (0.42)
Mean	0.612	
Standard Deviation	0.840	
Delinquency 08		
0		473 (66.25)
1		215 (30.11)
2		22 (3.08)
3		3 (0.42)
4		1 (0.14)
5		
Mean	0.381	
Standard Deviation	0.583	

Table 113: Household Income/Poverty Ratio Frequencies for Supplemental Male Model

Inc/Pov Ratio		Total (%)
0		27 (3.78)
1-99		139 (19.47)
100-199		122 (17.09)
200-299		114 (15.97)
300-399		98 (13.73)
400-499		62 (8.68)
500-599		55 (7.70)
600-699		27 (3.78)
700-799		24 (3.36)
800-899		16 (2.24)
900-999		6 (0.84)
1000-		24 (3.36)
Mean	329.350	
Standard Deviation	306.082	

Table 114: 2002 Violent Victimization, Bereavement, Family Incarceration Cross Tabulations for Females

Trauma 02	Violent Vic 02		Bereavement 02		Family Jail 02	
	No	*Yes*	*No*	*Yes*	*No*	*Yes*
0	167	0	167	0	167	0
1	212	12	26	198	210	14
2	22	29	1	50	28	23
3	0	10	0	10	0	10
Total	401	51	194	258	405	47

Table 115: 2007 Violent Victimization, Bereavement, Family Incarceration Cross Tabulations for Females

Trauma 07	Violent Vic 07		Bereavement 07		Family Jail 07	
	No	*Yes*	*No*	*Yes*	*No*	*Yes*
0	193	0	193	0	193	0
1	204	18	32	190	208	14
2	15	16	0	31	16	15
3	0	6	0	6	0	6
Total	412	40	225	227	417	35

Table 116: 2002 Depression Frequencies for Supplemental Female Analysis

Depressed 2002	Frequency (%)
None of the time	65 (14.38)
Some of the time	271 (59.96)
Most of the time	89 (19.69)
All of the time	27 (5.97)

* *Mean* = 2.173; *Standard Deviation* = 0.742

Table 117: 2008 Depression Frequencies for Supplemental Female Analysis

Depressed 2008	Frequency (%)
None of the time	94 (20.80)
Some of the time	290 (64.16)
Most of the time	57 (12.61)
All of the time	11 (2.43)

* *Mean* = 1.967; *Standard Deviation* = 0.657

Table 118: 2002 Tobacco Use, Alcohol Use, and Sexual Activity for Supplemental Female Analysis

Number of Events	Frequency (%)
0	112 (24.78)
1-5	143 (31.64)
6-10	74 (16.37)
11-20	83 (18.36)
21-56	40 (8.85)

* *Mean* = 7.442; *Standard Deviation* = 8.583

Table 119: 2008 Tobacco Use, Alcohol Use, and Sexual Activity for Supplemental Female Analysis

Number of Events	Frequency (%)
0	0
1-5	218 (48.23)
6-10	90 (19.91)
11-20	83 (18.36)
21-903	61 (13.50)

* *Mean* = 13.210; *Standard Deviation* = 50.321

Table 120: Delinquency Frequencies for Supplemental Female Model 2002, 2003, and 2008

Index Year		Total (%)
Delinquency 02		
0		267 (59.07)
1		142 (31.42)
2		28 (6.19)
3		10 (2.21)
4		5 (1.11)
Mean	0.549	
Standard Deviation	0.799	
Delinquency 03		
0		294 (65.04)
1		127 (28.10)
2		23 (5.09)
3		5 (1.11)
4		2 (0.44)
5		1 (0.22)
Mean	0.445	
Standard Deviation	0.717	
Delinquency 08		
0		320 (70.80)
1		115 (25.44)
2		13 (2.88)
3		2 (0.44)
4		2 (0.44)
Mean	0.343	
Standard Deviation	0.603	

Table 121: Household Income/Poverty Ratio Frequencies for Supplemental Female Model

Inc/Pov Ratio		Total (%)
0		19 (4.20)
1-99		147 (32.52)
100-199		94 (20.80)
200-299		75 (16.59)
300-399		37 (8.19)
400-499		28 (6.19)
500-599		18 (3.98)
600-699		13 (2.88)
700-799		5 (1.11)
800-899		5 (1.11)
900-999		4 (0.88)
1000-		7 (1.55)
Mean	231.128	
Standard Deviation	251.791	

