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DIRECT AND INDIRECT CONTROLS AS MEASURES OF ATTACHMENT: GENDER, DELINQUENCY, AND THE PARENTAL SOCIAL BOND

by

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A dissertation submitted in partial fulfillment of the requirements
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ABSTRACT

Research specific to gender and violent juvenile delinquency is sparse due to two factors: a substantially higher incidence of delinquent male violence and the cost associated with drawing adequate female samples is frequently prohibitive (Howell, 2003). Gender-differences are explored in a sample of arrested juveniles using an expanded measure of parental attachment [bond]. The dimensions of emotional attachment, supervision, and time-involvement with a self-reported caregiver are explored for between group differences and association with recognized risk factors for juvenile delinquency. Findings indicate that while statistically significant between-group differences are not found in the presentation of attachment, descriptive differences do exist. Females demonstrated a higher level of impairment in emotional attachment to a caregiver than their male counterparts; females arrested for a violent offense reported the highest level of problem in this area. Findings also indicate that the mechanism of attachment appears to function differently by gender group in terms of association with risk factors for delinquency. Time-involvement emerged as an important predictor for the full group and the female group, particularly in relationship with higher risk for antisocial peer involvement. Support for a gendered experience of parental attachment [social bond] is provided. Emotional attachment and time-involvement were found to be important predictors for the full group, while supervision was not indicated as important to any risk factor or to recidivism. The current research advances knowledge on gender-related differences within delinquency. Through enhancing the understanding of the complex gender-specific influences on juvenile crime, criminal justice and human service systems may better learn to address these needs thereby reducing both entrance rates into the juvenile justice system and recidivism.
I dedicate this dissertation to my parents. I owe this success, and so much more, to your unwavering love, support, and encouragement. You have built and sustained my faith in myself like no one else! My hope for all people, from childhood to adulthood, is the chance to experience the gift of nurturing, loving parents - beginning either from the first moments of life or in those inspirational caregivers that we find along life’s path.
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CHAPTER ONE: INTRODUCTION

The ongoing study of juvenile delinquency has led to a better understanding of the influences on juvenile offending; however a paucity of research specific to gender and delinquency remains. Family factors such as low supervision and impaired attachment are correlates of delinquency which may differ by gender (Wasserman, Miller, Pinner, & Jaramillo, 1996), particularly in terms of their effects on other risks associated with delinquency. The literature indicates juveniles’ experiences and involvement with antisocial peers (Wasserman et al., 2003), younger age at first offense (Loeber, Farrington, & Petechuk, 2003; Snyder, Espiritu, Huizinga, Loeber & Petechuk, 2003; Tolan, Gorman-Smith, & Loeber, 2000), substance use, mental health diagnosis (Potter & Jensen, 2003; Thornberry, Huizinga, & Loeber, 2004), and history of abuse or victimization (Loeber, Kalb, & Huizinga, 2001) as risk factors for delinquency.

No one area of risk can be said to be the cause of delinquency, instead it is the context and interrelationship of factors that leads to delinquency (Short & Hughes, 2008). The immediate system, particularly the family, is the context in which individual risks develop and societal risks manifest. Family-level risk factors such as poor supervision, parental neglect and abuse, insecure or low attachment, and broken family structure are of particular concern (Thornberry et al. 2004; Shoemaker, 2009). The existence of family-level risk factors places juveniles at further risk for the development of anti-social peer attachments or school influences within their immediate system (Ingram, Patchin, Huebner, McCluskey, & Bynum, 2007; Warr, 2005). The strong influence of family factors upon other delinquency risk factors has been demonstrated.
While the risk factors for delinquency are well documented, the largest amount of this research has been conducted within the male juvenile population (Loeber, et al. 2003; Quinsey, Skilling, Lalumiere, & Craig, 2004; Tatem-Kelley, Huizinga, Thornberry, & Loeber, 1997; Thornberry et al. 2004; Zingraff, Leiter, Myers, & Johnson, 1993). The literature on family factors specific to gender is limited by 1) a low number of studies focused on gender differences and 2) a low number of studies containing adequate numbers of female participants and 3) a failure to measure multiple indicators of family influence. According to Howell (2003) research on juvenile delinquency specific to female delinquents and gender-related differences is sparse due to two factors: the substantially higher incidence of delinquent male violence and offending impedes sampling and the cost associated with drawing adequate samples is usually prohibitive. The paucity of research in this area continues to be emphasized by many researchers (Belknap & Holsinger, 2006; Johansson & Kempf-Leonard, 2009; Wolf & Kempf-Leonard, 2009).

As female delinquency has increased in past decades so too has research and policy commitment to understanding female delinquency. However a paucity of research persists leaving significant gaps in the understanding of possible gender-different family level influences as a mechanism of delinquency. This study will contribute to the delinquency literature base through the examination of direct and indirect controls (e.g. parental supervision and parental time-involvement as direct controls; emotional attachment to a parent as indirect) specific to gender in a delinquency sample. This study is primarily interested in answering the overarching question: Are there differences in the delinquency population, specific to gender, in direct (supervision and time involvement) and indirect (emotional attachment) parental attachment controls?
Research elaborating on the differences of gender remains the clandestine area of few researchers. As such research that obtains adequate proportions of female participants remains sparse; gender differences remain indistinct. One only has to look at offense frequencies to get a sense of why research trends around male populations. In 2008 juvenile males accounted for close to 70% of all juvenile arrests (Office of Juvenile Justice and Delinquency Prevention (OJJDP), 2009). However while the number of male offenders is consistently larger than the number of female offenders, the rate of growth in juvenile female offending started to outpace the rate of growth in male juvenile offending beginning in the mid 1990's (Poe-Yamagata & Butts, 1996). Since 1983 the female arrest rate increased by 72 percent as compared to the male increase of 30 percent and then declined at a much smaller rate than the male rate (24% vs. 36%) (OJJDP, 2009). According to Knoll and Sickmund (2010) the female proportion of the delinquency case load rose from 19 percent in 1985 to 27 percent in 2007. Recent data indicates that this trend continues today (OJJDP, 2010; Zahn et al., 2010).

The theoretical framework for the current research draws from social control and attachment theories as these theories are complementary within the context of family level social bonding. The application of both theoretical frames is consistent with a social work perspective as juveniles are considered to be influenced by social bonds at multiple systems levels (e.g. individual, immediate and societal). The strength of a juvenile’s social bonds, particularly attachment to a parent, may influence his or her propensity for delinquent acts (Hirschi, 1969). Within the literature efforts to measure parental attachment frequently neglect to include measures of both direct and indirect controls. The current study operationalizes parental attachment using both direct and indirect control measures. Such an approach is emphasized by
Heimer and DeCoster (1999), as a means of accounting for gender difference; in which direct controls influence male delinquency and indirect controls better explain female delinquency. In the current study, as informed by social control and attachment theories, parental control is measured through parental emotional attachment (indirect control), parental supervision (direct control), and positive time involvement (direct control). This researcher was able to identify only one recent study in which attachment was examined, by distinct gender group, through three measures of the parental social bond; including direct and indirect controls. Worthen (2011) identifies emotional attachment, time spent with parents, and parental monitoring as three elements of the parental bond most germane to delinquency involvement. This example of research is an important step in expanding the measurement of attachment towards a gender-different understanding of attachment. The current study harnesses many of the same conceptions towards such an increased understanding.

**Background and Significance**

The well-known decline in the crime rate in the United States, beginning in the mid 1990’s was in part due to a large drop in the juvenile crime rate (Blumstein & Wallman, 2006). Immediately preceding the 1990’s decline in crime a 49 percent increase in the arrest of juveniles for violent offenses was seen between 1988 and 1997 (Reppucci, Fried, & Schmidt in Corrado, Roesch, Hart, & Gierowski, 2002). Since the 1990’s the arrest rate of juveniles for violent crime has maintained a rate lower than the mid 1990's peak (Short & Hughes, 2008). Snyder (2004)
reported a 31 percent decrease between 1994 and 2004 in the number of juvenile arrests for violent offenses (violent crime index).

While the overall crime rate has decreased over the past two decades, during this same period, the incidence of juvenile female arrests has increased or has been shown to decrease at a slower rate than that for juvenile males (Palermo, 2009). The decline in the overall juvenile arrest rate is not observed in the arrest rate of female juveniles, in part due to an increase in juvenile female violent crime (Jensen, Potter, & Howard, 2001). While males comprise a much larger percentage of the juvenile arrest rate, female arrest rates for both property and person crimes, have increased disproportionately or decreased at a rate slower than that of their male counterparts (Short & Hughes, 2008). The Federal Bureau of Investigation (2003) reports that between 1992 and 2003 arrests of male juveniles decreased by 16.3 percent while arrests for female juveniles increased by 6.4 percent. Snyder (2004) points to a female juvenile arrest rate that is contrary to the decreases seen in the male population in both the violent crime index and property crime indices between 1995 and 2004. While the male juvenile arrest rate within the violent crime index fell 35 percent between these two years the female arrest rate fell only 11 percent, and has demonstrated a trending upwards.

The growth trend is also seen in the increasing rate of juvenile girls entering the juvenile court system, which according to Snyder and Sickmund (2006) increased by 92 percent between 1985 and 2002, while for males this same variable increased by only 29 percent during the same time period. According to the same report by Snyder and Sickmund between the years 1985 and 2002 juvenile female robbery cases increased 18 percent while male cases decreased by 16 percent and in the charging category of aggravated assault female cases increased by 84 percent
while male cases increased 20 percent. Beginning in the late 1990’s the overall number of juvenile court cases steadied. This gradual steadying is attributed to the slower rate increases, and rate decreases, observed in male court cases (Knoll & Sickmund, 2010). The proportion of female juvenile cases handled by the courts has increased from 19 percent in 1985 to 27 percent in 2007, with the proportion of female person-on-person crimes (violent) at 30 percent (Knoll & Sickmund, 2010). The steady increase in female juvenile crime, and especially violent crime, underlines the need for ongoing research as to the differential influence of delinquency correlates.

Identifying a causal reason for the increase in the rate of female juvenile offending is beyond the scope of this study; however the continued growth of the female delinquency population points to a lack of understanding of the mechanisms behind gender-different risk factors for delinquency (Zahn et al., 2010). Led by seminal findings in the literature and trends in the field of juvenile justice a call has been made to increase the understanding of gender-different influences and needs in the hopes of bettering prevention, programming, and services for female offenders (American Corrections Association, 2006; Coll, Miller, Fields, & Mathews, 1997; Schram, Koons-Witt, & Morash, 2004). By enhancing our understanding of delinquency, specific to gender, both criminal justice and human service systems may learn to better address needs thus reducing rates of offending for both juvenile and ultimately adult populations.
Purpose

The purpose of this study is to examine gender differences in parental attachment through an exploration of direct and indirect controls [emotional attachment, supervision, and time-involvement with a parent] within a sample of juvenile defendants. A secondary purpose is to examine, by gender group, which factors of parental-level direct and indirect controls [emotional attachment, supervision, time-involvement] are associated with mental health, substance use, antisocial peer involvement, early age at first offense, and recidivism within six months of the eligible offense.

Specific aims for the research include:

**Aim 1:** To describe, by gender group, emotional attachment, supervision, and time involvement in a sample of juvenile defendants.

**Aim 2:** To identify gender group differences in emotional attachment, supervision, and time-involvement in a sample of juvenile defendants.

**Aim 3:** To evaluate, by gender group, which factors [emotional attachment, supervision, time-involvement] are associated with mental health, substance use, antisocial peer involvement, early age at first offense, and recidivism.

The study uses a retrospective, comparative approach, combining secondary and primary data collection. Surveys were administered to 59 juveniles charged with either a non-violent or violent crime. The research sample was drawn from all 2009 juvenile cases sent to the Office of the State Attorney for Orange and Osceola Counties for review for prosecution in the year 2009. The population of interest includes both male and female juvenile defendants charged with either a violent or non-violent offense.
CHAPTER TWO: THEORETICAL FRAMEWORK

The theoretical framework chosen for the current research draws from both social control and attachment theories to provide a structure for understanding attachment as a contextual risk factor for delinquency. The current research operationalizes parental attachment in the context of attachment theory while incorporating direct control elements of attachment as measured in social control. Attachment, as conceived within both social control and attachment theories, may be defined as an emotional closeness and demonstration of reciprocal concern within interpersonal relationships that exerts pressure to engage in pro-social rather than antisocial behaviors. Emphasized in this definition is the importance of a strong emotional bond between a parent and juvenile as measured with other indicators such as supervision or spending time together; as such indicators show a demonstration of reciprocal concern. As we will see in the following discussion, this range of indicators accounts for both the direct and indirect controls of the social bond.

Social control theory (Hirschi, 1969; Nye, 1958) posits that strong attachment between a juvenile and a parent produces a pro-social bond leading to commitment, belief, and self-control thereby decreasing antisocial behavior. Attachment, or social bonding, is inherent to the mechanism of social control, as it is to an individual’s healthy development. Attachment and social control theories converge via the importance placed by both on the influential role of attachment between a parent and child [juvenile]. The parallel between attachment and social control theory is evident in both Hirschi and Nye’s conception of attachment as an indirect control via emotional reciprocity.
Criticisms of social control theory, specific to gender, include the overrepresentation of male only or male dominate samples and a failure to fully measure the elements of social bonding for both genders. Such limitations indicate an ongoing need to further operationalize elements of social control for female populations. Emotional attachment in particular is stressed as an element of social bonding that is more distinctively important to the female experience of development and delinquency. Gilligan (1982) has stressed the importance of attachment in interpersonal relationships as a key factor in female’s moral and social development. Gilligan stresses the differential impact that relationships and attachment have on males and females adding strength to the current consideration of such differences within the juvenile delinquency population. Indeed other researchers have echoed Gilligan’s early claim (Belknap, & Holsinger, 2006; Heimer & Decoster, 1999; Huebner & Betts, 2002; Laundra, Kiger, & Bahr, 2002, Ma & Huebner, 2008), furthering support for a hypothesis of gender-difference in the presentation of attachment and influence of attachment.

Evidence that gender differentially mediates social bonding suggests a gendered application of social control to delinquency and brings into question the applicability of social control to female populations (Heimer & Decoster, 1999; Erickson, Crosnoe, & Dornbusch, 2000; Huebner & Betts, 2002). However other research indicates little difference in attachment, suggesting that social bonding may be measured and applied equally across male and female populations (Canter, 1982; Chapple, McQuillian, & Berdahl, 2005; Liu & Kaplan, 1999; Smith & Paternoster, 1987). The inconsistency among research findings is at the heart of continued research examining social bonding, across gender, in the delinquency population.
Social Control Theory

While numerous theories expound upon the pathways to juvenile delinquency social control theory is among the most influential (Zembrowski, 2011) and provides an appropriate and extensively tested model for understanding the impact of social bonds on a juvenile’s behavior. Research using social control theory as a theoretical framework to study juvenile delinquency is extensive and has generally been applied to male only samples or has not examined gender as a separate construct, either through sampling or statistical methods. It is important to note that, given this scarcity, the number of studies including adequate samples of females has grown in the last two decades (e.g. Booth, Farrell, & Varano, 2008; Huebner & Betts, 2002; Chapple et al., 2005; Worthen, 2011).

Social control theorists point to the importance of social controls that inherently exist in our social relationships with family, peers, school, and the larger community. Social control theorists are interested in understanding the protective factors that keep some individuals from committing crimes. This is a very different approach from social learning or differential association perspectives, in which it is assumed that individuals gain the potential to commit crimes based upon the context of social learning. Social control assumes that every individual person has the potential to commit crime and it is through protective factors, found primarily in the immediate system, that some individuals avoid delinquency and criminality.

Social control theory has deep roots, harkening back as far as Durkheim’s anomie theory, in which the dramatic urban social changes being observed were theorized to be the result of related disorganization and the collapse of social bonds. Later social control theorists such as Nye (1958) and Hirschi (1969) were surely influenced by both Durkheim’s collapse of social
bonds and the focus on the socialization of self, purported through thinkers within the Chicago School (Lilly, Cullen, & Ball, 1995). At the time Nye conceptualized his ideas of the “family focused” theory of social controls, many of the great theorists were under the influence of the Chicago School which was increasingly recognizing the importance of social disorganization as a source of family break down and individual antisocial behavior. This led Nye to consider the family as the most important aspect of an individual’s social control, or in other words he saw the family as the structure hindering individuals’ development of delinquency and criminality. The family as a social structure was viewed as producing modes of social control, including direct controls, indirect controls, and internal controls (Akers, 2000). Direct controls include punishment, rewards for behavior, and supervision. Indirect control refers to the direct influence of the relationship between a juvenile and caregivers in which the juvenile is compelled to refrain from certain acts or behaviors which might cause family members shame. Internal control indicates a sense of guilt which prevents potential courses of action. For Nye, while other social institutions were viewed as exerting the same modes of social control, it was the family that maintained the greatest influence.

Following Nye, and other social control theorists, Hirschi (1969) emerged as the foremost social control theorist and remains so today. Hirsch maintains the position of his former control theorists, that it is an individual’s weakened bonds to societal institutions that create the risk for deviance. Unlike Nye, Hirschi was interested in the influence of a range of social institutions and viewed social bonding with each institution as important. Hirschi posits that social bonding leads to the internalization of social norms that in turn influence and limit an individual’s chosen behaviors. Strong social bonds provide protection against antisocial influences and result in
fewer anti-social behaviors, whereas delinquent acts result when an individual’s bond to systems within society is weak or broken (Hirschi, 1969). For Hirschi the strength of an individual’s social bonds is demonstrated through four elements: 1) attachment to others, 2) commitment, 3) involvement, and 4) belief. Attachment refers to the availability, emotional closeness, and reciprocity between a child and parent, or peers. This model suggests that the stronger a juvenile’s attachment to a parent the less likely that juvenile is to engage in risky and delinquent behaviors. Attachment serves as a deterrent and protective factor. Involvement is the level of interaction an adolescent has with appropriate social norms including parents, peers and activities. Commitment refers to the level to which a juvenile demonstrates through behavior an internalization and personal obligation to upholding dominate pro-social norms. Belief refers to the internalization of pro-social norms by the youth.

The parental social bond, or parental attachment, is the element of social control theory of greatest interest to the current study. Social control theory hypothesizes that it is through attachment (social bond) that an individual develops commitment to and belief in pro-social norms which are then subsequently acted upon leading to behaviors that are pro-social. In the absence of adequate attachment [social bonding] to family pro-social commitment, involvement, and belief may not occur. Attachment to a parent encompasses such latent affective elements as emotional closeness, emotional reciprocity, and perceived parental support to an attachment figure as designated by a juvenile, while measures such as supervision and time-involvement measure the more observable aspects of attachment such as the commitment of a parent to the juvenile. Hirschi’s (1969) initial conception of parental attachment left little room for direct controls; instead the attachment construct is comprised of indirect controls including virtual
supervision, intimacy of communication, and affectional identification (p. 91). In virtual supervision Hirschi contends that it is important for the juvenile to view the parent as “psychologically present when temptation to commit a crime appears” (p. 88). Stated another way a juvenile who places importance on his or her parent’s expectations and not wanting to disappoint the parent will consider such expectations and rules even in the physical absence of the parent. In Hirschi’s seminal work, virtual supervision was measured through several indirect controls and two items measuring direct supervision (direct control) indicating that Hirschi identified virtual supervision as closely related with direct supervision. Intimacy of communication refers to a juvenile “sharing his [or her] mental life” with his or her parent (p. 90). The more likely a juvenile is to share about his or her activities and seek parental opinion the less likely that juvenile is to be involved in delinquency. Affectional identification, or the love and respect a juvenile feels towards a parent, is that element undoubtedly identified when considering attachment from both social control and attachment perspectives, in such that Hirschi noted that this dimension is both easy and difficult to measure given the ubiquity of possible elements of the dimension. While Hirschi felt the most appropriate measure of affectional identification was the juvenile’s desire to be the kind of person the parent is, other researchers have used measures such as perceived parental availability, statement of caring, or a juvenile’s desire to assist the parent.