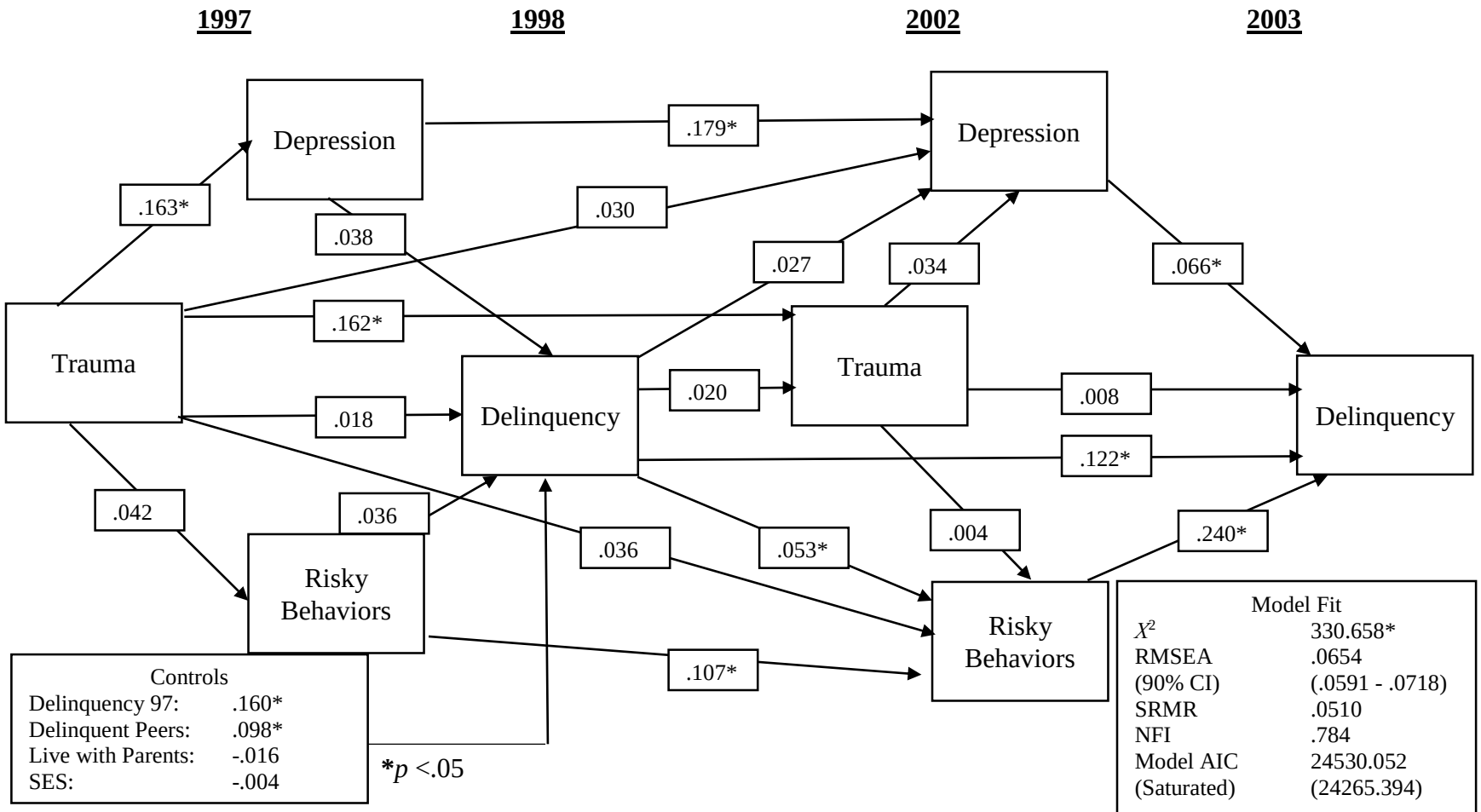

Figure 17: Full Bullying Model 1997 to 2003 (*N* = 2,112)