The literature related to social control and delinquency measures the social bond of parental attachment through direct and indirect controls. The interaction of controls creates the social bond necessary for pro-social behavior. While Hirschi’s (1969) parental social bond initially left little room for direct controls, he later joined previous social control theorists in
identifying a role for both direct and indirect controls within the social bond. Hirschi recognizes in his 1983 *Crime and the Family* essay, that parental supervision is derivative of the affection a parent feels towards a child and plays an important role in the social bond. Both Hirschi and Nye agree that there is interaction between direct and indirect controls; indicating that direct controls serve to better inhibit delinquency in juveniles who are more strongly attached to parents as measured by indirect controls.

**Limitations of Social Control**

A significant limitation of social control theory is the primary assumption that attachment and bonding occur only with pro-social parents. Hirschi (1969) considers this limitation in the context of cultural deviance theory stating: “the values of many parents (largely in the lower class)……are at least conducive to criminality” (p. 96). This is not to say that Hirschi’s notion of the lower class was that of a class inherently engaged in criminal overtures. Instead, in his view, individuals in the lower class by-and-large are engaged in delinquency because of a desire to obtain that which is valued by virtue of the middle and upper classes by means viewed as illegitimate by such classes. Hirschi identifies that it is this desire to gain that which is convincingly beyond reach that results in delinquency; through the acceptance of actions which are contrary to mainstream middle and upper class values. Hirschi notes, “since delinquency ‘derives’ from a positive effort to achieve what is valued within [the lower class] tradition, and to conform to its explicit and implicit norms, attachment to members of the lower class culture should foster delinquency, and lack of attachment might even foster conformity to middle class
norms, that is non-delinquency” (p. 96).

The social development model draws further attention to this limitation. The social development model draws from both social control and social learning theories, recognizing that behaviors including delinquency are learned in interaction with the social environment. Through social interactions, individuals learn behaviors and may assimilate criminal values and behaviors (Sutherland & Cressey, 1974). In other words individuals learn criminal behavior just like other behaviors. From this perspective, individuals residing in high crime areas or among other criminal social influences are at a greater risk for developing criminal behavior, as the opportunity to observe and learn such behavior is increased through the environment. The social development model hypothesizes that a juvenile will adopt and act upon the social norms and beliefs of those to whom they socially bond (Thornberry, 2003). In Hirschi’s (1969) conception juveniles may socially bond with conventional caregivers whose values are largely pro-social or unconventional caregivers whose values “while not explicitly criminal, are at least conducive to criminality” (p. 94). In other words the parent with whom a juvenile develops social bonds may themselves not maintain and encourage pro-social norms, thus it cannot be assumed that attachment will result in only pro-social outcomes for the juvenile. Instead negative or antisocial outcomes may come from the social bonding that occurs with parents. It has been found that strong bonding may occur with family members or caregivers whom value and instill norms of violence or criminality (Catalono, Oxford, Harachi, Abbott, & Haggerty, 1999; Kosterman, Graham, Hawkins, Catalano, & Herrenkohl, 2001; Herrenkohl, Maguin, Hill, Hawkins, & Abbott, 2000). While it was not possible to measure an attachment figure's level of adherence to pro-social norms, this limitation is recognized in the current study and identified as an area for
Another limitation to understanding the full influence of attachment in the delinquency population is the developmental nature of attachment and the discrete nature of delinquency. Researchers typically do not have access to those who commit delinquent acts prior to the delinquent act itself. Sokol-Katz and Dunham (1997) emphasize Hirschi’s (1969) contention that interest in juveniles who commit acts of delinquency starts only after that juvenile has committed the act of delinquency which is certainly too late for an early examination of attachment and childrearing practices.

**Attachment Theory**

To understand the importance of attachment to social control it is important to also explore attachment theory. Healthy attachment is a well-known factor in the healthy growth and development of individuals. Attachment theory is the groundbreaking work of theorists John Bowlby and Mary Ainsworth (Ainsworth & Bowlby, 1991) which focuses on the early evolution of attachment in a child’s development, particularly attachment to a mother. Early attachment behavior is explained “as an organized system, having as its goal the keeping of proximity, or of accessibility, to a discriminated mother-figure”, which requires the infant to have the capacity for retaining the memory of his or her caregiver (Bowlby, 1988, p. 122). Through adequate parental availability and treatment (in Bowlby’s conception most often with a mother) an infant is afforded a secure base. Attachment behavior is established, in which the infant is able to discern the caregiver and makes attempts to keep the caregiver immediate. Attachment behavior is
inexplicitly linked to the establishment of a more complicated attachment bond, or “the enduring attachments that children and other individuals make to particular others” (p. 29). To better our understanding of the meaning of "enduring attachments", and thus attachment, a further examination of attachment behavior is necessary. Attachment behavior in early childhood is characterized by behaviors which seek to elicit the care of a chosen caregiver, typically a parent. Behaviors such as crying and clinging to a caregiver indicate a child has formed emotional attachment to a specified other. While such behaviors diminish with age behaviors seeking care and attention of chosen others continues through adolescence and adulthood (Bowlby, 1978). Bowlby’s conception of “engagement of emotion” distinguishes attachment from dependency and is a means of understanding “enduring attachments” into adolescence (Bowlby, 1988, p. 29). Engagement of emotion is experienced within secure attachment bonding, which is categorized by a caregiver’s responsiveness to the efforts of a child or juvenile to maintain a close proximity. Engagement of emotion with a caregiver manifests as positive affect, positive regard, and a sense of joy within the relationship (Bowlby, 1978). Those children whose experiences lead to secure attachment exhibit interpersonal relationship behaviors in which they view relationships as having the potential to meet individual needs and maintain a healthy level of reciprocity.

Parental attachment has been shown to impact many aspects of an individual’s character and behavior through development, including adolescence. In the juvenile population attachment security has been linked with mental health and suicidality (Brumariu & Kerns, 2010; Merlo & Lakey, 2007; West, Spreng, Rose, & Adam, 1999; Zanussi, Cawthorpe, & Wilkes, 2010), substance abuse (Elgar, Knight, Worrall, & Sherman, 2003), and interpersonal problems such as
conflictual relationships or poor peer choice (Dykas, Ziv, & Cassidy, 2008; Elgar et al. 2003, Dillon, Pantin, Robbins, & Szapocnik, 2008).

A juvenile’s primary attachments change throughout development and while many consider attachment in infancy and childhood as primary to attachment theory the importance of parental attachment bonds in adolescence and adulthood is emphasized by Bowlby and Ainsworth (Ainsworth, 1985; Bowlby, 1988 p. 119) and has been emphasized by other researchers (Baumrind, 1993; Kobak, Sudler, & Gamble, 1991; Rice 1990; West & Sheldon-Keller, 1994). While attachment bonds during adolescence expand to include peers and other social groups (Freeman & Brown, 2001), the importance of early parental bonds endures and is not easily supplanted (Allen, Moore, Kuperminc, & Bell, 1998; Bowlby, 1978). In fact, Wilkinson & Walford (2001) found that parental attachment is more important to adolescents’ [psychological] well-being than peer attachment. This may be because secure parental attachment affords juveniles a safe platform from which to engage in positive relationships with others and self. Healthy attachment is associated with lower levels, and thus insecure attachment is associated with higher levels, of mental health issues (Brumariu & Kerns 2010; Keskin & Cam, 2010; Merlo & Lakey, 2007; Zanussi et al., 2010), substance use (Elgar et al., 2003), antisocial peer involvement and delinquent behavior (Allen et al., 1998; Dykas et al., 2008; Elgar, et al., 2003; Keskin & Cam). There is also evidence that parental attachment may be of greater importance to females than males (Heimer & Decoster, 1999; Huebner & Betts, 2002; Laundra et al., 2002, Ma & Huebner, 2008), and that this importance may impact delinquency factors.
CHAPTER THREE: LITERATURE REVIEW

In the introduction section, trends in juvenile crime were discussed; notably the increase, or lesser decrease, of female juvenile crime at a time of overall decline in juvenile violent crime. The causal factors of juvenile crime are well known albeit as studied in largely male offender studies. As informed by decades of research three main overlapping determinate areas emerge: 1) individual, 2) immediate systems, and 3) social and cultural influences. While societal level and community level influence is not directly examined in the current inquiry, the influence of gender roles, systemic poverty, racism and culture upon juvenile delinquency and violence is recognized (Patchin, Huebner, McCluskey, Varano, & Bynum, 2006).

Individual level factors such as intelligence, mental health, substance abuse, low self-control, and educational attainment are frequently cited in the literature as factors associated with delinquency. While individual level risk factors influence the development of delinquent behavior the literature points more so to an interaction between individual and family factors. The immediate system, particularly the family, is the context in which individual risks develop and societal risks manifest. According to Snyder and Sickmund (2006) family level risk factors are inexplicitly linked to juvenile offending for both males and females. The family influence link is emphasized by Thornberry et al. (2004). Family factors such as single parent household vs. two-parent household (Anderson, 2002; Apel & Kaukinen, 2008; Juby & Farrington, 2001; Rebellon, 2002), parental supervision, parental involvement, and emotional attachment are agreed to be of strong influence on the well-being and delinquency involvement of juveniles.

Gender matters to delinquency; while many similarities exist between male and female delinquents’ risk factors (Daigle, Cullen, & Wright, 2007) the literature also emphasizes
differences in characteristics and risks. Levels of aggression and delinquency are higher across the lifespan in males and lower in females (Quinsey et al., 2004). The frequency of serious physical violence committed by female juveniles has been shown to be less than for males (Leschied, Cummings, VanBrunschat, Cunningham, & Saunders, 2000); instead females commit a greater number of minor offenses. Previous research also shows that female juveniles tend to commit aggressive acts towards family more often than their male counterparts (Cairns & Cairns, 1994), resulting in simple and aggravated assault charges. Age has also been shown as a gendered correlate of delinquency, with males typically offending at a younger age than their female counterparts (Silverthorn & Frick, 1999; Silverthorn, Frick, & Reynolds, 2001).

Mental health is demonstrated as a common factor among juveniles involved in the delinquency system; with rates of mental health disorders well above those of the general population (Lexcen & Redding, 2000); however female delinquents’ rates of mental health problems are significantly higher than for males (Abrantes, Hoffman, & Anton, 2005; Zahn et al., 2010). Female delinquents report higher levels of depression and anxiety than males (Calhoun, 2001; Crawford, Cohen, Midlarsky, & Brook, 2001). Of particular importance is the seemingly gendered relationship between abuse, mental health, and delinquency (Dembo, Schmeidler, Sue, Borden, & Manning, 1995; Jespersen, 2006; Morash, Bynum, & Koons, 1998; Singer, Bussey, Song, & Lunghofer, 1995); both in terms of clinical presentation and the interconnection with family factors. Ruffulo, Sarri, and Goodkind (2004) found that as the severity of female delinquency increased so too did the level of abuse and depression. Similar findings were reported earlier by Widom (1989). Cernkovich, Lanctot, and Giardono (2008) found that while, contrary to their hypothesized influence, family bonding did little to predict
offending while abuse in the context of family was strongly predictive of future offending. The mental health needs of female offenders are complex and are often influenced by systemic abuse suffered at the hands of intimate relationships (Cook, Smith, Tusher, & Raitford, 2005; Kane & DiBartolo, 2002; Sowards & Weissman, 2005).

Involvement with antisocial peers is often argued to be one of the strongest predictors of delinquency involvement. Antisocial peer involvement while influential for both genders has been shown to be more strongly related to male delinquency (Daigle et al., 2007; Erickson et al., 2000; Thompson, Mitchell, Dodder, 1984). Peer involvement may be more influential for males, particularly in the context of antisocial friends, due to the greater likelihood of males to yield to the pressure of peer perceptions (Galbavy, 2003). While peer involvement is acknowledged for a direct effect on delinquency (Weerman, 2011) it is shown that the existence of family level factors appear to mediate the risk for the development of anti-social peer attachments and influences (Ingram et al., 2007; Warr, 1993; 2005).

The literature points to gender differences in risk factors at the individual and social level, and a clear interaction between the two areas of risk. Gender may serve as an intermediate between the social bond and many correlates of delinquency.

**Delinquency, Family, & Gender: Structure & Attachment**

The impact of the family level social bond on juvenile delinquency is acknowledged as crucial by numerous researchers. Of particular importance to the study of delinquency from a social control perspective, and indeed many other theoretical frames, is family influence as an
exploratory risk factor in the development of delinquent behaviors. Family level risk factors include both structural and affective elements.

Family structure is regularly defined through an approximation of the number of parents heading a household. Juveniles in one-parent households are deemed more at risk for delinquency involvement, ranging from minor delinquency to more serious violent crime (Anderson, 2002; Apel & Kaukinen, 2008; Juby & Farrington, 2001; Rebellon, 2002). Studies examining family structure find family to be significant to the development of delinquency in both genders and while definitive gender differences have not been established (Kierkus & Hewitt, 2009) much of the evidence available indicates that family structure is more influential in male delinquency. Households experiencing recent divorce or other family strain, such as single-parenting have been shown to result in higher levels of delinquency; and that it is the result of family structure that differs by gender. For example, Krohn, Hall, and Lizotte (2009) found that family structure transitions affected male juveniles more so than females, particularly in the area of peer group influence and substance use. Males who experienced more transition in family structure demonstrated a higher likelihood of involvement in anti-social peers and substance use as compared with males who experienced fewer or no family structure transitions. The same influence was not shown for females. Family structure, such as single-parent structure, may influence levels of attachment, supervision, and time-involvement; as evidenced within the delinquency literature and is controlled for within subsequent analyzes. Also indicated in the literature is that the influence of family structure may influence other areas of family functioning such as supervision, time involvement (Rankin & Wells, 1990; Schroeder, Osgood, & Oghia,
and emotional attachment (Kierkus & Baer, 2002; Schroeder et al., 2010; Sokol-Katz & Dunham, 1997) and these family elements may also differ by gender.

Attachment, as informed by social control and attachment theories, may be defined as: both 1) emotional closeness and 2) a more concrete demonstration of reciprocal concern between a juvenile and an identified caregiver; such that the relationship exerts pressure to engage in pro-social above antisocial behaviors. Emphasized in this definition is the importance of a strong emotional bond between a parent and juvenile as measured in tandem with indicators such as supervision or time spent together; as such indicators demonstrate a more tangible element of reciprocal concern and account for indirect and direct control. Evidence that parental attachment is associated with delinquency is demonstrated frequently within the literature. Parental attachment is among the most tested elements of the social bond and has long been shown to be inversely associated to delinquency and the severity of delinquency (Erickson et al., 2000; Junger-Tas, 1992; Rankin & Wells, 1990; Wiatrowski, Griswold, & Roberts, 1981). Evidence that attachment to a parent may be of greater importance to female than male delinquency (Heimer & Decoster, 1999; Huebner & Betts, 2002; Laundra et al., 2002, Ma & Huebner, 2008), is juxtaposed with evidence that the relationship between attachment and delinquency demonstrates no gender-differences (Canter, 1982; Chapple et al., 2005; Liu & Kaplan, 1999; Smith & Paternoster, 1987). This seeming stalemate in consensus may be related to a question of measurement. While the literature repeatedly indicates gender differences, such differences are not always measured by each element of the parental attachment social bond. The sections below examine the literature from a social control perspective, or closely associated perspective such as
social development, as it relates to gender, delinquency and measures of attachment, as seen in figure 1.

Figure 1: Hypothesized Model of Attachment

Delinquency, Emotional Attachment, & Gender

Emotional attachment may well be thought of as the most significant element of the parental social bond. By now it has been established that attachment as a complete concept pairs the underlying construct of emotional attachment with the more easily measured constructs of supervision and time involvement. While emotional attachment is inseparable from the social bond a challenge exists in establishing a clear definition and means of measurement. As previously described Hirschi (1969) recognized emotional attachment as a juvenile’s perception of a parent’s psychological presence, intimacy of communication, and affectional identification. These three elements of emotional attachment collectively measure what is stressed in
attachment theory as emotional proximity to an identified caregiver. Therefore emotional attachment may be defined as a juvenile’s level of affection towards and emotional security with a parent.

A correlation between emotional attachment and delinquency has been established and continues to be studied (Demuth & Brown, 2004; Longshore, Chang, Hsieh, & Messina, 2004; Parker & Benson, 2004; Rankin & Wells, 1990; Sokol-Katz & Dunham, 1997). While less studied, the relationship of emotional attachment to delinquency has been shown to vary by gender. Though not always consistent, evidence exists that female delinquency is impacted more by emotional bonds while male delinquency more through direct controls such as supervision (Heimer & Decoster, 1999). The following is an examination of the research findings on delinquency, gender and emotional attachment.

Drawing a distinct conclusion that the experience and influence of emotional attachment is gendered is hard to concretely establish. While the literature seems to point to the greater importance of emotional attachment on female delinquency than male, a number of studies exist that indicate little or no gender difference in levels of emotional attachment or the impact of emotional attachment on delinquency. A number of studies examining delinquency from a social control perspective have failed to find clear gender differences in the relationship between emotional attachment and delinquency.

An early study by Rosenbaum (1987) examined the acceptability of social control theory to both male and female delinquent populations. Prior to this study only four previous studies had examined the applicability of social control theory to both genders (e.g. Hendelang, 1973; Jensen & Eve, 1976; Johnson, 1979; Wilkinson, 1978). Rosenbaum’s work, along with her four
predecessors, represents the first efforts to examine females separately in terms of social control. While Rosenbaum examined all four elements of the social bond, of particular interest was her finding that stronger parental attachment was predictive of lower delinquency for both males and females. Attachment to parents was measured through four items ranging from supervision to emotional connectedness, intended to measure the strength of emotional attachment. While gender differences were not demonstrated, this early study made it clear that supervision and emotional connection with a caregiver is of importance in delinquency for both genders. Of interest it was noted that the strength of the inverse correlation was stronger for upper class than for lower class juveniles.

Junger-Tas, Ribeaud, and Cruyff (2004) also found little support for gender differences in the influence of the parental social bond on delinquency. No statistically significant differences were identified, indicating that attachment and other social control variables explain juvenile delinquency equally for male and females. While this study did not find differences in terms of social control variables such as attachment or involvement, the researchers noted that social control may still be differentially explanatory for males and females, in that females are socialized differently. Özbay & Özcna (2007) also failed to find gender differences in parental attachment instead concluding that the emotional parental social bond would provide the same protective effect.

Chapple et al. (2005) examined the moderating effect of gender on the measurement of the social bond. Also examined was the gender-difference between the social bond and delinquency. Like Rosenbaum (1987) the researchers measured all four elements of Hirschi’s social bond. Emotional attachment was measured through indicators of a juvenile’s likelihood to:
talk over future plans with parents, desire to identify with parental characteristics, share thoughts and feelings, and perceive a parent’s understanding. No direct-control measures were used, such as supervision or involvement. While females were found to have higher attachment scores in all areas of the social bond, no significant differences in terms of gender were identified. This research concluded that the social bond is measured similarly for male and female delinquents. In general this study found a higher levels of attachment resulted in lower levels of delinquency regardless of gender.

While the previous research failed to indicate gender-differences in emotional attachment, it is frequently noted by researchers that it may be the emotional bond that serves as a protective factor for females more so than males, underlining the need to continue to consider the differential measurement of the parental social bond. Also of importance is that the research findings are in contrast to other research indicating the importance of attachment bonds in reducing female delinquency.

Heimer and Decoster (1999) used structural equation modeling techniques to explore gender and violent delinquency. From a differential association perspective the researchers were interested in how juveniles learn delinquent behaviors through interaction with the social bonds of family and peers. Findings by the researchers indicate a specific gender gap in the influential mechanisms of attachment. Female violence was found to be more directly impacted by emotional bonds within a family or caregiver, whereas for males overt forms of control such as “supervision and coercive discipline were important for explaining the variation in male violence” (p. 303). While the findings are useful the study utilized data from 1976, which occurred prior to the more recent trends in juvenile crime.
Laundra et al. (2002) applied social control theory and the social development model to explore sources of influence for delinquency in male and female juvenile populations. Similar to other findings, attachment and commitment were found to be more greatly influential to female delinquency while alienation (as contributed by the social development model) was shown to influence male delinquency. The authors measured attachment and commitment and one combined measure which included six items related to closeness and enjoyment of time spent with a parent. No measure of supervision was provided. Predictive analytical techniques revealed a statistically significant result related to attachment and female delinquency. Female juveniles with lower levels of attachment and commitment to parents demonstrated higher levels of delinquency. This result was found for females only. Based upon the findings a gender-difference in the influence of attachment for female delinquents was demonstrated.

Using a sample of both male and female Huebner and Betts (2002) discovered that attachment bonds serve to protect females from acts of general delinquency such as damaging property, cheating, or stealing. Of interest, the researchers also included a measure of time spent with family. Cernkovich et al. (2008) examined family factors from a social control and social strain perspective, using a female only sample. The researchers used a longitudinal sample of 109 institutionalized females. Including eleven indicators of family control and social bonding, the researchers found that females with higher levels of delinquency reported lower levels of family social bonds; providing support for the predictive strength of social control elements of attachment and supervision on female involvement in higher levels of delinquency. Baglivio (2009) draws attention to another interesting finding related to the importance of emotional attachment for females. Baglivio found that female recidivism may be predicted by previous
runaway status and the absence of a close emotional bond (or fewer close emotional bonds) with a positive identified other. It is also recognized that runaway behaviors, which are demonstrated by a large number of female delinquents, are indicative of family level attachment issues such as child abuse or strain (Kempf-Leonard & Johansson, 2007), lending further support to the importance of a healthy attachment relationship with a caregiver for female juveniles. In contrast Baglivio found that male recidivism was better predicted by a lack of supervision, further indicating that for males direct controls are of greater importance.

Some research has even been in harsh contrast to the majority of the social science research in the area. For example, Erickson et al. (2000) found that while other elements of the social bond were equally associated with delinquency across gender, attachment was less associated with female delinquency (p. 416). Similar to the findings of Erickson et al., Anderson, Holmes and Ostresh (1999) reported findings at odds with much of the research base. The researchers measured attachment to parents, school, and peers using the original items from Hirschi’s 1969 *Causes of Delinquency*. No statistically significant results were found between gender groups on any measure of attachment however results found that while attachment to parents was negatively and strongly associated with the severity of delinquency for males, attachment to peers and school was found to be negatively and strongly associated with the severity of delinquency for females. This is in drastic contrast to research indicating the importance of parental attachment to female delinquency and peer influence to male delinquency. As noted by Junger-Tas et al. (2004) females may experience a socialization process different to that of males’. Socialization differences may exist in the levels of supervision, or monitoring, experienced by males and females; with males experiencing higher
levels of autonomy and freedom further strengthening the decision to include supervision as a distinct element of social control in the current research.

Gender, Delinquency, and Supervision

As is the case with the previous studies, measuring attachment through emotional components, the supervision literature frequently conflicts in the area of gender differences. Supervision is a commonly used measure of the parental social bond. There is evidence that parental attachment via direct control (supervision) impacts juvenile delinquency through the role parental supervision plays in mediating a juvenile’s antisocial peers and activities (Bowman, Prelow, & Weaver, 2006; Dillon et al., 2008; Wells & Rankin, 1988; Ingram et al., 2007). A number of studies have found that supervision is important to the development (or avoidance) of delinquency for both genders. Frey, Ruchkin, Martin, and Schwab-Stone (2009) found that of attachment types (e.g. school, parent, peer) parental control (supervision) was most related to delinquent acts for both genders. Junger-Tas et al. (2004) found that parental supervision and control were predictors of delinquent behaviors for both genders. However an interesting finding is that for females the existence of a bad relationship with caregivers was found to lower the risk of delinquency in this particular study. This may be due to cultural and social differences in the European population sampled. Silverman and Caldwell (2005) found that parental supervision decreased delinquency involvement in both males and females equally. While customarily considered as important in the context of initial delinquency, Robertson, Baird-Thomas, and Stein (2008) demonstrated that parental monitoring is able to reduce negative outcomes, such as
recidivism, in juveniles’ adjudicated delinquent. As Baglivio (2009) indicates the impact of supervision may be greater for male delinquents than for females.

Many studies have also found what appear to be gender differences in the importance of supervision to delinquency; commonly indicating the importance of supervision to male delinquency over that of female delinquency. Gove and Crutchfield (1982) found that parental physical discipline was found to be significantly related to the delinquency of males while parental supervision (knowledge of friends) and attachment variables were found to be more related to female delinquency. Similarly Heimer and Decoster (1999) emphasize the greater importance of direct-controls on male delinquency, finding that emotional bonds and not supervision better reduce female delinquency. While more effective in controlling male delinquency, Seydlitz (1991) found that direct parental controls deterred older females from involvement in delinquency.

Still other studies have found that supervision is neither important to the commission of delinquency or in the context of gender. Booth et al. (2008) found that female (and minority) students reported the highest levels of serious delinquency and that parental attachment was not a significant predictor of delinquency. Parental attachment was measured only through the direct-control construct of supervision. While a direct effect on delinquency or gender differences were not found it is important to note that the sample was drawn from an urban upper-middle class high school population in which attachment may have been consistently higher than in the general delinquency population. It is also important to note that other constructs of attachment, such as emotional bonding were not measured; instead the study focused primarily on supervision. Crosnoe, Erickson, and Dornbusch (2002) found that increased parental supervision
was not related to low levels of delinquency in either male or female groups. Interestingly the researchers found that supervision was related to an increase in female association with drug using friends. Childs, Sullivan, and Gulledge (2011) recently found that supervision was not related to delinquency, this in contrast to much of the literature on direct controls (p. 83). Similarly to Booth et al. the researchers found no gender differences. While females are typically subject to increased levels of parental supervision this may relate to a female juvenile’s stronger relationship (bond) with a parent, thus effectively shifting the locus of control. This is supported by Worthen’s (2011) finding that while parents monitored females more frequently such supervision failed to make significance as a predictor of delinquency for either gender.

Gender, Delinquency, and Time-Involvement

Less literature is devoted to the gendered influence of time-involvement on delinquency and delinquency risk factors. Given the nature of time-involvement, namely that it is indicative of both supervision and closeness it is felt that such a measure provides a good indication of attachment. Time involvement is defined as the amount of time a juvenile spends in positive interaction with a caregiver (by day) per week. This level of time is indicative of both a juvenile’s relationship with his or her caregiver and the level of supervision exerted by a caregiver.

Of interest to gender-specific inquiry the importance of time-involvement with a parent (or family) has been shown to be inversely related to delinquency for both genders. In fact it has been shown that a lack of supervision and time-involvement has been shown to increase
juveniles’ involvement with both substance use and involvement with antisocial peers (Barnes, Hoffman, Welte, Farrell, & Dintcheff, 2007; Bauer, 2006; Greene & Banerjee, 2009). The power exerted by time spent engaged in activity with parents to directly impact juveniles’ risk factors, such as peer influence, is emphasized by Warr (1993). Sen (2010) found that the increased frequency of family dinners eaten together reduced a range of problem and delinquency behaviors for both male and females; no significant gender differences were found. Underscored is the relationship between time spent with family and increased parental supervision. A recent examination including time-involvement found that increased time-spent with parents to be more important to female delinquency than male (Worthen, 2011). Given the dearth of research including measures of time-involvement the current research may contribute in a meaningful way.

Summary

In spite of ongoing interest in gender and delinquency, particularly in the areas of family influence and social control, research in this area remains limited and is inconsistent in terms of findings. While gender is recognized as important to differential pathways to delinquency, gender differences in the attachment mechanism of social control remain indistinct. Delinquency, as previously mentioned, has traditionally been the primary jurisdiction of the male gender. With the recent increases in female arrest rates and system involvement, research dedicated to understanding and identifying gendered delinquency has been growing. While much has been
gained in this area of research, there remains a paucity of research dedicated to identifying gender differences in the delinquency population.

A clear limitation in the delinquency literature as it relates to gender is a lack of consensus as to the existence of gender differences in the importance of and effect on attachment, particularly in the constructs of emotional attachment, supervision, and time-involvement. While a range of studies indicate there is a gender difference in the overall construct of attachment, as it interacts with delinquency, others indicate no such difference. Implications for gender fall under two groupings: 1) that gender differences may exist in the influence of gender on the measurement of the social bond and 2) that gender may differentially impact the influence of the social bond on delinquency. In general the literature leads us to identify the importance of emotional attachment to female delinquency and supervision to male delinquency. Of importance in the current research is the possibility of multicollinearity between the three constructs of attachment. For example an association between emotional attachment and supervision may be a normal element of the attachment relationship experienced by females, in that it has been recognized that females are socialized differently than males and are automatically subject to greater monitoring (Rubin et al., 2004). As monitoring increases greater levels of time-involvement are expected; thus increasing the chance of a stronger and more emotionally attached relationship.
CHAPTER FOUR: METHODOLOGY

Guided by the complementary frameworks of social control and attachment theories this study gives consideration to gender specific influences on delinquency. This study utilizes mixed methodology including comparative and associational research designs. The study sample size requires that both parametric and non-parametric methods be engaged to answer the desired research questions.

Research Questions/ Hypotheses

Research Question 1: Are there gender group differences in emotional attachment, supervision, and time-involvement in the delinquency sample.

- Ho1: The mean emotional attachment score for the female group will be equal to the mean emotional attachment score for the male group.
- Ha1: The mean emotional attachment score for the female group will be different than that of the males; specifically it will be higher than the mean emotional attachment score for the male group.
- Ho2: The mean AAQ scale scores (availability, angry distress, and goal-corrected partnership) for the female group will be equal to mean scores on the same AAQ scales for male group.
• Ha2: The mean AAQ scale scores (availability, angry distress, and goal-corrected Partnership) for the female group will not be equal to mean scores on the same AAQ scales for male group.

• Ho3: Male and female groups will experience no difference in the mean level of reported supervision.

• Ha3: The female group will experience a higher mean level of reported supervision.

• Ho4: Male and female groups will demonstrate no difference in the mean level of time-involvement.

• Ha4: Male and female groups will demonstrate a difference in the mean level of time-involvement.

• Ho5: There are no differences in the emotional attachment medians among four juvenile groups (non-violent male, non-violent female, violent male, violent female). All four groups have a similar distribution on the emotional attachment measure.

• Ha5: There are differences in the emotional attachment medians among four juvenile groups. One or more groups differ in the underlying distribution on the emotional attachment measure. It is anticipated, based upon the literature, that the VF group will demonstrate a different distribution (higher score).

• Ho6: There are no differences in the supervision medians among four juvenile groups (non-violent male, non-violent female, violent male, violent female). All four groups have a similar distribution on the supervision measure.

• Ha6: There are differences in the supervision medians among four juvenile groups. One or more groups differ in the underlying distribution on the supervision measure.
• Ho7: There are no differences in the time-involvement medians among four juvenile groups (non-violent male, non-violent female, violent male, violent female). All four groups have a similar distribution on the time-involvement measure.

• Ha7: There are differences in the time-involvement medians among four juvenile groups. One or more groups differ in the underlying distribution on the time-involvement measure.

Research Question 2: Which parental factors (emotional attachment, supervision, time-involvement) are associated with the presence of mental health, substance use, involvement with antisocial peers early age at first offense, and recidivism when controlling for gender and offense type?

• Ho8: There will be no statistically significant difference in the odds ratio probability of predicting mental health using the following continuous independent variables of emotional attachment, supervision, and time-involvement in a sample of 2009 Orange County juvenile defendants.

• Ha8: There will be a statistically significant difference in the odds ratio probability of predicting mental health using the following continuous independent variables of emotional attachment, supervision, and time-involvement in a sample of 2009 Orange County juvenile defendants.

• Ho9: There will be no statistically significant difference in the odds ratio probability of predicting substance use using the following continuous independent variables of emotional attachment, supervision, and time-involvement in a sample of 2009 Orange County juvenile defendants.
• Ha9: There will be a statistically significant difference in the odds ratio probability of predicting substance use using the following continuous independent variables of emotional attachment, supervision, and time-involvement in a sample of 2009 Orange County juvenile defendants.

• Ho10: There will be no statistically significant difference in the odds ratio probability of predicting involvement with antisocial peers using the following continuous independent variables of emotional attachment, supervision, and time-involvement in a sample of 2009 Orange County juvenile defendants.

• Ha10: There will be a statistically significant difference in the odds ratio probability of predicting involvement with antisocial peers using the following continuous independent variables of emotional attachment, supervision, and time-involvement in a sample of 2009 Orange County juvenile defendants.

• Ho11: There will be no statistically significant difference in the odds ratio probability of predicting early age at first offense using the following continuous independent variables of emotional attachment, supervision, and time-involvement in a sample of 2009 Orange County juvenile defendants.

• Ha11: There will be a statistically significant difference in the odds ratio probability of predicting early age at first offense using the following continuous independent variables of emotional attachment, supervision, and time-involvement in a sample of 2009 Orange County juvenile defendants.

• Ho12: There will be no statistically significant difference in the odds ratio probability of predicting recidivism using the following continuous independent variables of emotional
attachment, supervision, and time-involvement in a sample of 2009 Orange County juvenile defendants.

- Ha12: There will be a statistically significant difference in the odds ratio probability of predicting recidivism using the following continuous independent variables of emotional attachment, supervision, and time-involvement in a sample of 2009 Orange County juvenile defendants.

- Ho13: There is no association between the indicators of attachment (emotional attachment, supervision, and time-involvement) and mental health, substance use, involvement with antisocial peers, early age at first offense, and recidivism in a sample of 2009 Orange County juvenile defendants.

- Ha13: There is an association between the indicators of attachment (emotional attachment, supervision, and time-involvement) and mental health, substance use, involvement with antisocial peers, early age at first offense, and recidivism in a sample of 2009 Orange County juvenile defendants.

**Design**

To further add to the knowledge base, given the dearth of consensus as to the existence of gender differences in the importance of and effect on attachment, particularly in the constructs of emotional attachment, supervision, and time-involvement, the following study uses a mixed approach. This study used a retrospective, cross-sectional, comparative, and associational research design. This study utilized mixed methodology; between-group measures were used to
identify gender differences in the constructs of attachment while logistic regression and point biserial correlation were used to explore associations between the independent and dependent variables. To conduct hypothesis testing appropriate statistical tests were chosen for each research question and corresponding hypothesis and include between groups and correlation techniques. Given the small sample size, non-parametric techniques were used as a cross check when appropriate.

The unit of analysis is the individual juvenile defendant. Guided by the complementary frameworks of social control and attachment theories this study gives consideration to 1) a gender-different presentation of attachment and 2) the gender-specific influence of attachment on delinquency.

Measurement of Study Variables

Operationalization of Dependent Variables

Early Age of First Offense

Early age at first offense was measured as a binary variable. The juvenile’s age was coded as a 1 (yes) if the juvenile was a chronological age of 13 or below at the time of their first arrest. While there is clear evidence that in general as juveniles’ age, delinquency rates drop, it is also documented that an early age of delinquency onset is correlated with an increase in the severity of later delinquency (Tolan et al., 2000). Age of delinquency onset has been shown, on average, to be later for females than for males (Gorman-Smith & Loeber, 2005). Research has
shown that on average the onset of minor delinquency for males can start as early as age seven, typically progressing to more serious forms of offending (Loeber et al., 2003). In the current study females were older than males at the time of their first offense (females, $\overline{X} = 15.47$; males, $\overline{X} = 13.70$).

Mental Health

Mental health was operationalized as a binary variable. A juvenile was coded as having the attribute of mental health ($1 = $evidence exists) if the archival data indicated a diagnosis from the following sources: DSM IV-TR, axis I or II; ICD 9 coding; Indication of involvement in Orange County Public Schools (OCPS) Exceptional Education Services (ESE): Cognitive Disability, Developmentally Delayed (DD), Autistic Spectrum Disorder, Mentally Handicapped (MH), Specific Learning Disability (SLD), Traumatic Brain Injury, Emotional Behavioral Disorder, and Emotionally Handicapped (EH) (Family Services of Metro Orlando, 2006; OCPS, 2009). Allen et al. (1998) emphasize the importance of secure attachment to a healthy psychosocial functioning in several areas, including competence with peers and the development of mental health issues such as anxiety or depression.

Substance Use

Substance use was measured by the inclusion of two criterion; 1) Evidence of history of substance abuse or use and 2) Substance abuse evidence at time of arrest. Using archival arrest
and PACT records it was determined whether a juvenile’s record included evidence of substance abuse or use (1=evidence exists).

**Interaction with Antisocial Peers**

Interaction with antisocial peers was measured through juvenile self-report. Juveniles were asked to respond to five yes or no questions related to their friends: 1) Do any of your friends use tobacco products? 2) Do any of your friends use alcohol or drugs? 3) Do any of your friends belong to a gang? 4) Do any of your friends steal? 5) Do any of your friends use violence on you or someone else? A reliability analysis was completed using SPSS 19 software. The alpha level for this measure was .77, indicating an acceptable level in internal reliability.

**Recidivism**

Recidivism was measured by the total number of re-arrests within the six months following the eligible offense. This data was obtained from official records of the Office of the State Attorney with the permission of the juvenile participants and caregivers. The aggregate of non-violent and violent rearrests during the six month period was used to indicate if a juvenile recidivated (0=no, 1= yes) within 6 months of the eligible offense.
Operationalization of Independent Variables

It is assumed that not all juveniles will have a biological parent with whom they identify and thus report attachment. Instead the current study assumes a self-report approach in which the juvenile was asked to identify a primary caregiver. Regardless of whom a juvenile identified as a primary caregiver it is assumed that the attachment relationship is an important component of this relationship, either positively or negatively (Stein, Milbern, Zane, & Rotheram-Borus, 2009).

Emotional Attachment.

Emotional attachment is measured in the current study using the Adolescent Attachment Questionnaire (AAQ) (West, Rose, Spreng, Sheldon-Keller, & Adams, 1998). This researcher was granted permission to use and reproduce the AAQ from the authors, see Appendix E. The AAQ draws from the attachment research and observations of Bowlby (1969; 1973; 1980; 1982) to measure three distinct areas of attachment. The AAQ measures a juvenile’s anger toward a caregiver (Anger), perception of emotional availability (Availability), and perception of a caregiver’s responsiveness to their needs (Goal-Corrected Partnership). In a nine item measure respondents (three per subscale) are asked to respond to each question using a Likert scale. Availability and Goal-Corrected Partnership scales are reverse scored, resulting in a total score in which a higher composite score indicates a higher level of attachment problems. The AAQ was chosen to measure emotional attachment in the current study due to a high convergent validity.

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1 Emotional attachment (AAQ), supervision, and time-involvement are used as independent variables within logistic regression procedures and dependent variables within between-groups methods.
with the more widely used Adult Attachment Interview. The internal reliability of the AAQ is high, with Cronbach’s alpha ranging from .62 to .80. This researcher ran reliability measures using the current sample, finding Cronbach’s alpha to be .87, indicating a high level of internal reliability. It should be noted that West et al. identified a gender difference in responses to angry distress, with females reporting higher levels of anger than males. Mean scores for the AAQ composite and subscales were identified out of the literature and ranged from 15 to 19 for the composite score (15.82=group 1, control; 18.36=group 2), 4.87-6.58 for the Angry Distress subscale, 5.25-5.73 (Availability), 5.67-6.06 (Goal Corrected-Partnership).