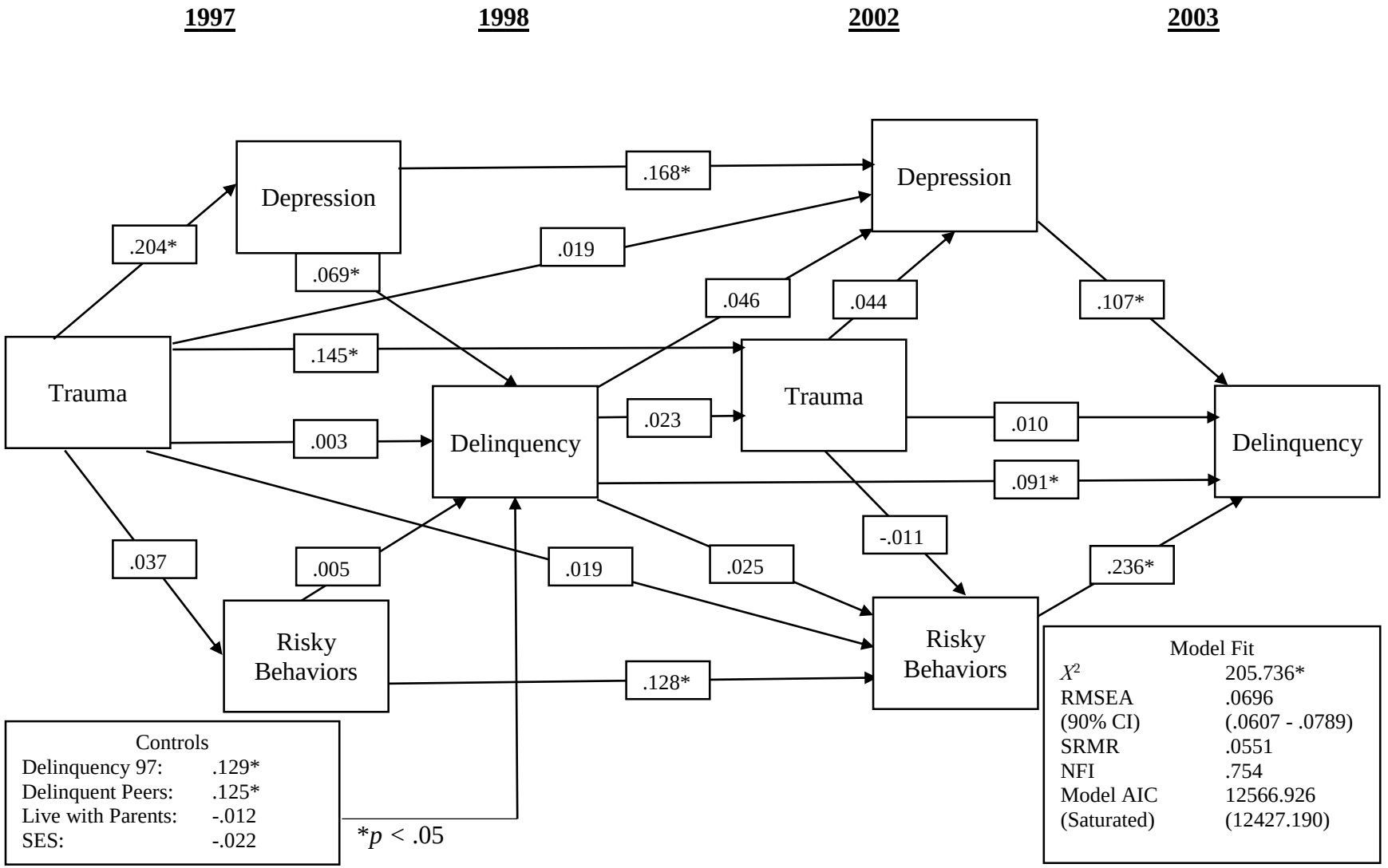

Figure 18: Male Bullying Model 1997 to 2003 (*N* = 1,080)