While the AAQ has been used in multiple populations (e.g. Schober, Lipman, Haltigan, & Kuhn, 2004; Zawnussi et al., 2010; West et al., 1999) fewer instances of use in the delinquency population were found. In fact upon examining the literature only two instances of AAQ use in the delinquency population were identified. In the first example, Elgar et al. (2003) utilized the AAQ to examine the relationship between attachment and delinquency in a population of male juvenile delinquents. The researchers examined attachment characteristics in 68 male juvenile delinquents. The mean AAQ composite score for the sample was 19.18. Mean scores for the subscales were as follows: Angry/Distress (5.87), Availability (7.06), and Goal-Corrected Partnership (6.25). In the second example Mathew, Rutemiller, Sheldon-Keller, Sheras, and Canterbury (1995) utilized the AAQ to examine the relationship between attachment and social problem solving. The AAQ was administered to 100 incarcerated juvenile males between the ages of 13 and 17. Preliminary regression results provided support for a link between attachment and problem solving. No scores were reported. The results of the study were preliminary and reported at a conference; no known follow up publication was located.
Supervision

As previously discussed supervision is a direct control measure of the attachment construct. This study assumes the method used by Booth et al. (2008). Juveniles were asked to reflect back to the time of arrest and report the number of days in week (seven days) a caregiver would: 1) check to see if homework was completed, 2) limit the amount of TV they watched, and 3) check to see where the juvenile was after school. The measure had a lower than desired alpha level of .52. To achieve a single score, principal components analysis (PCA) was conducted resulting in a 2 item composite component, with an alpha level of .61, which is reasonably acceptable. Methods and results for the PCA will be further discussed in the results section.

Time-Involvement

Juveniles were asked to report the number of days in a week (seven days) the identified caregiver would: 1) prepare or eat a meal together, 2) Watch a television show, spend time playing video games, playing music, or exploring the internet together, 3) shop together, 4) go to church or religious services together, 5) drive to school or work together, 6) do something else, not listed, for fun together. The measure had a lower than desired alpha level of .52. Principal components analysis (PCA) was conducted resulting in the retention of one component of involvement, with an alpha level of .54.
Control Variables

In the current study, an experimental design was unfeasible, therefore it is important to control for variables of potential influence that are not directly related to the relationship(s) of interest.

Family Structure

Family structure at the time of the 2009 arrest was measured using both archival and primary data collection techniques. In the current study it is recognized that juveniles living situations may vary therefore juveniles are asked to identify whom they identify as their primary caregiver. Participants were asked to identify whom they lived with at the time of their arrest in 2009. As a check the juvenile participant’s family structure was identified from the archival information available to researchers, in the prosecution documentation. Out of family structure a new variable IntacThome was coded as 0=one or no parents, and 1= two-parent household.

Age

Considering evidence that age may have an interactive effect with attachment (Seydlitz, 1991), age was measured at the continuous level and included as a control.
Sample

With the assistance of the Office of the State Attorney, District 9, Orlando, Florida ii a stratified random sample of 160 juvenile cases, reviewed for prosecution in the year 2009, was drawn. Stratified random sampling allowed the researcher to minimize standard error and increase the proportion of the female population (subpopulation) within the sample (Bickman & Rog, 1998). The sample was generated using SPSS software. The sample was stratified by gender and offense category (violent vs. non-violent) in order to ensure variability. While the use of a comparative approach negates the need to randomize the study sample, as there is no active independent variable, efforts were taken to draw a random sample. While such efforts were taken, it is important to note the difficulty in recruiting participants. The difficulty in recruiting participants limits the strength of the random sample given the extremely low response rate.

Final Sample Size

While a sample of 160 was desirable (see discussion below in Justification of Sample Size) the final sample size obtained was 59 participants iii. The resulting sample is 48 percent male (N=29) and 52 percent female (N=30). While this sample size is well below the original

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ii The Letter of Support from the Office of the State Attorney, District 9, Orange and Osceola Counties, Florida is shown in Appendix D.

iii The final sample obtained is following eight months of recruitment and a total number of 705 (8% response rate) potential juvenile participants contacted. It is unclear why data collection was hampered by a low response rate. The largest segment of those not responding (73%) were those who were unreachable by the sixth contact attempt. Another 18% (N=130) declined to participate after contact was made. This researcher suspects that the sensitive nature of questioning and data collection discouraged participant and caregiver permission. Other researchers in the area of juvenile delinquency have drawn samples from school or institutionalized youth; populations that are considerably more captive than community based juvenile defendants. The mobile nature of the population sample certainly has an influence on the overall response rate.
goal, it is sufficient to provide adequate power for limited parametric predictive and between-groups hypothesis testing with two groups (male, female). As an alternative to parametric measures, considering the small sample size, non-parametric measures were employed. The small sample size did impact the ability to compare female and male groups by offense type and the ability to run offense type as a dependent variable (given that the variability in offense type is controlled).

While challenging, sampling juveniles brought before the Office of the State Attorney for review for prosecution provided a more complete cross-section of the delinquency population, than court cases or arrest data. Data provided by the Office of the State Attorney includes the majority of juveniles known to police, through the inclusion of both court cases and juvenile arrests in which a referral to the Department of Juvenile Justice (DJJ) resulted. The only juvenile cases potentially not initially captured within the sample population are those juvenile arrests in which the police officer made a direct referral into a diversion program (DJJ, 2009). It should also be noted that certain criteria were deemed ineligible for the study due to IRB requirements. A juvenile was ineligible for the study if they were currently in a juvenile, commitment facility, within the Department of Corrections, or residing in any other community based program (such as foster care or a behavioral center). Juveniles participating in the study were community-based.
Justification of Sample Size

The use of parametric statistics, while preferred over the use of nonparametric, typically requires a large sample size and adherence to strict sample assumptions in order to provide adequate power. Parametric measures are sensitive to sampling size and distribution problems; which often plague social science research. According to Gliner and Morgan (2000), a sample size of approximately 30 participants in each group is typically adequate to provide sufficient power to detect significant findings; however this depends on the planned methodological techniques employed. Power can be defined as the probability of rejecting a false null (1-\(\beta\)), and therefore making a correct decision (Spatz, 2004). An adequate level of power is characteristically thought to be a minimum level of 80%, however it has been noted that a majority of social sciences research obtains a level of only 50% (Rossi, 1997).

For the methodological techniques used in the current study, many factors were balanced. An initial power estimate was conducted using Power and Precision (Borenstein, Rothstein, Cohen, & Schoenfeld, 2007). Results of the power analysis indicated that a sample of approximately 40 participants in each group was sufficient to provide a power of over 80% when running logistic regression techniques.

Power analysis was conducted using Power and Precision (Borenstein et al., 2007) software to guide an appropriate sample size for the statistical methods employed. Using the Power and Precision application for logic regression, power was assessed for a model using the total AAQ score as a predictor variable, at the continuous level. In order to determine an estimate of power and therefore increase the probability of a correct decision (power), assumptions were made about the sample. Estimates for the mean and standard deviation of the latent predictor
variable (attachment) were determined using West et al. (1998), and Booth et al. (2008). Table 1 shows the results of the power analysis.

Table 1: Logistic Regression Power Analysis

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Mean</th>
<th>SD</th>
<th>Event Rate @ M</th>
<th>Other Predictor Value</th>
<th>Event Rate</th>
<th>Effect Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>AAQ</td>
<td>21.0</td>
<td>2.5</td>
<td>50</td>
<td>23.5</td>
<td>.88</td>
<td>7.39</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.80</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>1.76</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>100% at N=100</td>
</tr>
<tr>
<td>Involvement, Supervision Aggregate</td>
<td>7.0</td>
<td>2.5</td>
<td>.50</td>
<td>9.5</td>
<td>.88</td>
<td>7.39</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.80</td>
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<td></td>
<td>1.76</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>100% at N=100</td>
</tr>
<tr>
<td></td>
<td>4.0</td>
<td>1.5</td>
<td>.50</td>
<td>5.5</td>
<td>.77</td>
<td>3.32</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.80</td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>1.54</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>100% at N=100</td>
</tr>
</tbody>
</table>

Note. Power is expected to range between 85%-88% for an N=40

Power analysis was then run for a model containing two simultaneous continuous predictor variables. For this analysis of power it was recognized that the use of three continuous predictor variables (aggregate AAQ, involvement, and supervision) was to be used in the majority of logistic models, however the software did not allow this researcher to run the power analysis in this manner. For both models the alpha (α) level was set at .05 for a two tailed hypothesis. The Beta (β) level was set at the .80 level, per traditional standards (Katz, 1999). The power analysis, as conducted for two continuous predictor variables, indicated a sample of 40 per group will provide an 85% probability of a correct decision.
Data Sources

In an effort to capture official record data and self-report data, two means of data collection were used. As previously described, upon enrollment in the study, the juvenile’s archival records were accessed and applicable data coded onto the Archival Data Collection Tool (described below and seen in Appendix F). Upon collection of archival data the juvenile was then contacted by phone and the Juvenile Survey Instrument (described below and seen in Appendix G) was administered to juveniles to measure for missing variables, family structure, attachment, supervision, and involvement. Several checks were put in place in the juvenile survey instrument to validate the juvenile as an accurate historian. For example each juvenile was asked to identify how old he or she was at the time of first arrest.

Archival Data

Archival data, from official records (e.g. arrest affidavits) served as an important source of information on juvenile participants. For the purposes of this study, upon a juvenile’s enrollment in the study a juvenile’s official record, as on file with the Office of the State Attorney, was accessed for data collection. The official records contained a range of documents related to the juveniles’ involvement with and assessment within the Juvenile Justice System. It should be recognized that archival data was collected to the best of the researchers’ ability, missing data was inevitable. See appendix F.
Survey Tool

The influence of attachment in juvenile delinquency has often failed to examine multiple elements of the attachment construct. The role of each multiple measures of attachment in the commission of crime within the context of gender has more rarely been examined.

The current study measures three areas of attachment, pairing emotional attachment with parental supervision and of face to face time spent with a caregiver. The construct of attachment is measured through emotional attachment (Adolescent Attachment Questionnaire (AAQ) (West et al., 1998), indicators of supervision (Booth et al., 2008), and indicators of positive time-involvement. The latent variable of attachment is measured through multiple dimensions (indicators) within the proposed research, defining attachment in terms of emotional response to the caregiver, reported supervision provided by the caregiver, and the level of involvement (activity) with the caregiver. The survey tool includes these three areas, seeking to create a comprehensive measure of attachment. The juvenile survey instrument can be found in Appendix G.

Procedures

IRB Approval and Consent Process

Application for approval of human subjects’ research was made to both the University of Central Florida and Florida Department of Justice Institutional Review Boards (IRB). Approval was obtained by both governing bodies (see approval letters in Appendices A, B & C). Using
information obtained from the Office of the State Attorney, juveniles and caregivers were contacted by phone. If interest was expressed by the potential participants the study was reviewed including risks and benefits. Contact with the juvenile and a caregiver (if the juvenile was under the age of 18 at the time of sampling) was be made by phone to discuss the study and obtain consent from both juvenile and the caregiver (if the juvenile is under the age of 18). The nature of the study, procedures, risks, and rewards was reviewed with the juvenile and parent/guardian via phone. A five dollar incentive gift card was offered to the juveniles alone in order to discourage undo coercion by parents. If a juvenile agreed to participate, the juvenile and caregiver’s consent was recorded over the phone, as allowed by IRB approval. Consent forms were then mailed to both the juvenile and caregiver. If a juvenile was unreachable past the sixth contact attempt or declined to participate the case was removed from the sample and a replacement was drawn in order to obtain a viable sample number.

Administration of Surveys

Administration of surveys was primarily conducted by telephone for safety reasons (both juvenile and researcher) and for reasons of feasibility. The juvenile participants were given the option to complete the survey in person, however all participants chose to complete the survey by phone. Surveys were only administered after permissions were obtained from both juvenile and parent (if required) and the archival data collection tool had been obtained from the juvenile participant’s chart. Surveys took approximately 10 to 15 minutes to complete. Juveniles were provided with a five dollar incentive gift card for participation.
Issues of Validity

The largest threat to validity in the current study is the issue of sampling. In assessing issues of external validity for the current study several issues must be highlighted. The researcher made attempts to draw a representative sample in terms of participant characteristics, using stratified random sampling. While such attempts were made, the low response rate makes it impossible to ensure the randomness of the sample. While acceptable response rates vary by methodology and discipline, what is clear is that an average response rate in the social sciences is between 50 and 80 percent; however this rate has been declining in recent years (Babbie, 2010). The response rate can be defined as the ratio of the actual sample size, those completing the survey tool and remaining in the sample through analysis, to the selected sample, or those drawn into the sample for potential selection (Gliner & Morgan, 2000). Using this range and response rate definition, it is clear that the current study falls well below the 50 percent response rate; at eight percent. While it was possible to control the sample, using stratified random sampling, for gender and offense category it is necessary to consider the limitation of self-selection and non-response bias placed on the sample due to such a low response rate. The non-response of so many potential participants results in the conclusion that it is possible that those who agreed to participate in the study were somehow categorically different, and thus potentially unrepresentative of the overall sample (Gliner & Morgan, 2000).

In an effort to address the question of sample representativeness a comparison between the sample and population was completed to compare ethnicity and age. These characteristics can be seen below in Table 2.
Table 2: Population Sample Comparison

<table>
<thead>
<tr>
<th></th>
<th>Sample Total</th>
<th>Sample Non-Violent</th>
<th>Sample Violent</th>
<th>Population Total</th>
<th>Population Non-Violent</th>
<th>Population Violent</th>
</tr>
</thead>
<tbody>
<tr>
<td>% Minority</td>
<td>81%</td>
<td>78.5%</td>
<td>83.9%</td>
<td>54.8%</td>
<td>50%</td>
<td>60.6%</td>
</tr>
<tr>
<td>Mean Age</td>
<td>15.52</td>
<td>15.53</td>
<td>15.52</td>
<td>15.26</td>
<td>15.43</td>
<td>15.05</td>
</tr>
</tbody>
</table>

A true comparison of ethnicity was a challenge in that the official dataset for the full population does not differentiate between White/Non-Hispanic and White/Hispanic. All case data for White also include Hispanic cases, inflating this percentage. The current study calculated White/Non-Hispanic and White/Hispanic as separate counts, so a more accurate count of minority status was available in the sample. Taking this into consideration for comparison purposes, if Hispanic cases are tallied into White cases for the sample data the minority percentages more closely resemble the population data. This can be seen below in table 3.

Table 3: Updated Population Sample Comparison

<table>
<thead>
<tr>
<th></th>
<th>Sample Total</th>
<th>Sample Non-Violent</th>
<th>Sample Violent</th>
<th>Population Total</th>
<th>Population Non-Violent</th>
<th>Population Violent</th>
</tr>
</thead>
<tbody>
<tr>
<td>% Minority</td>
<td>52.2%</td>
<td>57%</td>
<td>52%</td>
<td>54.8%</td>
<td>50%</td>
<td>60.6%</td>
</tr>
<tr>
<td>Mean Age</td>
<td>15.52</td>
<td>15.53</td>
<td>15.52</td>
<td>15.26</td>
<td>15.43</td>
<td>15.05</td>
</tr>
</tbody>
</table>

As previously discussed, the limitations of social control theory create an additional validity concern in the current study. Social control theory cannot assume that the social bond a juvenile forms is with a pro-social caregiver, and in fact. Given time and IRB limitations, this current study did not measure for parental criminality or antisocial behavior. To fully measure attachment the current study measures emotional attachment, supervision, and time involvement,
thus seeking to limit issues of construct validity by measuring many points of the social bond to a caregiver. It was hoped that the measurement of victimization would result in more data than was collected. Using archival data it was found that information on victimization was frequently missing, so that the researcher could neither rule in or out a history of abuse or victimization.

Analysis

To explore gender group differences in the relationship between attachment and several known determinants of juvenile offending a mixed methodology is used. The current study includes descriptive statistics, between-group methods, logistic regression, and correlation techniques.

Data Cleaning, Transformation, and Reduction

The final raw data set included 59 cases and 60 variables. To begin data analysis, first the data was examined and analyzed for errors. Frequencies were run to identify errors in categorical variables. To analyze the continuous variables, the dataset was checked for outliers. Several coding mistakes were located and corrected. Three outliers were identified and checked for data entry mistakes. None were found and the decision to maintain the three outlier cases in the analysis was made. The rationale for maintaining the three cases was two-fold. First the small sample size requires that the three cases are maintained. Second it is reasonable to assume that given the juvenile population that was sampled; a range of responses will be obtained. However it is important to note that regression analysis has a high sensitivity to outliers; and while given
the small sample size these cases were maintained, such outliers have the potential to affect the r value. The nature of data collection lent itself to reliance on secondary data, which included official data and assessment sources. For this reason it was reasonably expected that variable data should be present in the areas collected. When not present this was assumed to be data missing at random (Howell, 2007) and is not related to the variable itself. Several variables were either collapsed or recoded in order to obtain useful construct variables that accounted for the data in both variables. Variables that were recoded and collapsed are seen below in Table 4.

Table 4: Variable Recoding and Transformation

<table>
<thead>
<tr>
<th>Original Variable(s)</th>
<th>Method used</th>
<th>Outcome Variable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Substance Abuse &amp; Substance Use at Time of Arrest</td>
<td>SPSS Transform-Recode Creation of dichotomous variable</td>
<td>Subevidence</td>
</tr>
<tr>
<td>Mental &amp; Suicide Hx</td>
<td>SPSS Transform-Recode Creation of dichotomous variable</td>
<td>Evidencemh</td>
</tr>
<tr>
<td>Living arrangements (archival) &amp; Living Arrangements(self-report)</td>
<td>Cross check official data and report, used report data</td>
<td>JSliving</td>
</tr>
<tr>
<td>Early age(raw)</td>
<td>Creation of categories</td>
<td>Earlyage</td>
</tr>
<tr>
<td>Antisocial Peer Involvement</td>
<td>SPSS Transform-Recode Creation of dichotomous variable</td>
<td>Antispeer</td>
</tr>
<tr>
<td>Recidivism</td>
<td>SPSS Transform-Recode Creation of dichotomous variable</td>
<td>Recidivism</td>
</tr>
</tbody>
</table>
Principal Components Analysis

Based on the methods employed by Booth et al. (2008, pp. 435), principal components analysis (PCA) with varimax rotation as a data reduction technique for the direct–control attachment measures of supervision and time-involvement. PCA is a technique widely used for the reduction of data while preserving the amount of variation within the dataset. A reduction in data was completed through the identification of principal components (PCs) within the larger dataset (measures), ensuring that identified PCs are uncorrelated. Those variables with adequate factor loadings were maintained in the retained PCs, resulting in the solution.

PCA is not a passive analysis, instead decision making is required by the researcher in determining which PC’s and associated variables will be maintained. The number of components extracted will be equal to the number of variables included in the PCA; it is then up to the researcher to employ decision criteria in the retention of both PCs and variables. A comprehensive and understandable look at the criteria for PC retention is provided by O’Rourke, Hatcher, and Stepanski (2005). To initially maintain a component as a PC, this researcher relied on three general criteria: 1) retention of any component with an eigenvalue (Kaiser, 1960) greater than 1.00, 2) a scree plot to identify any large breaks between components; those components occurring before the break were retained, 3) retention of those components that accounted for a substantial amount of the total variance. Once initial components were retained the researcher identified the number of significant variables loadings on the retained components using the recommendation of three significant loadings for retention (O’Rourke et al., 2005).

Varimax rotation allowed the interpretation of the PC solution and the creation of factor score. The use of a factor based score is preferable to the use of a factor score in that a factor-
based score is a linear composite of those items retained (loaded onto the retained component), allowing the researcher to identify a composite score for each subject by simply adding together retained items. In the current study PCA is appropriate as a data reduction tool, on the two measures stated, due to the need to identify and eliminate redundancy within each measure thus creating factor scores to be used in subsequent statistical analysis. Results of the PCA are discussed in the results section to follow.