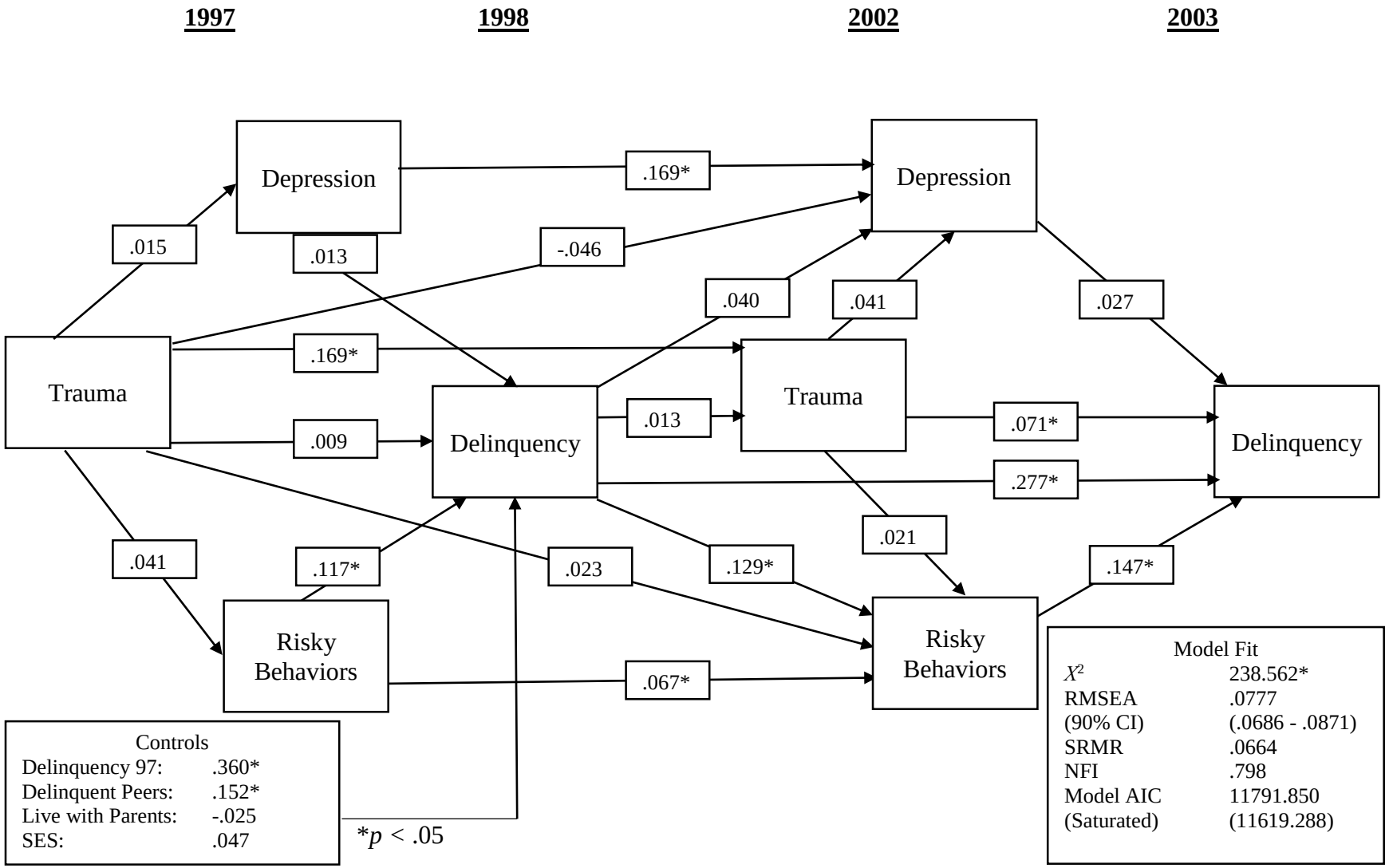

Figure 19: Female Bullying Model 1997 to 2003 (*N* = 1,032)

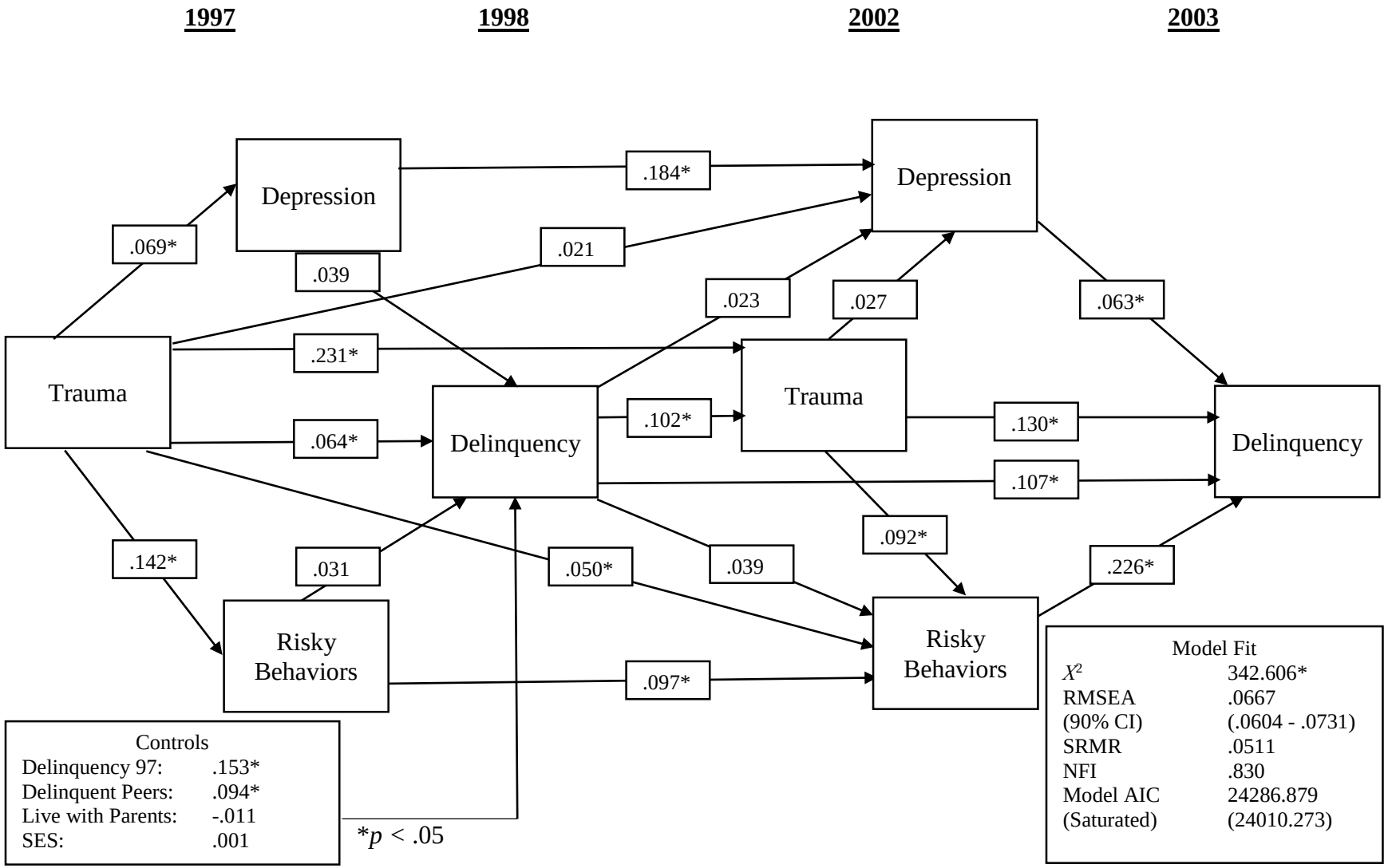

Figure 20: Full Vicarious Victimization Model 1997 to 2003 (*N* = 2,112)