Statistical Analysis

Between groups measures, including independent t-tests and multiple analysis of covariance (MANCOVA) was used to answer the research question: *Are there gender group differences in attachment, supervision and time-involvement in the delinquency sample.* T-test procedures allowed the researcher to test H1, H3, and H4. T-test procedures allowed the researcher to test for between group differences. One-way MANOVA was used to test H2, and is appropriate in the case of two groups (sex=independent variable) and multiple continuous dependent variables. Another benefit of MANOVA is the ability to account for covariates (control variables) through an extended application of multiple analysis of covariance. This is important to the current study, given the inability to use matching or other techniques to control for extraneous influences. The appropriate non-parametric alternatives, the Mann-Whitney U and Kruskal-Wallis tests, were used to check for differences given the small sample size, as seen in hypotheses H1, H3, H4, H5, H6, and H7.
Logistic regression procedures were used to test the research question: *Which family factors (attachment, supervision, time-involvement) are associated with the presence of mental health, substance use, involvement with antisocial peers early age at first offense, and recidivism when controlling for gender and offense type?* The hypothesized model includes binary dependent variables making logistic regression the appropriate regression technique. The construct of emotional attachment is modeled as an aggregate continuous variable, which would address issues of multicollinearity through a simple aggregate (Hardy & Bryman, 2004). Emotional attachment, supervision principal component, and time-involvement principal component are used as independent predictor variables. In this case, the needed assumption of linearity will first be explored through the use of a correlation matrix to check for multicollinearity concerns. Hardy and Bryman indicate that in the case of multicollinearity within regression techniques the use of computations suited to tolerate “near collinearity” are prohibitive (p. 179). To further test for associations point biserial correlation, a distinct application of Pearson product-moment correlation coefficient for dichotomous data (IBM Support Portal, n.d.), is used to estimate the correlation coefficient for an association between continuous independent and categorical dependent variables. Control variables were included to further check identified significant correlations.

**Anticipated Findings**

The literature provides one with several expected findings as related to gender and the presentation of attachment. The literature also provides guidance on possible findings as it relates
to the gender-different association of direct and indirect attachment constructs with mental health, substance use, peer involvement, early age at onset, and recidivism. Given the support found in the literature that emotional attachment is of greater importance to female delinquency while supervision is of great importance to male, it is expected that females in the sample will demonstrate lowered levels of attachment (higher level of attachment problem) while the male sample group will demonstrate lowered levels of supervision. Given the evidence purported in the literature it is expected that there will be a significant difference in male and female groups’ mean emotional attachment, supervision, and time-involvement scores. In particular it is expected that the mean reported attachment score for delinquent females will be higher than that of males, as it would be expected that females already engaged with the delinquency system would have been influenced by damaged attachment with a caregiver. This leads to the conclusion that female violent offenders will demonstrate the lowest level of emotional attachment to a parent or caregiver (highest emotional attachment scores). It is expected that attachment will be the strongest predictor of female mental health, substance use, early age at first offense, antisocial peer involvement, and recidivism. In consideration of the increased levels of supervision expected in the female group and the evidenced relationship between supervision and time-involvement it is expected that the females will demonstrate higher levels of time-involvement than males. As we have seen supervision is thought to be of greater importance to male recidivism and thus it is expected that male offenders will demonstrate supervision levels lower than their female counterparts and that male violent offenders will demonstrate the lowest level of supervision among groups. It is expected that supervision will be the strongest predictor
of male mental health, substance use, early age at first offense, antisocial peer involvement, and recidivism.
CHAPTER FIVE: RESULTS

Sample: Descriptive Statistics

The final sample was 49% (N=29) male and 51% (N=31) female. Of the male sample, 12 were included for non-violent arrests while 17 were included for violent arrests. The female sample was a bit more equal, with 16 non-violent females and 14 violent females. Table 5 shows the gender and offense composition of the study sample. The majority of juveniles sampled identified as Black or African American (N=47.5%), as seen in table 6. Another 27% identified as Hispanic, while 18.6% identified as White/Non-Hispanic. A much smaller group identified as Asian (N=1.7%), or other (N=5.1). Those juvenile’s identifying as other, typically identified as biracial.

Table 5: Study Composition by Gender and Offense Type

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male Non-Violent</td>
<td>12</td>
<td>20.3</td>
</tr>
<tr>
<td>Female Non-Violent</td>
<td>16</td>
<td>27.1</td>
</tr>
<tr>
<td>Male Violent</td>
<td>17</td>
<td>28.8</td>
</tr>
<tr>
<td>Female Violent</td>
<td>14</td>
<td>23.7</td>
</tr>
<tr>
<td>Total</td>
<td>59</td>
<td>100.0</td>
</tr>
</tbody>
</table>
Table 6: Study Composition by Race and Ethnicity

<table>
<thead>
<tr>
<th>Race/Ethnicity</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>White/Non Hispanic</td>
<td>11</td>
<td>18.6</td>
</tr>
<tr>
<td>White/Hispanic</td>
<td>16</td>
<td>27.1</td>
</tr>
<tr>
<td>Black</td>
<td>28</td>
<td>47.5</td>
</tr>
<tr>
<td>Asian</td>
<td>1</td>
<td>1.7</td>
</tr>
<tr>
<td>Other</td>
<td>3</td>
<td>5.1</td>
</tr>
<tr>
<td>Total</td>
<td>59</td>
<td>100.0</td>
</tr>
</tbody>
</table>

As seen in Table 7, the vast majority of juveniles (59%) report living with at least one parent at the time of their arrest, while another 25% report living with both parents. A small number of juveniles (12%) reported living with another relative, in most cases a grandparent while only 3% of juveniles reported living with friends during the time of their offense. The majority of juveniles identified a parent, in particular their mother as their primary caregiver at the time of their offense. Table 8 shows the composition of reported primary caregiver.

Table 7: Living Arrangements at Time of Arrest

<table>
<thead>
<tr>
<th>Living Arrangement</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>With One Parent</td>
<td>35</td>
<td>59.3</td>
</tr>
<tr>
<td>With Both Parents</td>
<td>15</td>
<td>25.4</td>
</tr>
<tr>
<td>With Relative (not parent)</td>
<td>7</td>
<td>11.9</td>
</tr>
<tr>
<td>With Friends</td>
<td>2</td>
<td>3.4</td>
</tr>
<tr>
<td>Total</td>
<td>59</td>
<td>100.0</td>
</tr>
</tbody>
</table>
Table 8: Primary Caregiver-Self Report

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mother</td>
<td>38</td>
<td>64.4</td>
</tr>
<tr>
<td>Father</td>
<td>4</td>
<td>6.8</td>
</tr>
<tr>
<td>Grandmother</td>
<td>6</td>
<td>10.2</td>
</tr>
<tr>
<td>Other</td>
<td>11</td>
<td>18.6</td>
</tr>
<tr>
<td>Total</td>
<td>59</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Principal Components Analysis

As earlier described, PCA is a technique for the reduction of data while preserving the amount of variation within the dataset. PCA was completed for the variables of Supervision and Time-Involvement, however it is important to keep in mind that given the small sample size, particularly when analyzed by gender group, that inferences as to the application of identified principal components (PCs) to the larger population are limited (Jolliffe, 2002, pp 68). PCA resulted in the retention of one supervision component and one time-involvement component.

Taking the supervision measure first, responses to the three survey items were analyzed using PCA. Prior to undertaking PCA data suitability to PCA was examined. The Kaiser-Meyer-Olkin Measure of Sampling Adequacy (.548) was close to the recommended .6 and Bartletts’ Test of Sphericity (see table 9) was significant at the .002 level, as seen in table 10, indicating that proceeding with PCA was advisable.
Table 9: Barlett’s Test of Sphericity

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>$X^2$</td>
<td>15.165</td>
</tr>
<tr>
<td>$df$</td>
<td>3</td>
</tr>
<tr>
<td>$p$</td>
<td>.002</td>
</tr>
</tbody>
</table>

PCA further revealed one component with an eigenvalue exceeding 1, which was subsequently retained. Table 10 shows the component eigenvalues for the supervision PCA. Review of the screeplot, as seen in figure 2, showed a clear break following component one further providing support for the retention of one component.

Table 10: Eigenvalues for Supervision PCA

<table>
<thead>
<tr>
<th>Component</th>
<th>Initial Eigenvalues</th>
<th>Total</th>
<th>% of Variance</th>
<th>Cumulative %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1.553</td>
<td>51.765</td>
<td>51.765</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>.902</td>
<td>30.073</td>
<td>81.838</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>.545</td>
<td>18.162</td>
<td>100.000</td>
<td></td>
</tr>
</tbody>
</table>
Figure 2: Supervision PCA Screeplot

Varimax rotation could not be completed as only one component achieved an adequate eigenvalue and was therefore retained. The component matrix, as seen in table 11 shows the factor loadings for the retained component. Items loading strongly (> .8) on the retained component of supervision were survey items 1 “On how many days out of a week did your caregiver check to see if your homework or chores were completed?” and 2 “On how many days out of a week did your caregiver check to see where you were during the day?” Item 3, “On how many days out of a week did your caregiver limit the amount of television you watch?” failed to strongly load and was thus dropped from the component solution.
Table 11: Supervision PCA Factor Loadings

<table>
<thead>
<tr>
<th></th>
<th>Component 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reported Supervision 1</td>
<td>.801</td>
</tr>
<tr>
<td>Reported Supervision 2</td>
<td>.488</td>
</tr>
<tr>
<td>Reported Supervision 3</td>
<td>.821</td>
</tr>
</tbody>
</table>

The final solution for supervision resulted in the retention of one component accounting for 51.7% of the variance. A factor-based score for supervision was completed for each subject by adding items one and three. Higher scores reveal a greater amount of supervision.

The six survey items associated with time-involvement were subjected to PCA procedures, however prior to undertaking the analysis PCA data suitability was examined. The Kaiser-Meyer-Olkin Measure of Sampling Adequacy (.596) was adequately close to the recommended .6, and the Bartletts' Test of Sphericity (table 12) reached significance (p=.002), indicating that PCA is suitable.

Table 12: Bartlett's Test of Sphericity

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>$X^2$</td>
<td>35.383</td>
</tr>
<tr>
<td>$df$</td>
<td>15</td>
</tr>
<tr>
<td>$p$</td>
<td>.002</td>
</tr>
</tbody>
</table>

PCA revealed two components with an eigenvalue exceeding 1, as seen in table 13. Upon closer inspection of the scree plot and factor loadings only the component with the highest eigenvalue (1.87) was retained in the solution. Review of the screeplot (Figure 3) showed a clear break following component one further providing support for the retention of only one component.
Table 13: Eigenvalues for Time-Involvement PCA

<table>
<thead>
<tr>
<th>Component</th>
<th>Initial Eigenvalues</th>
<th>Total</th>
<th>% of Variance</th>
<th>Cumulative %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1.873</td>
<td>31.213</td>
<td>31.213</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>1.291</td>
<td>21.514</td>
<td>52.727</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>.949</td>
<td>15.812</td>
<td>68.539</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>.831</td>
<td>13.848</td>
<td>82.388</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>.582</td>
<td>9.699</td>
<td>92.086</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>.475</td>
<td>7.914</td>
<td>100.000</td>
<td></td>
</tr>
</tbody>
</table>

Figure 3: Time-Involvement PCA Screeplot

Varimax rotation was performed revealing the strongest factor loading on component one. Four items loaded strongly on the retained component. Those items retained in the solution of time-involvement included survey item 1 “On how many days out of a week did your caregiver check to see if your homework or chores were completed?”, item 2 “On how many
days out of a week did your caregiver check to see where you were during the day?, item 5 “On how many days out of a week did your caregiver limit the amount of television you watch?”, and item 6 “ failed to strongly load and was thus dropped from the component solution.

Table 14: Time-Involvement PCA Factor Loadings

<table>
<thead>
<tr>
<th>Time Involvement</th>
<th>Component 1</th>
<th>Component 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time Involvement 1</td>
<td>.766</td>
<td>.285</td>
</tr>
<tr>
<td>Time Involvement 2</td>
<td>.735</td>
<td>.283</td>
</tr>
<tr>
<td>Time Involvement 3</td>
<td>.257</td>
<td>.784</td>
</tr>
<tr>
<td>Time Involvement 4</td>
<td>-.163</td>
<td>.704</td>
</tr>
<tr>
<td>Time Involvement 5</td>
<td>.556</td>
<td>-.278</td>
</tr>
<tr>
<td>Time Involvement 6</td>
<td>.469</td>
<td>-.255</td>
</tr>
</tbody>
</table>

The final solution for time-involvement resulted in the retention of one component accounting for 31.23% of the variance. A factor-based score for time-involvement was completed for each subject by adding retained items. Higher scores reveal a greater amount of time-involvement.

Hypothesis 1

The mean emotional attachment score for the female group will be different that of the males, specifically it will be higher than the mean emotional attachment score for the male group.

An independent-samples t-test was conducted to compare the emotional attachment scores for male and female groups. Levene’s Test for Equality of Variances found that the sample data was in violation of the assumption of equal variance; therefore SPSS output for
equal variances not assumed was used. While there was no significant difference in male and female’s scores, there is a descriptive difference which provides some support for the hypothesis. As seen in table 15, the female score was higher than that of the male’s and the effect size of the differences neared the moderate level ($\eta^2=0.47$). However there was no significant difference ($p=.183$) in the mean emotional attachment score for males (\bar{X}=17.75, SD=5.24) and females (\bar{X} = 20.06, SD=7.7). Table 16 shows the t-test results for equal variances not assumed. Regardless of the score difference and effect size, the null hypothesis of no difference between groups is retained. As a non-parametric alternative an Independent Samples Mann-Whitney U test was performed. No significant difference ($p=.398$) in emotional attachment was found between gender groups.

Table 15: Emotional Attachment Descriptive Statistics

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>n</td>
<td>29</td>
<td>30</td>
</tr>
<tr>
<td>\bar{X}</td>
<td>17.76</td>
<td>20.07</td>
</tr>
<tr>
<td>SD</td>
<td>5.24</td>
<td>7.71</td>
</tr>
<tr>
<td>SEM</td>
<td>.973</td>
<td>1.41</td>
</tr>
</tbody>
</table>

Table 16: Gender and Emotional Attachment T-Test Results

<table>
<thead>
<tr>
<th></th>
<th>t</th>
<th>df</th>
<th>p</th>
<th>MD</th>
<th>SE</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>LL</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>UL</td>
</tr>
<tr>
<td>Equal variances not assumed</td>
<td>-1.35</td>
<td>51.25</td>
<td>.183</td>
<td>-.2.308</td>
<td>1.711</td>
<td>-5.742</td>
</tr>
</tbody>
</table>
Hypothesis 2

The mean emotional attachment (AAQ) scale scores (availability, angry distress, and goal-corrected Partnership) for the female group will not be equal to mean scores on the same emotional attachment (AAQ) scales for male group.

A one-way multiple analysis of variance was completed to test for gender’s effect on the three subscales in the emotional attachment measure. The three subscales of the emotional attachment measure were used as dependent variables: availability, angry-distress, and goal-corrected partnership. Assumptions of MANOVA were first examined. Dependent variables were assessed for issues of multicollinearity, using a correlation matrix (see table 17). No dependent variables (AAQ subscales) were highly correlated with one another, indicating that we have not violated the assumption of multicollinearity. A review of Levene’s Test of Equality of Error Variances indicated that we cannot assume equality of variances for this scale. Otherwise, no serious violations of assumptions were observed.

Table 17: Correlation Matrix for AAQ Subscales

<table>
<thead>
<tr>
<th></th>
<th>Angry Distress</th>
<th>Availability</th>
<th>Goal Corrected Partnership</th>
</tr>
</thead>
<tbody>
<tr>
<td>Angry Distress</td>
<td>1 rectangle_i</td>
<td>.706**</td>
<td>.357**</td>
</tr>
<tr>
<td>N</td>
<td>59</td>
<td>59</td>
<td>59</td>
</tr>
<tr>
<td>Availability</td>
<td>.706**</td>
<td>1 rectangle_i</td>
<td>.571**</td>
</tr>
<tr>
<td>N</td>
<td>59</td>
<td>59</td>
<td>59</td>
</tr>
<tr>
<td>Goal Corrected</td>
<td>.357**</td>
<td>.571**</td>
<td>1 rectangle_i</td>
</tr>
<tr>
<td>Partnership</td>
<td>59</td>
<td>59</td>
<td>59</td>
</tr>
</tbody>
</table>

Note. **. Correlation is significant at the 0.01 level (2-tailed).
Table 18: AAQ Subscale Descriptive Statistics by Gender

<table>
<thead>
<tr>
<th>Subscale</th>
<th>Gender</th>
<th>$\bar{X}$</th>
<th>$SD$</th>
<th>$N$</th>
</tr>
</thead>
<tbody>
<tr>
<td>AAQ angry distress</td>
<td>Male</td>
<td>6.2414 2.50222</td>
<td>29</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>7.4000 3.15791</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>6.8305 2.88965</td>
<td>59</td>
<td></td>
</tr>
<tr>
<td>AAQ availability</td>
<td>Male</td>
<td>5.9655 2.19549</td>
<td>29</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>7.1667 3.30186</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>6.5763 2.85393</td>
<td>59</td>
<td></td>
</tr>
<tr>
<td>AAQ goalcorr partner</td>
<td>Male</td>
<td>5.5517 1.82417</td>
<td>29</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>5.5000 2.47400</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>5.5254 2.16043</td>
<td>59</td>
<td></td>
</tr>
</tbody>
</table>

Table 18 shows descriptive statistics by gender on the AAQ subscales. Table 19 shows Wilks’ Lambda results of the MANOVA. While females scored higher on two out of the three subscales, no statistically significant difference was found between male and female groups on the combined dependent variables: $F(3, 55)=1.49; p=.228$; Wilks’ Lambda=.93; partial eta squared=.08. A second model was run, which included the covariates of age and family structure. Results remained non-significant when covariates were included. As significant results were not found among the combined dependent variables no further steps were taken to examine the dependent variables separately. Results indicate that there is no statistically significant difference between male and female AAQ subscale scores.

Table 19: MANOVA Wilks’ Lambda Results

<table>
<thead>
<tr>
<th>$\Lambda$</th>
<th>$F$</th>
<th>$df$</th>
<th>Error $df$</th>
<th>$p$</th>
<th>Partial Eta Squared</th>
<th>Observed Power$^b$</th>
</tr>
</thead>
<tbody>
<tr>
<td>.93</td>
<td>1.49$^a$</td>
<td>3.00</td>
<td>55.00</td>
<td>.23</td>
<td>.075</td>
<td>.372</td>
</tr>
</tbody>
</table>

73
Hypothesis 3

The mean supervision score for the female group will be different that of the males, specifically the female group will experience a higher mean level of reported supervision.

An independent-samples t-test was conducted to compare the supervision scores for male and female groups. Levene’s test for equality of variances was not found to be significant indicating the sample data meets the assumption of equal variance. No significant difference ($p=.692$) was found in the mean supervision score for males ($\bar{X}=10.72$, SD=4.01) and females ($\bar{X}=10.26$, SD=4.75). Table 20 shows the descriptive difference between male and female scores, while table 21 shows the t-test results. The analysis revealed no evidence for the hypothesis, the females score was very similar to that of the males. The effect size for the small difference found in the mean scores was very small ($\eta^2=.008$). As a non-parametric alternative Independent Samples Mann-Whitney U test was performed. No significant difference ($p=.975$) in supervision was found between gender groups.