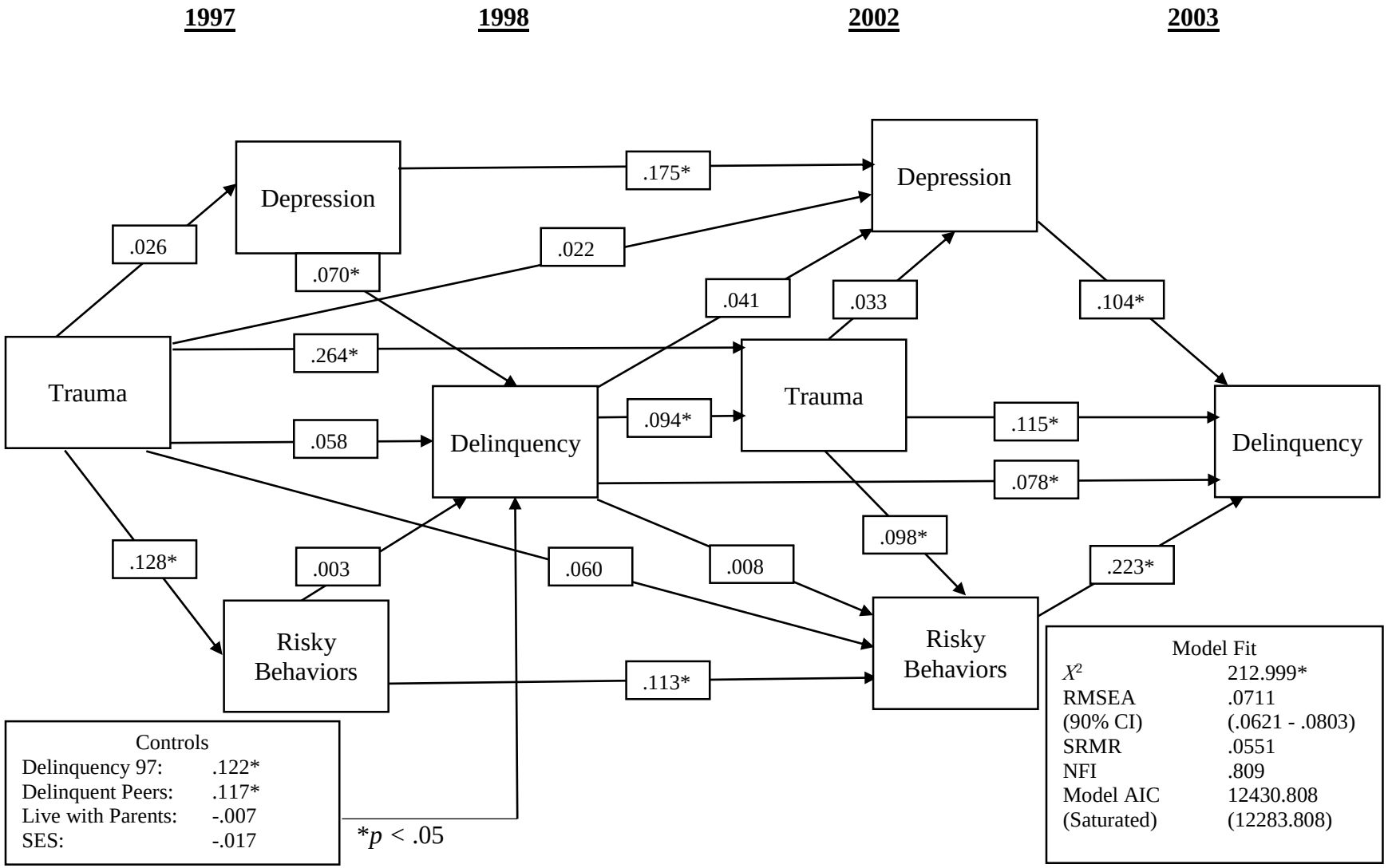

Figure 21: Male Vicarious Victimization Model 1997 to 2003 (*N* = 1,080)