Table 20: Supervision Descriptive Statistics by Gender

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>$n$</td>
<td>29</td>
<td>30</td>
</tr>
<tr>
<td>$\bar{X}$</td>
<td>10.7241</td>
<td>10.2667</td>
</tr>
<tr>
<td>$SD$</td>
<td>4.01690</td>
<td>4.75564</td>
</tr>
<tr>
<td>$SEM$</td>
<td>.74592</td>
<td>.86826</td>
</tr>
</tbody>
</table>
Table 21: Gender and Supervision Independent T-Test Results

<table>
<thead>
<tr>
<th></th>
<th>$t$</th>
<th>$df$</th>
<th>$p$</th>
<th>$MD$</th>
<th>$SE$</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$LL$</td>
</tr>
<tr>
<td>Equal variances not assumed</td>
<td>.400</td>
<td>56</td>
<td>.691</td>
<td>.457</td>
<td>1.145</td>
<td>-1.836</td>
</tr>
</tbody>
</table>

Hypothesis 4

*Male and female groups will demonstrate a difference in the mean level of time-involvement.*

An independent-samples t-test was conducted to compare the time-involvement scores for male and female groups. Levene’s test for equality of variances was not found to be significant indicating the sample data meets the assumption of equal variance. There was no significant difference ($p=.289$) in mean time-involvement score for males ($\bar{X} =11.10$, SD=6.84) and females ($\bar{X} = 9.30$, SD=6.09). Table 22 shows the descriptive difference between male and female scores, while table 23 shows the t-test results. While there was no significant difference in male and female’s scores, there is some support for the hypothesis. The female score was lower than that of the male’s and the effect size of the differences was at the moderate level ($\eta^2=.058$). Regardless of the score difference and effect size, the null hypothesis of no difference between groups is retained. As a non-parametric alternative Independent Samples Mann-Whitney U test was performed. No significant difference ($p=.382$) in time-involvement was found between gender groups.
Table 22: Time-Involvement Descriptive Statistics by Gender

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>n</td>
<td>29</td>
<td>30</td>
</tr>
<tr>
<td>(\bar{X})</td>
<td>11.1034</td>
<td>9.3000</td>
</tr>
<tr>
<td>SD</td>
<td>6.84181</td>
<td>6.09777</td>
</tr>
<tr>
<td>SEM</td>
<td>1.27049</td>
<td>1.11329</td>
</tr>
</tbody>
</table>

Table 23: Gender and Time-Involvement Independent T-Test Results

<table>
<thead>
<tr>
<th></th>
<th>t</th>
<th>df</th>
<th>p</th>
<th>MD</th>
<th>SE</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Equal variances</td>
<td>1.068</td>
<td>56</td>
<td>.290</td>
<td>1.803</td>
<td>1.689</td>
<td>-1.581</td>
</tr>
<tr>
<td>not assumed</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Hypothesis 5

There are differences in the emotional attachment medians among four juvenile groups. One or more groups differ in the underlying distribution on the emotional attachment measure. It is anticipated, based upon the literature, that the VF group will demonstrate a different distribution (higher score).

A Kruskal-Wallis test was conducted to compare the emotional attachment medians among four groups (Violent Female, Non-Violent Female, Violent Male, and Non-Violent Male). Cross-tabs, as seen in table 24, reveal that the violent female group had the highest mean score on the emotional attachment measure (\(\bar{X}=20.86,\ SD=7.75\)). This was considerably higher than the lower mean score (non-violent males, \(\bar{X}=16.75,\ SD=4.85\)). It was anticipated that there
would be a significant difference in the distribution among groups however no significant difference \((p=.511)\) was found among groups.

Table 24: Emotional Attachment Descriptive Statistics by Gender and Offense Level

<table>
<thead>
<tr>
<th></th>
<th>Male Non-Violent ((n=12))</th>
<th>Female Non-Violent ((n=16))</th>
<th>Male Violent ((n=17))</th>
<th>Female Violent ((n=14))</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum</td>
<td>9</td>
<td>9</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Maximum</td>
<td>26</td>
<td>39</td>
<td>28</td>
<td>31</td>
</tr>
<tr>
<td>(\bar{X})</td>
<td>16.75</td>
<td>19.38</td>
<td>18.47</td>
<td>20.86</td>
</tr>
<tr>
<td>SD</td>
<td>4.85</td>
<td>7.85</td>
<td>5.54</td>
<td>7.75</td>
</tr>
</tbody>
</table>

Hypothesis 6

*There are differences in the supervision medians among four juvenile groups. One or more groups differ in the underlying distribution on the supervision measure.*

A Kruskal-Wallis test was conducted to compare the supervision medians among four groups (Violent Female, Non-Violent Female, Violent Male, and Non-Violent Male). Table 25 reveals that the non-violent male group had the highest mean score on the supervision measure \((\bar{X}=10.91, \text{SD}=3.7)\). Non-violent females demonstrated the lowest median supervision score \((\bar{X}=9.86, \text{SD}=5.1)\). No significant difference \((p=.975)\) was found among groups.
Hypothesis 7

There are differences in the time-involvement medians among four juvenile groups. One or more groups differ in the underlying distribution on the time-involvement measure.

A Kruskal-Wallis test was conducted to compare the time-involvement medians among four groups (Violent Female, Non-Violent Female, Violent Male, and Non-Violent Male). Table 26, shows that surprisingly the violent male group had the highest mean score on the time-involvement measure ($\bar{X}=11.52$, $SD=7.35$). Violent females demonstrated the lowest median time-involvement score ($\bar{X}=9.42$, $SD=6.66$). No significant difference ($p=.975$) was found among groups.
Table 26: Time-Involvement Descriptive Statistics by Gender and Offense Level

<table>
<thead>
<tr>
<th></th>
<th>Male Non-Violent (n=12)</th>
<th>Female Non-Violent (n=16)</th>
<th>Male Violent (n=17)</th>
<th>Female Violent (n=14)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Maximum</td>
<td>21</td>
<td>19</td>
<td>23</td>
<td>20</td>
</tr>
<tr>
<td>$\bar{X}$</td>
<td>10.50</td>
<td>9.19</td>
<td>11.53</td>
<td>9.42</td>
</tr>
<tr>
<td>$SD$</td>
<td>6.32</td>
<td>5.78</td>
<td>7.35</td>
<td>6.66</td>
</tr>
</tbody>
</table>

Hypothesis 8

There will be a statistically significant difference in the odds ratio probability of predicting mental health using the following continuous independent variables of emotional attachment, supervision, and time-involvement in a sample of 2009 Orange County juvenile defendants.

A direct logistic regression analysis was performed, by gender group and the full sample, to examine the probability of predicting mental health by three predictors: emotional attachment, supervision, and time-involvement. Three predictors were simultaneously entered into the model. Prior to initiation of analysis assumptions of logistic regression were first examined. Age and family structure covariates were not included in the full sample or gendered analysis due to the already small sample size. The issue of multicollinearity was addressed by the examination of the correlation matrix for independent variables (see table 27). Independent variables were not observed to be highly correlated with one another; instead there is a moderate correlation. Logistic regression assumes that independent variables will have some level of correlation but
will not be highly correlated. It can be assumed that the assumption of multicollinearity is not violated. Table 28 shows the frequency of mental health within the full sample.

**Table 27: Predictor Variable Correlation Matrix**

<table>
<thead>
<tr>
<th></th>
<th>Supervision</th>
<th>Emotional Attachment</th>
<th>Time-Involvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supervision</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emotional Attachment</td>
<td>-.659**</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Time-Involvement</td>
<td>.446**</td>
<td>-.478**</td>
<td>1</td>
</tr>
</tbody>
</table>

*Note. **. Correlation is significant at the 0.01 level (2-tailed).*

**Table 28: Mental Health Frequency**

<table>
<thead>
<tr>
<th>Mental Health</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>35</td>
<td>59%</td>
</tr>
<tr>
<td>Yes</td>
<td>17</td>
<td>29%</td>
</tr>
<tr>
<td>Total</td>
<td>52</td>
<td>88%</td>
</tr>
<tr>
<td>Missing</td>
<td>7</td>
<td>12%</td>
</tr>
<tr>
<td>Total</td>
<td>59</td>
<td>100%</td>
</tr>
</tbody>
</table>

In the full group, the omnibus test of model coefficients indicated no significance, $\chi^2 (3, N=52) = 6.66, p=.084$, was found in the test of the full model, with three predictors, against the constant-only model. This indicates that for the full sample, the predictors as a set are no more reliable in predicting mental health status than the constant only model. While our initial test of goodness of fit failed to indicate support for our model, the Hosmer and Lemeshow Test of
Goodness of Fit $\chi^2 (8, N=52) = 6.09$, $p = .637$, shows support for our model. In the Hosmer and Lemeshow Test of Goodness of fit test, a p value greater than .05 level indicates support for goodness of fit. Further examination of the effect size, using Cox and Snell ($r^2$) and Nagelkerke ($r^2$) criterion found that approximately 12 to 16 percent of the variation found in the mental health variable may be explained by the set of predictor variables. Classification of the model was unimpressive: while the full model was able to correctly predict 85 percent of those juvenile with no mental health indication, only 29 percent of those with mental health were predicted for a full model classification of 67.3 percent. This is not an improvement on the constant-only model (67.3%).

Table 29 shows regression coefficients, Wald Chi Square, odds ratios, and 95% confidence intervals for each predictor variable. According to the Wald criterion only emotional attachment contributed significantly to the model, $\chi^2 (1, N=52) = 4.09$, $p = .043$. The direction of the regression coefficient ($\beta = .134$) shows that as problems with emotional attachment increase so too does the probability of mental health indication. Specifically, the odds ratio ($e^\beta$) indicates that the odds of a juvenile having a mental health disorder increase 1.14 times with the addition of one unit in the attachment score.
Table 29: Full Sample Logistic Regression Analysis of Attachment on Mental Health

<table>
<thead>
<tr>
<th>Predictor</th>
<th>β</th>
<th>SE β.</th>
<th>χ²</th>
<th>df</th>
<th>p</th>
<th>eβ (OR)</th>
<th>95% C.I. for eβ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>-3.838</td>
<td>2.096</td>
<td>3.352</td>
<td>1</td>
<td>.067</td>
<td>.022</td>
<td>NA</td>
</tr>
<tr>
<td>Emotional Attachment</td>
<td>.134</td>
<td>.066</td>
<td>4.090</td>
<td>1</td>
<td>.043</td>
<td>1.144</td>
<td>1.004 - 1.303</td>
</tr>
<tr>
<td>Supervision</td>
<td>-.007</td>
<td>.090</td>
<td>.007</td>
<td>1</td>
<td>.935</td>
<td>.993</td>
<td>.833 - 1.184</td>
</tr>
<tr>
<td>Time-Involvement</td>
<td>.054</td>
<td>.059</td>
<td>.835</td>
<td>1</td>
<td>.361</td>
<td>1.055</td>
<td>.940 - 1.184</td>
</tr>
</tbody>
</table>

The full logistic model was then run by gender group. While a small sample size is recognized, the analysis was run as a cross check for the masking effect of gender. In the male group the omnibus tests of model coefficients was not significant, χ² (3, n=28) = 3.26, p=.354, was found in the test of the full model, with three predictors, against the constant-only model. In the female group, the omnibus tests of model coefficients also failed to make significance (χ² (3, n=24) = 3.79, p=.285). This indicates that for the full sample, regardless of gender group, the predictors as a set are no more reliable in predicting mental health status than the constant only model. While our initial test of goodness of fit failed to indicate support for our model, for either gender, the Hosmer and Lemeshow Test of Goodness of Fit shows support for our model in both gender groups, male group χ² (7, n=28) =5.87, p=.56; female group χ² (8, n=24) =13.33, p=.101. Further examination of the effect size, using Cox and Snell (r²) and Nagelkerke (r²) criterion found that approximately 11 to 15 percent of the variation found in the male mental health variable may be explained by the set of predictor variables, while a larger 15-20 percent may be explained in the female group. Classification of the model, in the male group, was unimpressive: while the full model was able to correctly predict 89 percent of those juvenile with no mental
health indication, only 22 percent of those with mental health were predicted for a full model classification of 67.3 percent. This is not an improvement on the constant-only model (67.9%). A different picture emerged in the female group. The full model in the female group was able to correctly predict 93.8% of no responses to mental health, while correctly predicting 50 percent of yes responses. The full model classification for the female group was 79.2 percent, an improvement over the constant only model (66.7%).

Table 30 shows regression coefficients, Wald Chi Square, odds ratios, and 95 percent confidence intervals for each predictor variable by gender group. No predictor variables were identified to contribute significantly to the model by either gender group.

While the model appears to account for some of the variability in mental health, differentially for males and females, as evidenced by the goodness of fit, effect size and model classification, no statistically significant odds ratios ($e^\beta$) were identified in the predictive power of the three independent variables by either gender group.
Table 30: Logistic Regression Analysis of Attachment on Mental Health by Gender

<table>
<thead>
<tr>
<th>Predictor</th>
<th>β</th>
<th>SE β</th>
<th>$\chi^2$</th>
<th>df</th>
<th>p</th>
<th>$e^\beta$ (OR)</th>
<th>95% C.I. for $e^\beta$</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Male</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>-4.367</td>
<td>2.938</td>
<td>2.210</td>
<td>1</td>
<td>.137</td>
<td>.013</td>
<td>NA</td>
</tr>
<tr>
<td>Emotional Attachment</td>
<td>.168</td>
<td>.105</td>
<td>2.526</td>
<td>1</td>
<td>.112</td>
<td>1.182</td>
<td>.962 - 1.454</td>
</tr>
<tr>
<td>Supervision</td>
<td>-.013</td>
<td>.122</td>
<td>.011</td>
<td>1</td>
<td>.917</td>
<td>.987</td>
<td>.777 - 1.255</td>
</tr>
<tr>
<td>Time-Involvement</td>
<td>.064</td>
<td>.077</td>
<td>.688</td>
<td>1</td>
<td>.407</td>
<td>1.066</td>
<td>.917 - 1.239</td>
</tr>
<tr>
<td><strong>Female</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>-3.897</td>
<td>3.262</td>
<td>1.427</td>
<td>1</td>
<td>.232</td>
<td>.020</td>
<td>NA</td>
</tr>
<tr>
<td>Emotional Attachment</td>
<td>.129</td>
<td>.096</td>
<td>1.805</td>
<td>1</td>
<td>.179</td>
<td>1.138</td>
<td>.942 - 1.375</td>
</tr>
<tr>
<td>Supervision</td>
<td>.000</td>
<td>.136</td>
<td>.000</td>
<td>1</td>
<td>1.000</td>
<td>1.000</td>
<td>.765 - 1.307</td>
</tr>
<tr>
<td>Time-Involvement</td>
<td>.045</td>
<td>.097</td>
<td>.220</td>
<td>1</td>
<td>.639</td>
<td>1.046</td>
<td>.866 - 1.264</td>
</tr>
</tbody>
</table>

**Hypothesis 9**

There will be a statistically significant difference in the odds ratio probability of predicting substance use using the following continuous independent variables of emotional attachment, supervision, and time-involvement in a sample of 2009 Orange County juvenile defendants.

A direct logistic regression analysis was performed, by gender group and the full sample, to examine the probability of predicting substance use by three predictors: emotional attachment, supervision, and time-involvement. The three predictors were simultaneously entered into the model. Prior to initiation of analysis assumptions of logistic regression were first examined. Age and family structure covariates were not included in the full sample or gendered analysis due to
the already small sample size. The issue of multicollinearity was addressed by the examination of the correlation matrix for independent variables (see table 27). Independent variables were not observed to be highly correlated with one another; instead there is a moderate correlation; therefore the assumption of multicollinearity is not violated. Table 31 shows the substance use frequencies for the full sample.

Table 31: Substance Use Frequency

<table>
<thead>
<tr>
<th>Substance</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>41</td>
<td>69%</td>
</tr>
<tr>
<td>Yes</td>
<td>13</td>
<td>22%</td>
</tr>
<tr>
<td>Total</td>
<td>54</td>
<td>91%</td>
</tr>
<tr>
<td>Missing</td>
<td>5</td>
<td>8%</td>
</tr>
<tr>
<td>Total</td>
<td>59</td>
<td>100%</td>
</tr>
</tbody>
</table>

In the full group the omnibus tests of model coefficients indicated no significance, $\chi^2 (3, N=54) = 4.8, p=.187$, was found in the test of the full model, with three predictors, against the constant-only model. This indicates that for the full sample, the predictors as a set are no more reliable in predicting mental health status than the constant only model. While our initial test of goodness of fit failed to indicate support for our model, the Hosmer and Lemeshow Test of Goodness of Fit $\chi^2 (8, N=54) =5.5, p=.698$, shows support for our model. In the Hosmer and Lemeshow Test of Goodness of fit test, a p value greater than .05 level indicates support for goodness of fit. Further examination of the effect size, using Cox and Snell ($r^2$) and Nagelkerke ($r^2$) criterion found that approximately nine to thirteen percent of the variation found in the
substance use variable may be explained by the set of predictor variables. Classification of the model was unimpressive: while the full model was able to correctly predict 95 percent of those juvenile with no substance use, only seven percent of those with substance use were predicted for a full model classification of 74.1 percent. This is lower than the constant-only model (75.9%).

Table 32 shows regression coefficients, Wald Chi Square, odds ratios, and 95 percent confidence intervals for each predictor variable for the full group. According to the Wald criterion, no predictor variables were identified to contribute significantly to the model, however supervision came close to significance, $\chi^2 (1, N=54) = 3.2$, $p=.072$.

**Table 32: Full Sample Logistic Regression Analysis of Attachment on Substance Use**

<table>
<thead>
<tr>
<th>Predictor</th>
<th>$\beta$</th>
<th>$SE\beta$</th>
<th>Wald’s $\chi^2$</th>
<th>df</th>
<th>$p$</th>
<th>$e^\beta$ (OR)</th>
<th>95% C.I. for $e^\beta$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>2.811</td>
<td>2.341</td>
<td>1.442</td>
<td>1</td>
<td>.230</td>
<td>16.631</td>
<td>NA</td>
</tr>
<tr>
<td>Emotional Attachment</td>
<td>-.090</td>
<td>.073</td>
<td>1.517</td>
<td>1</td>
<td>.218</td>
<td>.914</td>
<td>.792 - 1.055</td>
</tr>
<tr>
<td>Supervision</td>
<td>-.195</td>
<td>.108</td>
<td>3.244</td>
<td>1</td>
<td>.072</td>
<td>.823</td>
<td>.666 - 1.017</td>
</tr>
<tr>
<td>Time-Involvement</td>
<td>-.034</td>
<td>.060</td>
<td>.314</td>
<td>1</td>
<td>.575</td>
<td>.967</td>
<td>.860 - 1.088</td>
</tr>
</tbody>
</table>

The full logistic model was then run by gender group. While a small sample size is recognized, the analysis was run as a cross check for the masking effect of gender. In the male group the omnibus tests of model coefficients was not significant, $\chi^2 (3, N=28) = 3.1$, $p=.378$, was found in the test of the full model, with three predictors, against the constant-only model. In the female group, the omnibus tests of model coefficients also failed to make significance, however it came very close ($\chi^2 (3, N=26) = 7.18$, $p=.066$). This indicates that for the full sample,
regardless of gender group, the predictors as a set are no more reliable in predicting substance use than the constant only model. While the initial test of goodness of fit failed to indicate support for our model, for either gender, the Hosmer and Lemeshow Test of Goodness of Fit shows support for our model in both gender groups, male group $\chi^2 (7, n=28) = 3.1, p=.876$; female group $\chi^2 (3, n=26) = 6.8, p=.451$. Further examination of the effect size, using Cox and Snell ($r^2$) and Nagelkerke ($r^2$) criterion found that approximately 10 to 16 percent of the variation found in the male substance use variable may be explained by the set of predictor variables, while a much larger 24-35 percent may be explained in the female group. Classification of the model, in the male group, was unimpressive: while the full model was able to correctly predict 100 percent of those juvenile with no substance use, only 16 percent of those with substance were predicted for a full model classification of 82 percent. While this is an improvement over the constant-only model (78.6%), the improvement is slight. The full model in the female group was able to correctly predict 89 percent of no responses to substance use, while correctly predicting 43 percent of yes responses. The full model classification for the female group was 77 percent, an improvement over the constant only model (73%).

Table 33 shows regression coefficients, Wald Chi Square, odds ratios, and 95 percent confidence intervals for each predictor variable by gender group. No predictor variables were identified to contribute significantly to the model by either gender group. It is interesting to note that while supervision came close to significance in the full group model application, leading one to suspect that supervision may be significant for either gender group, for the female group time-involvement emerged as nearing statistical significance, $\chi^2 (1, N=26) = 3.15, p=.076$. 
Table 33: Logistic Regression Analysis of Attachment on Substance Use by Gender

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Male</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th>Female</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>β</td>
<td>SE β.</td>
<td>Wald’s χ²</td>
<td>df</td>
<td>p</td>
<td>e^β</td>
<td>95% C.I. for e^β</td>
<td>LL</td>
<td>UL</td>
</tr>
<tr>
<td>Constant</td>
<td>2.062</td>
<td>3.950</td>
<td>.273</td>
<td>1</td>
<td>.602</td>
<td>7.861</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Emotional Attachment</td>
<td>-.092</td>
<td>.143</td>
<td>.412</td>
<td>1</td>
<td>.521</td>
<td>.912</td>
<td>.688</td>
<td>1.208</td>
<td></td>
</tr>
<tr>
<td>Supervision</td>
<td>-.262</td>
<td>.175</td>
<td>2.237</td>
<td>1</td>
<td>.135</td>
<td>.770</td>
<td>.546</td>
<td>1.085</td>
<td></td>
</tr>
<tr>
<td>Time-Involvement</td>
<td>.083</td>
<td>.087</td>
<td>.917</td>
<td>1</td>
<td>.338</td>
<td>1.087</td>
<td>.917</td>
<td>1.288</td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>5.184</td>
<td>3.895</td>
<td>1.771</td>
<td>1</td>
<td>.183</td>
<td>178.48</td>
<td>NA</td>
<td>NA</td>
<td></td>
</tr>
<tr>
<td>Emotional Attachment</td>
<td>-.132</td>
<td>.109</td>
<td>1.477</td>
<td>1</td>
<td>.224</td>
<td>.876</td>
<td>.708</td>
<td>1.084</td>
<td></td>
</tr>
<tr>
<td>Supervision</td>
<td>-.205</td>
<td>.176</td>
<td>1.357</td>
<td>1</td>
<td>.244</td>
<td>.815</td>
<td>.577</td>
<td>1.150</td>
<td></td>
</tr>
<tr>
<td>Time-Involvement</td>
<td>-.227</td>
<td>.128</td>
<td>3.154</td>
<td>1</td>
<td>.076</td>
<td>.797</td>
<td>.620</td>
<td>1.024</td>
<td></td>
</tr>
</tbody>
</table>

While the model appears to account for some of the variability substance use, differentially for males and females, as evidenced by combination of the goodness of fit, effect size and model classification tests for the female group, no statistically significant odds ratios were identified in the predictive power of the three independent variables by either gender group.
Hypothesis 10

There will be a statistically significant difference in the odds ratio probability of predicting involvement with antisocial peers using the following continuous independent variables of emotional attachment, supervision, and time-involvement in a sample of 2009 Orange County juvenile defendants.

A direct logistic regression analysis was performed, by gender group and the full sample, to examine the probability of predicting involvement with antisocial peers by three predictors: emotional attachment, supervision, and time-involvement. The three predictors were simultaneously entered into the model. Age and family structure covariates were not included in the full sample or gendered analysis due to the already small sample size. Prior to initiation of analysis assumptions of logistic regression were first examined. The issue of multicollinearity was addressed by the examination of the correlation matrix for independent variables (see table 27). Independent variables were not observed to be highly correlated with one another; instead there is a moderate correlation; therefore the assumption of multicollinearity is not violated.

In the full group the omnibus tests of model coefficients was significant, $\chi^2 (3, N=59) = 8.6, p=.036$, was found in the test of the full model, with three predictors, against the constant-only model. This indicates that for the full sample, the predictors as a set are more reliable in predicting involvement with antisocial peers than the constant only model. This significant finding was further supported by a significant finding in the Hosmer and Lemeshow Test of Goodness of Fit $\chi^2 (8, N=59) =12.57, p=.127$. These two findings together show strong support for our model as a predictor of antisocial peer involvement. Further examination of the effect size, using Cox and Snell (r2) and Nagelkerke (r2) criterion found that approximately 14 to 19
percent of the variation found in the involvement with antisocial peers may be explained by the set of predictor variables. The classification of the model was strong with the full model able to correctly predict 18 percent of those juvenile with no involvement with antisocial peers and 88 percent of those with involvement with antisocial peers. While the full model classification (67%) was not an improvement on the constant-only model (71%), the model was able to more accurately predict involvement over non-involvement which would be of more concern in the juvenile population.

Table 34 shows regression coefficients, Wald Chi Square, odds ratios, and 95 percent confidence intervals for each predictor variable. According to the Wald criterion, time-involvement contributed significantly to the model, $\chi^2 (1, N=59) = 5.5$, $p=.019$. The regression coefficient ($B=-.14$) indicates that as time-involvement increases the probability of involvement with antisocial peers decreases. Specifically, the odds ratio ($e^\beta$) shows that the odds of a juvenile having involvement with antisocial peers increases 8.7 times with each unit decrease in the reported time-involvement score.

Table 34: Full Sample Logistic Regression of Attachment on Involvement with Antisocial Peers

<table>
<thead>
<tr>
<th>Predictor</th>
<th>$\beta$</th>
<th>$SE\beta$</th>
<th>$\chi^2$</th>
<th>df</th>
<th>$p$</th>
<th>$e^\beta$</th>
<th>95% C.I. for $e^\beta$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>3.276</td>
<td>2.314</td>
<td>2.005</td>
<td>1</td>
<td>.157</td>
<td>26.463</td>
<td>NA</td>
</tr>
<tr>
<td>Emotional Attachment</td>
<td>-.016</td>
<td>.067</td>
<td>.055</td>
<td>1</td>
<td>.815</td>
<td>.984</td>
<td>.863</td>
</tr>
<tr>
<td>Supervision</td>
<td>-.044</td>
<td>.103</td>
<td>.184</td>
<td>1</td>
<td>.668</td>
<td>.957</td>
<td>.781</td>
</tr>
<tr>
<td>Time-Involvement</td>
<td>-.140</td>
<td>.060</td>
<td>5.499</td>
<td>1</td>
<td>.019</td>
<td>.869</td>
<td>.773</td>
</tr>
</tbody>
</table>
The full logistic model was then run by gender group. While a small sample size is recognized, the analysis was run as a cross check for the masking effect of gender. In the male group the omnibus tests of model coefficients was not significant, $\chi^2 (3, N=29) = 3.2$, $p=.36$, was found in the test of the full model, with three predictors, against the constant-only model. In the female group, the omnibus tests of model coefficients also failed to reach significance, however it came close ($\chi^2 (3, N=30) = 6.7$, $p=.082$). While the initial test of goodness of fit failed to indicate support for our model, for either gender, the Hosmer and Lemeshow Test of Goodness of Fit shows support for our model in both gender groups, male group $\chi^2 (7, N=28) =5.87$, $p=.56$; female group $\chi^2 (8, N=24) =13.33$, $p=.101$. The near significance level in the female group combined with the significant Hosmer and Lemeshow Test of Goodness of Fit provides support that the full model better predicts involvement with antisocial peers than the constant only model, for the female group. Further examination of the effect size, using Cox and Snell ($r^2$) and Nagelkerke ($r^2$) criterion found that approximately 11 to 15 percent of the variation found in the male mental health variable may be explained by the set of predictor variables, while a larger 20-28 percent may be explained in the female group. Classification of the model, in the male group, indicated that the full model was able to correctly predict 12.5 percent of those juvenile with no involvement with antisocial peers, and 95 percent of those with involvement with antisocial peers for a full model classification of 72.4 percent. This is not an improvement on the constant-only model (72%). A different picture emerged in the female group. The full model in the female group was able to correctly predict 44.4 percent of no involvement with antisocial peers, while correctly predicting 90.5 percent of cases of involvement with antisocial peers. The full model
classification for the female group was 76.7 percent, an improvement over the constant only model (70%).

Table 35 shows regression coefficients, Wald Chi Square, odds ratio, and 95 percent confidence intervals for each predictor variable by gender group. No predictor variables were identified to contribute significantly to the model for the male group. In the female group, time-involvement significantly contributed to the model, $\chi^2 (1, \, N=30) = 3.98$, $p=.046$. There is support for the model’s ability to predict antisocial peer involvement in the full group and the female group. In addition the odds ratio indicates that time-involvement is a significant predictor of involvement with antisocial peers for the full group and for the female group. Specifically, the odds ratio ($e^\beta$) shows that the odds of a female having involvement with antisocial peers increases 8.2 times with each unit decrease in the reported time-involvement score.
Table 35: Logistic Regression Analysis of Attachment on Involvement with Antisocial Peers by Gender

<table>
<thead>
<tr>
<th>Predictor</th>
<th>β</th>
<th>SE β.</th>
<th>Wald's χ²</th>
<th>df</th>
<th>p</th>
<th>$e^β$ (OR)</th>
<th>95% C.I. for $e^β$</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>LL</td>
</tr>
<tr>
<td>Male</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>UL</td>
</tr>
<tr>
<td>Constant</td>
<td>3.981</td>
<td>3.353</td>
<td>1.410</td>
<td>1</td>
<td>.235</td>
<td>53.567</td>
<td>NA</td>
</tr>
<tr>
<td>Emotional Attachment</td>
<td>-.045</td>
<td>.103</td>
<td>.195</td>
<td>1</td>
<td>.659</td>
<td>.956</td>
<td>.781</td>
</tr>
<tr>
<td>Supervision</td>
<td>-.068</td>
<td>.149</td>
<td>.210</td>
<td>1</td>
<td>.647</td>
<td>.934</td>
<td>.698</td>
</tr>
<tr>
<td>Time-Involvement</td>
<td>-.120</td>
<td>.081</td>
<td>2.172</td>
<td>1</td>
<td>.141</td>
<td>.887</td>
<td>.757</td>
</tr>
<tr>
<td>Female</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>UL</td>
</tr>
<tr>
<td>Constant</td>
<td>2.221</td>
<td>3.211</td>
<td>.479</td>
<td>1</td>
<td>.489</td>
<td>9.221</td>
<td>NA</td>
</tr>
<tr>
<td>Emotional Attachment</td>
<td>.031</td>
<td>.095</td>
<td>.108</td>
<td>1</td>
<td>.743</td>
<td>1.032</td>
<td>.857</td>
</tr>
<tr>
<td>Supervision</td>
<td>.018</td>
<td>.149</td>
<td>.015</td>
<td>1</td>
<td>.902</td>
<td>1.018</td>
<td>.761</td>
</tr>
<tr>
<td>Time-Involvement</td>
<td>-.202</td>
<td>.101</td>
<td>3.981</td>
<td>1</td>
<td>.046</td>
<td>.817</td>
<td>.670</td>
</tr>
</tbody>
</table>

Hypothesis 11

There will be a statistically significant difference in the odds ratio probability of predicting early age at first offense using the following continuous independent variables of emotional attachment, supervision, and time-involvement in a sample of 2009 Orange County juvenile defendants.

A direct logistic regression analysis was performed, by gender group and the full sample, to examine the probability of predicting early age at first offense by three predictors: emotional attachment, supervision, and time-involvement. The three predictors were simultaneously entered into the model. Age and family structure covariates were not included in the full sample.
or gendered analysis due to the already small sample size. Prior to initiation of analysis assumptions of logistic regression were first examined. The issue of multicollinearity was addressed by the examination of the correlation matrix for independent variables (see table 27). Independent variables were not observed to be highly correlated with one another; instead there is a moderate correlation; therefore the assumption of multicollinearity is not violated.

In the full group the omnibus tests of model coefficients indicated no significance, $\chi^2 (3, N=59) = 2.18$, p=.536, was found in the test of the full model, with three predictors, against the constant-only model. This indicates that for the full sample, the predictors as a set are no more reliable in predicting early age at first offense than the constant only model. While our initial test of goodness of fit failed to indicated support for our model, the Hosmer and Lemeshow Test of Goodness of Fit $\chi^2 (8, N=59) =8.7$, p=.37, shows support for our model. In the Hosmer and Lemeshow Test of Goodness of fit test, a p value greater than .05 level indicates support for goodness of fit. However upon further examination of the effect size, using Cox and Snell ($r^2$) and Nagelkerke ($r^2$) criterion found that only approximately four to five percent of the variation found in the early age at first offense variable may be explained by the set of predictor variables. Classification of the model was unimpressive: while the full model was able to correctly predict 100 percent of those juvenile with no early age at first offense, zero percent of those with early age at first offense were predicted for a full model classification of 69.5 percent. The overall classification of the full model is equal to the constant-only model.

Table 36 shows regression coefficients, Wald Chi Square, odds ratios, and 95 percent confidence intervals for each predictor variable for the full group. According to the Wald criterion, no predictor variables were identified to contribute significantly to the model.
Table 36: Full Sample Logistic Regression Analysis of Attachment on Early Age at 1st Offense

<table>
<thead>
<tr>
<th>Predictor</th>
<th>$\beta$</th>
<th>SE $\beta$</th>
<th>Wald’s $\chi^2$</th>
<th>df</th>
<th>$p$</th>
<th>$e^{\beta}$ (OR)</th>
<th>95% C.I. for $e^{\beta}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>-2.908</td>
<td>2.056</td>
<td>2.002</td>
<td>1</td>
<td>.157</td>
<td>.055</td>
<td>NA</td>
</tr>
<tr>
<td>Emotional Attachment</td>
<td>.037</td>
<td>.060</td>
<td>.374</td>
<td>1</td>
<td>.541</td>
<td>1.038</td>
<td>.922 1.168</td>
</tr>
<tr>
<td>Supervision</td>
<td>.081</td>
<td>.093</td>
<td>.749</td>
<td>1</td>
<td>.387</td>
<td>1.084</td>
<td>.903 1.302</td>
</tr>
<tr>
<td>Time-Involvement</td>
<td>.049</td>
<td>.053</td>
<td>.868</td>
<td>1</td>
<td>.352</td>
<td>1.050</td>
<td>.947 1.164</td>
</tr>
</tbody>
</table>

The full logistic model was then run by gender group. While a small sample size is recognized, the analysis was run as a cross check for the masking effect of gender. In the male group the omnibus tests of model coefficients was not significant, $\chi^2 (3, N=29) = 2.13, p=.546,$ was found in the test of the full model, with three predictors, against the constant-only model. In the female group, the omnibus tests of model coefficients also failed to reach significance ($\chi^2 (3, N=30) = .519, p=.915$). This indicates that for the full sample, regardless of gender group, the predictors as a set are no more reliable in predicting early age at first offense than the constant only model. While our initial test of goodness of fit failed to indicate support for our model, for either gender, the Hosmer and Lemeshow Test of Goodness of Fit shows support for our model in both gender groups, male group $\chi^2 (8, N=29) = 11.27, p=.187$; female group $\chi^2 (8, N=30) = 5.7, p=.68$. Further examination of the effect size, using Cox and Snell ($r^2$) and Nagelkerke ($r^2$) criterion found that approximately seven to ten percent of the variation found in the male early age at first offense variable may be explained by the set of predictor variables. The effect size for females was smaller; two to three percent of the variation in the early age at first offense may be
explained by the set of predictors. Classification of the model, in the male group, was unimpressive: while able to correctly predict 100 percent of those juvenile with no early age at first offense the model was unable to predict those whose first offense occurred prior to age 13. The full model in the female group was able to correctly predict 100 percent of no responses to early age at first offense, while correctly predicting zero percent of yes responses. The full model classification for the female group was 83%, and was an improvement over the constant only model (69.5%).

Table 37 shows regression coefficients, Wald Chi Square, odds ratios, and 95 percent confidence intervals for each predictor variable by gender group. No predictor variables were identified to contribute significantly to the model by either gender group. While there is some support for the model, as evidenced by the Hosmer and Lemeshow goodness of fit test, when considered in conjunction with other evidence little support exists for this predictive model in relationship to early age at first offense. Furthermore no odds ratios \(e^\beta\) were identified as significant in the full group application or by gender.
Table 37: Logistic Regression Analysis of Attachment on Early Age at 1st Offense by Gender

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Male</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>β</td>
<td>SE β.</td>
<td>χ²</td>
<td>df</td>
<td>p</td>
<td>e^β (OR)</td>
<td>95% C.I. for e^β</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>-3.635</td>
<td>2.845</td>
<td>1.632</td>
<td>1</td>
<td>.201</td>
<td>.026</td>
<td>NA</td>
<td>NA</td>
<td></td>
</tr>
<tr>
<td>Emotional Attachment</td>
<td>.087</td>
<td>.097</td>
<td>.811</td>
<td>1</td>
<td>.368</td>
<td>1.091</td>
<td>.903</td>
<td>1.318</td>
<td></td>
</tr>
<tr>
<td>Supervision</td>
<td>.103</td>
<td>.122</td>
<td>.705</td>
<td>1</td>
<td>.401</td>
<td>1.108</td>
<td>.872</td>
<td>1.409</td>
<td></td>
</tr>
<tr>
<td>Time-Involvement</td>
<td>.069</td>
<td>.071</td>
<td>.934</td>
<td>1</td>
<td>.334</td>
<td>1.071</td>
<td>.932</td>
<td>1.231</td>
<td></td>
</tr>
</tbody>
</table>

| Predictor          | Female                |           |           |       |           |           |           |           |           |
|--------------------|-----------------------|-----------|-----------|-------|-----------|-----------|-----------|-----------|
|                    | β         | SE β.    | χ²       | df | p         | e^β (OR) | 95% C.I. for e^β |
| Constant           | -3.812   | 3.601    | 1.120    | 1   | .290      | .022      | NA        | NA        |
| Emotional Attachment | .118   | .172     | .476     | 1   | .490      | 1.126     | .804      | 1.576     |
| Supervision        | -.005    | .095     | .002     | 1   | .962      | .995      | .826      | 1.200     |
| Time-Involvement   | -.202    | .101     | 3.981    | 1   | .046      | .817      | .670      | .996      |

Hypothesis 12

There will be a statistically significant difference in the odds ratio probability of predicting recidivism using the following continuous independent variables of emotional attachment, supervision, and time-involvement in a sample of 2009 Orange County juvenile defendants.

A direct logistic regression analysis was performed, by gender group and the full sample, to examine the probability of predicting recidivism by three predictors: emotional attachment, supervision, and time-involvement. The three predictors were simultaneously entered into the model. Prior to initiation of analysis assumptions of logistic regression were first examined. Age and family structure covariates were not included in the full sample or gendered analysis due to
the already small sample size. The issue of multicollinearity was addressed by the examination of the correlation matrix for independent variables (see table 27). Independent variables were not observed to be highly correlated with one another; instead there is a moderate correlation; therefore the assumption of multicollinearity is not violated.

In the full group the omnibus tests of model coefficients indicated no significance, \( \chi^2 (3, N=59) = 1.6, p=.658 \), was found in the test of the full model, with three predictors, against the constant-only model. This indicates that for the full sample, the predictors as a set are no more reliable in predicting mental health status than the constant only model. While our initial test of goodness of fit failed to indicate support for our model, the Hosmer and Lemeshow Test of Goodness of Fit \( \chi^2 (8, N=59) =4.02, p=.85 \), shows support for our model. Further examination of the effect size, using Cox and Snell (r2) and Nagelkerke (r2) criterion found that only approximately three to four percent of the variation found in the recidivism variable may be explained by the set of predictor variables. Classification of the model was also unimpressive: the full model was able to correctly predict 92 percent of those juvenile with no recidivism, only 26 percent of those with recidivism were predicted for a full model classification of 66 percent. This is a slight improvement on the constant-only model (61%).