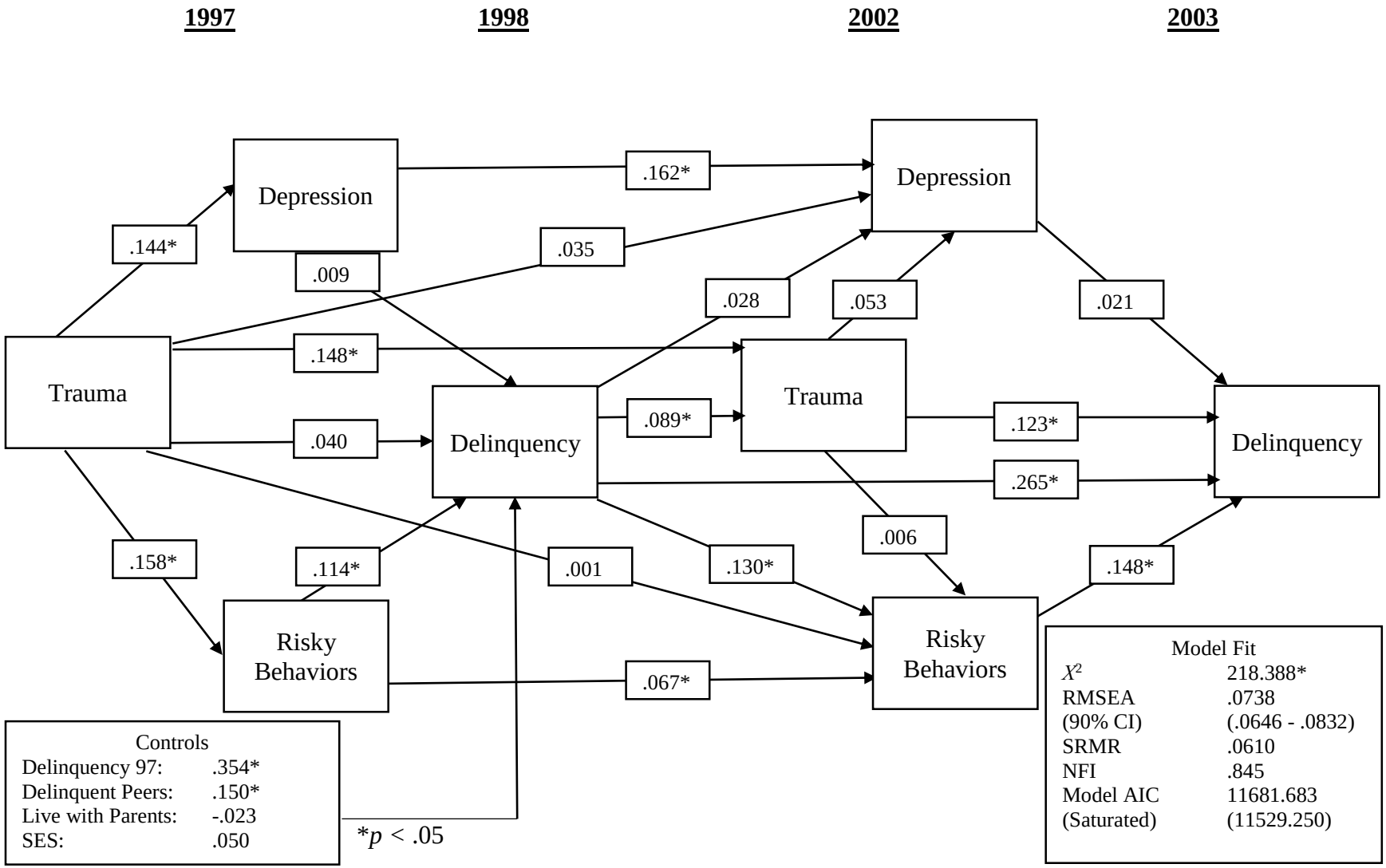

Figure 22: Female Vicarious Victimization Model 1997 to 2003 (*N* = 1,032)

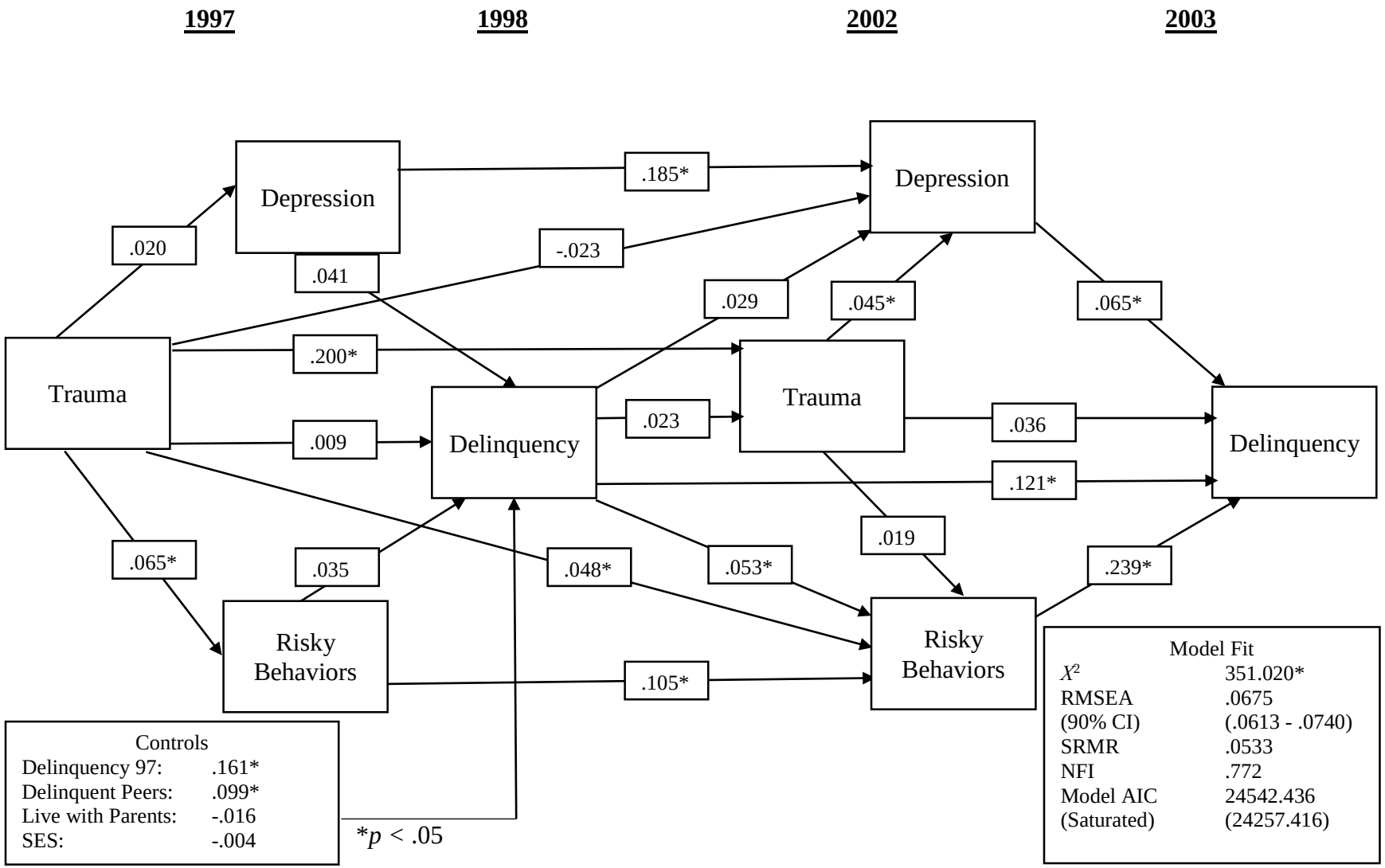

Figure 23: Full Burglary Model 1997 to 2003 (*N* = 2,112)

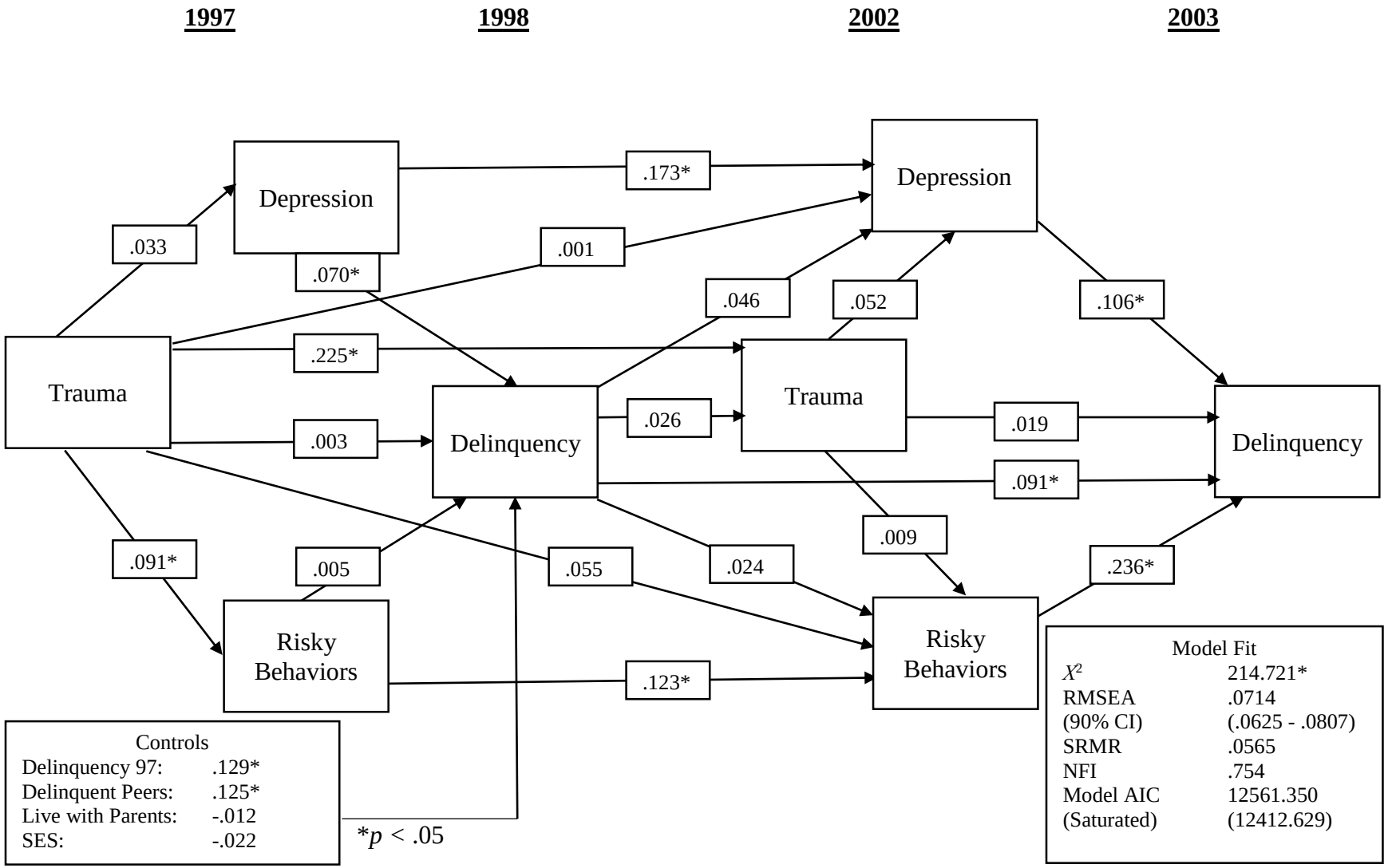

Figure 24: Male Burglary Model 1997 to 2003 (*N* = 1,080)

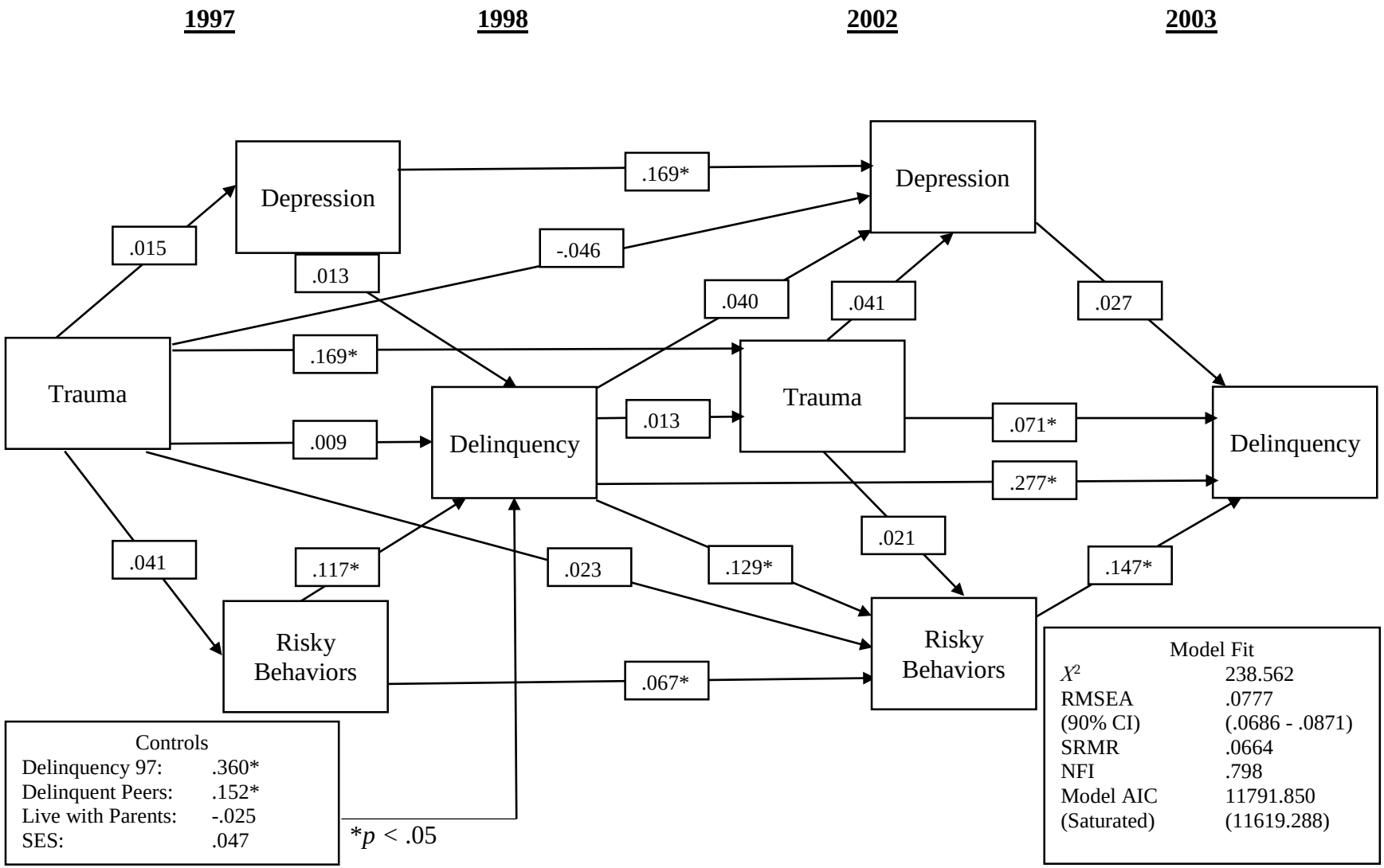

Figure 25: Female Burglary Model 1997 to 2003 (*N* = 1,032)

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