Table 38 shows regression coefficients, Wald Chi Square, odds ratios, and 95% confidence intervals for each predictor variable for the full group. According to the Wald criterion, no predictor variables were identified to contribute significantly to the model.
Table 38: Full Sample Regression Analysis of Attachment on Recidivism

<table>
<thead>
<tr>
<th>Predictor</th>
<th>$\beta$</th>
<th>$SE\beta$</th>
<th>Wald’s $\chi^2$</th>
<th>$df$</th>
<th>$p$</th>
<th>$e^\beta$ (OR)</th>
<th>95% C.I. for $e^\beta$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>-2.335</td>
<td>1.865</td>
<td>1.567</td>
<td>1</td>
<td>.211</td>
<td>.097</td>
<td>NA</td>
</tr>
<tr>
<td>Emotional Attachment</td>
<td>.064</td>
<td>.056</td>
<td>1.282</td>
<td>1</td>
<td>.258</td>
<td>1.066</td>
<td>.954 - 1.191</td>
</tr>
<tr>
<td>Supervision</td>
<td>.074</td>
<td>.085</td>
<td>.757</td>
<td>1</td>
<td>.384</td>
<td>1.076</td>
<td>.912 - 1.271</td>
</tr>
<tr>
<td>Time-Involvement</td>
<td>-.010</td>
<td>.049</td>
<td>.045</td>
<td>1</td>
<td>.831</td>
<td>.990</td>
<td>.898 - 1.090</td>
</tr>
</tbody>
</table>

The full logistic model was then run by gender group. While the small sample size is recognized, the analysis was run as a cross check for the masking effect of gender. In the male group the omnibus tests of model coefficients was not significant, $\chi^2 (3, n=29) = .449, p=.93$, was found in the test of the full model, with three predictors, against the constant-only model. In the female group, the omnibus tests of model coefficients also failed to make significance, however it came very close ($\chi^2 (3, n=30) = 2.89, p=.408$). This indicates that, regardless of gender group, the predictors as a set are no more reliable in predicting recidivism than the constant only model. While the initial test of goodness of fit failed to indicate support for our model, for either gender, the Hosmer and Lemeshow Test of Goodness of Fit shows support for our model in both gender groups, male group $\chi^2 (8, N=29) = 3.4, p=.906$; female group $\chi^2 (8, N=30) = 8.35, p=.400$. Further examination of the effect size, using Cox and Snell ($r^2$) and Nagelkerke ($r^2$) criterion found that approximately one to two percent of the variation found in the male recidivism may be explained by the set of predictor variables, while a somewhat larger nine to twelve percent may be explained in the female group. Classification of the model, in the male group, was unimpressive: while the full model was able to correctly predict 100 percent of those juvenile
with no recidivism, zero percent of those with recidivism were predicted for a full model classification of 62 percent. This is equal to the classification of the constant-only model. In the female group classification did a bit better. The full model in the female group was able to correctly predict 83 percent of no responses to recidivism, while correctly predicting 50 percent of yes responses. The full model classification for the female group was 70 percent, an improvement over the constant only model (60%).

Table 39 shows regression coefficients, Wald Chi Square, odds ratios, and 95 percent confidence intervals for each predictor variable by gender group. No predictor variables were identified to contribute significantly to the model by either gender group.

<table>
<thead>
<tr>
<th>Predictor</th>
<th>β</th>
<th>SE β</th>
<th>Wald’s χ²</th>
<th>df</th>
<th>p</th>
<th>e^β (OR)</th>
<th>95% C.I. for e^β</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>-.154</td>
<td>2.750</td>
<td>.003</td>
<td>1</td>
<td>.955</td>
<td>.858</td>
<td>NA</td>
</tr>
<tr>
<td>Emotional Attachment</td>
<td>-.031</td>
<td>.096</td>
<td>.106</td>
<td>1</td>
<td>.744</td>
<td>.969</td>
<td>.803</td>
</tr>
<tr>
<td>Supervision</td>
<td>.051</td>
<td>.121</td>
<td>.176</td>
<td>1</td>
<td>.675</td>
<td>1.052</td>
<td>.830</td>
</tr>
<tr>
<td>Time-Involvement</td>
<td>-.030</td>
<td>.072</td>
<td>.174</td>
<td>1</td>
<td>.677</td>
<td>.970</td>
<td>.842</td>
</tr>
<tr>
<td>Female</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>-4.112</td>
<td>2.850</td>
<td>2.081</td>
<td>1</td>
<td>.149</td>
<td>.016</td>
<td>NA</td>
</tr>
<tr>
<td>Emotional Attachment</td>
<td>.123</td>
<td>.081</td>
<td>2.341</td>
<td>1</td>
<td>.126</td>
<td>1.131</td>
<td>.966</td>
</tr>
<tr>
<td>Supervision</td>
<td>.131</td>
<td>.129</td>
<td>1.033</td>
<td>1</td>
<td>.309</td>
<td>1.140</td>
<td>.885</td>
</tr>
<tr>
<td>Time-Involvement</td>
<td>-.017</td>
<td>.075</td>
<td>.049</td>
<td>1</td>
<td>.825</td>
<td>.984</td>
<td>.849</td>
</tr>
</tbody>
</table>
While there is some support for the model, as evidenced by the Hosmer and Lemeshow goodness of fit test, when considered in combination with other evidence little support exists for this predictive model in relationship to recidivism. Furthermore odds ratios \( e^\beta \) were non-significant in the full group application and by gender.

**Hypothesis 13**

*There is an association between the indicators of attachment (emotional attachment, supervision, and time-involvement) and mental health, substance use, involvement with antisocial peers, early age at first offense, and recidivism in a sample of 2009 Orange County juvenile defendants.*

To further explore associations distinct in gender and the influence of attachment indicators, while allowing for control of potentially confounding variables, point biserial correlation\(^iv\) was conducted by gender group and the full sample using SPSS version 19 for each combination of dependent and independent variables. Maintaining the dichotomous dependent variables used in logistic regression, correlation matrices were created for each independent and dependent variable permutation.

As seen in table 40, the strength of correlation between mental health and the measures of attachment for either gender was found to be both small and non-significant by gender group, indicating that none of the attachment measures are strongly or significantly associated with mental health for either gender group. However there was a moderate, significant positive correlation between emotional attachment and mental health in the full sample \([r_{pb} = .33, n=52, p\]

\(^iv\) It should be noted that in the SPSS program point biserial correlation is conducted using Pearson product-moment correlation coefficient as an estimate of association between variables. In each analysis the point biserial correlation is reported as \( r_{pb} \).
indicating that as emotional attachment problems increase so too do mental health problems. To further investigate this association, age and family structure were included as controls. When controlling for the effects of age and family structure the correlation between emotional attachment and mental health remains at the moderate level but becomes non-significant. This indicates that the effects of age and family structure may mediate the influence of emotional attachment on mental health. It should also be noted that while the association between emotional attachment and mental health was non-significant, the strength of association in both groups was at the moderate level.

Table 40: Attachment and Mental Health Correlations

<table>
<thead>
<tr>
<th>Gender</th>
<th>Emotional Attachment</th>
<th>Supervision</th>
<th>Time-Involvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male Mental Health</td>
<td>( r_{pb} )</td>
<td>.30</td>
<td>-.13</td>
</tr>
<tr>
<td>Sig</td>
<td>.127</td>
<td>.510</td>
<td>.907</td>
</tr>
<tr>
<td>n</td>
<td>28</td>
<td>28</td>
<td>28</td>
</tr>
<tr>
<td>Female Mental Health</td>
<td>( r_{pb} )</td>
<td>.38</td>
<td>-.27</td>
</tr>
<tr>
<td>Sig</td>
<td>.069</td>
<td>.207</td>
<td>.785</td>
</tr>
<tr>
<td>n</td>
<td>24</td>
<td>24</td>
<td>24</td>
</tr>
<tr>
<td>Sample Mental Health</td>
<td>( r_{pb} )</td>
<td>.33*</td>
<td>-.20</td>
</tr>
<tr>
<td>Sig</td>
<td>.017</td>
<td>.154</td>
<td>.782</td>
</tr>
<tr>
<td>N</td>
<td>52</td>
<td>52</td>
<td>52</td>
</tr>
</tbody>
</table>

Note.* Correlation is significant at the 0.05 level (2-tailed).

Table 41 shows that a moderate significant inverse correlation exists between female substance use and time-involvement \( [r_{pb} = -.44, n=26, p=.026] \), indicating that as time-involvement increases female substance use decreases. However when controlling for age and family structure, both separately and conjointly, the statistically significant association between
substance use and time-involvement disappears. It appears the correlation between time-involvement and substance use for the female population may be mediated by age and family structure. No direct effect of gender was found instead any effects seem to be accounted for in age and family structure. An association does exist between time-involvement and substance use in the female population, albeit as possibly mediated by other factors.

Table 41: Attachment and Substance Use Correlations

<table>
<thead>
<tr>
<th>Gender</th>
<th>Emotional Attachment</th>
<th>Supervision</th>
<th>Time-Involvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male Substance Use</td>
<td>rₚb</td>
<td>-.04</td>
<td>-.20</td>
</tr>
<tr>
<td></td>
<td>Sig</td>
<td>.834</td>
<td>.304</td>
</tr>
<tr>
<td></td>
<td>n</td>
<td>28</td>
<td>28</td>
</tr>
<tr>
<td>Female Substance Use</td>
<td>rₚb</td>
<td>.09</td>
<td>-.28</td>
</tr>
<tr>
<td></td>
<td>Sig</td>
<td>.660</td>
<td>.173</td>
</tr>
<tr>
<td></td>
<td>n</td>
<td>26</td>
<td>26</td>
</tr>
<tr>
<td>Sample Substance Use</td>
<td>rₚb</td>
<td>.05</td>
<td>-.25</td>
</tr>
<tr>
<td></td>
<td>Sig</td>
<td>.717</td>
<td>.072</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>54</td>
<td>54</td>
</tr>
</tbody>
</table>

Note.* Correlation is significant at the 0.05 level (2-tailed).

The small associations between early age at first arrest and each the three measures of attachment were found to be non-significant, as seen in table 42. It is indicated that there is no association between the measures of attachment and early age at first offense for either gender group or for the full sample.
Table 42: Attachment and Early Age at 1st Offense Correlations

<table>
<thead>
<tr>
<th>Gender</th>
<th>Emotional Attachment</th>
<th>Supervision</th>
<th>Time-Involvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Early Age</td>
<td>$r_{pb}$= 0</td>
<td>.17</td>
<td>.18</td>
</tr>
<tr>
<td></td>
<td>Sig</td>
<td>.992</td>
<td>.383</td>
</tr>
<tr>
<td></td>
<td>n</td>
<td>29</td>
<td>29</td>
</tr>
<tr>
<td>Female</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Early Age</td>
<td>$r_{pb}$= 0</td>
<td>.09</td>
<td>.02</td>
</tr>
<tr>
<td></td>
<td>Sig</td>
<td>.984</td>
<td>.639</td>
</tr>
<tr>
<td></td>
<td>n</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>Sample</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Early Age</td>
<td>$r_{pb}$= -.06</td>
<td>.14</td>
<td>.15</td>
</tr>
<tr>
<td></td>
<td>Sig</td>
<td>.682</td>
<td>.301</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>59</td>
<td>59</td>
</tr>
</tbody>
</table>

Table 43 shows that a significant moderate inverse correlation exists between female antisocial peer involvement and time-involvement [$r_{pb} = -.44, n=30, p=.015$], indicating that as time-involvement increases antisocial peer involvement decreases in the female group. However, as in substance use, when controlling for age and family structure, the association between antisocial peer involvement and time-involvement disappears. It would again, appear, that the correlation between time-involvement and antisocial peer involvement is somehow influenced by age and family structure within the female population. No direct effect of gender was found instead any effects seem to be accounted for in age and family structure. A significant moderate inverse correlation between antisocial peer involvement and time-involvement was also found for the full group [$r_{pb} = -.37, n=59, p=.004$]. As in the female group, when controlling for age and family structure the association became non-significant. Support for the hypothesis is found in both the full group and the female group, as time-involvement appears to be associated with antisocial peer involvement in both groups.
Table 43: Attachment and Antisocial Peer Involvement Correlations

<table>
<thead>
<tr>
<th>Gender</th>
<th>Emotional Attachment</th>
<th>Supervision</th>
<th>Time-Involvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male Antisocial Peer</td>
<td>$r_{pb}$: .12</td>
<td>-.16</td>
<td>-.31</td>
</tr>
<tr>
<td></td>
<td>Sig: .532</td>
<td>.406</td>
<td>.100</td>
</tr>
<tr>
<td></td>
<td>n: 29</td>
<td>29</td>
<td>29</td>
</tr>
<tr>
<td>Female Antisocial Peer</td>
<td>$r_{pb}$: .21</td>
<td>-.20</td>
<td><strong>-.44</strong>*</td>
</tr>
<tr>
<td></td>
<td>Sig: .271</td>
<td>.299</td>
<td>.015</td>
</tr>
<tr>
<td></td>
<td>n: 30</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>Sample Antisocial Peer</td>
<td>$r_{pb}$: .16</td>
<td>-.18</td>
<td><strong>-.37</strong>**</td>
</tr>
<tr>
<td></td>
<td>Sig: .216</td>
<td>.177</td>
<td>.004</td>
</tr>
<tr>
<td></td>
<td>N: 59</td>
<td>59</td>
<td>59</td>
</tr>
</tbody>
</table>

Note**: Correlation is significant at the 0.01 level (2-tailed).
*Correlation is significant at the 0.05 level (2-tailed).

Table 44 shows that the small correlations between recidivism and the measures of attachment were non-significant. This indicates that there is no association between measures of attachment and recidivism in either gender group or the full sample.

Table 44: Attachment and Recidivism Correlations

<table>
<thead>
<tr>
<th>Gender</th>
<th>Emotional Attachment</th>
<th>Supervision</th>
<th>Time-Involvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male Recidivism</td>
<td>$r_{pb}$: -.07</td>
<td>.09</td>
<td>-.01</td>
</tr>
<tr>
<td></td>
<td>Sig: .704</td>
<td>.640</td>
<td>.951</td>
</tr>
<tr>
<td></td>
<td>n: 29</td>
<td>29</td>
<td>29</td>
</tr>
<tr>
<td>Female Recidivism</td>
<td>$r_{pb}$: .24</td>
<td>-.06</td>
<td>-.11</td>
</tr>
<tr>
<td></td>
<td>Sig: .193</td>
<td>.748</td>
<td>.567</td>
</tr>
<tr>
<td></td>
<td>n: 30</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>Sample Recidivism</td>
<td>$r_{pb}$: .12</td>
<td>.01</td>
<td>-.06</td>
</tr>
<tr>
<td></td>
<td>Sig: .370</td>
<td>.967</td>
<td>.646</td>
</tr>
<tr>
<td></td>
<td>N: 59</td>
<td>59</td>
<td>59</td>
</tr>
</tbody>
</table>
CHAPTER SIX: DISCUSSION

Summary of Findings

Support was not found for hypotheses one through seven (H1-H7), indicating that in the current study between group differences are not supported in the presentation of attachment, supervision, or time-involvement for gender or combined gender and offense severity. While between-group differences were not found to be significant several interesting descriptive differences were found. The mean attachment score (AAQ) was found to be higher for the female group ($\bar{X} = 20.06$ vs. $\bar{X} = 17.75$ for males); with females scoring higher than males on two out of the three AAQ subscales (Angry Distress and Availability) and the violent female group scoring the highest of all groups on the aggregate AAQ scale.

Logistic regression procedures were used to test hypotheses eight through twelve (H8-H12). In discrete regression models tested for H8, H9, H11, and H12 (dependent variables of mental health, substance use, age at first offense, and recidivism), analyzed by gender group, no statistically significant odds ratio ($e^\beta$) was identified in the predictive power of the three independent variables (AAQ, Supervision, and Time-Involvement), thus indicating that the hypothesized models are no better able to predict the dependent variables than the constant only model. Hypothesis 10, when tested by gender group, was supported as the odd ratio ($e^\beta$), indicates that for each unit decrease in reported time-involvement with a caregiver a female juvenile’s chance of antisocial peer involvement increases by 8.2 times.

When the regression models were run for the full group no statistically significant odds ratios ($e^\beta$) were identified in the predictive power of the independent variables for H9, H11, and
H12. However for both H8 and H10 a statistically significant odds ratio ($e^\beta$) was identified in the predictive power of at least one independent variable. In H8, the odds ratio ($e^\beta$) shows that emotional attachment (AAQ) contributed significantly to the model, indicating that for each addition of one unit in the AAQ attachment score a juvenile’s chances of having a mental health disorder increase by 1.14 times. In hypothesis 10 the odds ratio ($e^\beta$) indicates that for each unit decrease in the report of time-involvement with a caregiver a juvenile’s chance of antisocial peer involvement increases by 8.7 times.

In hypothesis 13, correlation techniques were used to explore associations while controlling for confounding variables. Several correlations were found for both the full sample group and by gender group. A significant positive correlation was found between emotional attachment and mental health while a significant inverse correlation was found between time-involvement and antisocial peer involvement; both for the full group. Furthermore a significant inverse correlation was found between time-involvement and substance use and time-involvement and antisocial peer involvement, in the female group. When controlling for the variables of age and family structure, statistically significant correlations were no longer identified, indicating that all identified associations are influenced by age and family structure.

**Emotional Attachment, Gender and Delinquency**

Study results indicate several interesting findings which are consistent with the literature and which indicate the need for further research in the area of emotional attachment, gender, and delinquency. Findings indicate a non-significant descriptive difference in emotional attachment
among gender groups. Findings indicate that while females reported a higher degree of attachment problems, predominantly in the areas of anger towards their identified caregiver and feelings of a lack of caregiver availability, the difference is not great enough to indicate that delinquent females are dissimilar to males in terms of the presentation of emotional attachment. The identification of a greater similarity in male and female attachment was further supported by the MANOVA analysis of the AAQ (emotional attachment measure) subscales. This finding adds support to previous research findings that male and female emotional attachment is more similar than dissimilar (Anderson et al., 1999; Chapple et al., 2005, Junger-Tas et al., 2004).

That being supposed, the difference identified in scores still merits recognition. It is important to note, that while no statistically significant difference was located, it is speculated that juvenile females involved in delinquency appear to have a higher level of caregiver related emotional attachment problems than their male counterparts. As anticipated females in the violent offense group reported the most attachment problems (\( \bar{X} = 20.86 \)). This finding, while non-significant provides further support to previous findings indicating that emotional attachment serves as a protective factor against higher levels of delinquency (Cernkovich et al., 2008, Huebner & Betts, 2002; Laundra et al., 2002).

Females not only reported a higher aggregate emotional attachment score (female, \( \bar{X} = 20.07 \), male, \( \bar{X} = 17.76 \)) but also scored higher than males in all but one AAQ subscale (Goal Corrected Partnership). Females scored minimally one point higher than males in the areas of angry distress (female, \( \bar{X} = 7.4 \), male, \( \bar{X} = 6.2 \)) and availability (female, \( \bar{X} = 7.1 \), male, \( \bar{X} = 5.9 \)). These findings indicate that females within the sample tend to struggle with anger towards caregivers and lack the security that their caregiver is receptive to their feelings and needs.
Interestingly, in spite of such feelings, the female groups’ least area of problem was in their willingness to act for the benefit of a caregiver (goal corrected partnership). This finding adds to the literature, by contradicting the previously stated findings, which indicate that female and male delinquents experience attachment to a parent in similar manner. On the contrary it could be speculated that juvenile females experience greater anger and alienation from caregivers while maintaining a desire to assist their caregiver. Revisiting social control theory, it becomes clear that females report of greater problems with anger and perceived availability is similar to a lack of intimacy of communication (Hirschi, 1969) in which a juvenile feels able and compelled to share and communicate with a caregiver. Clearly the females in this study struggle, more so than the males, with feeling close enough to a caregiver to share openly; thus impacting the perception of availability. Further research is needed to determine if the speculation that similar concerns are also experienced by females within the larger juvenile offender population.

The exploration of association between emotional attachment and correlates of delinquency yielded several interesting findings. Emotional attachment was found to be a significant predictor of mental health in the full group, which further supports recent findings of a comparable nature (Brumariu & Kerns, 2010; Keskin & Cam, 2010; Zanussi et al., 2010). The odds ratio results indicate that the odds of a juvenile having a mental health issue is 1.4 times higher for those with attachment problems. However the small sample size is recognized as a limitation in the rejection of the null hypothesis in the current study. This association was further supported by the finding of point biserial correlation which revealed that in the full sample emotional attachment is positively associated with mental health in the full sample. Interestingly
when age and family structure were controlled the association disappeared, indicating that these covariates may play a confounding role in determining such an association.

Support is found for an overall similarity in the genders, via the findings, in the influence of emotional attachment on mental health, antisocial peer influence, early age at first offense, and recidivism. It appears that the influence of emotional attachment exists at the group level for these risk factors and little difference occurs at the level of gender. This is consistent with the finding of Özbay & Özcna (2008) that emotional attachment should provide similar protective results to both genders. The failure to identify significant gender differences in the presentation or association of emotional attachment is similar to many previous findings, while the current study also supports the importance of emotional attachment as a protective factor for females and the juvenile sample.

**Supervision, Gender and Delinquency**

Contrary to expectations, supervision was not found to be different by gender in either presentation or influence, nor did supervision emerge as a predictor of delinquency risk factors or recidivism. Findings indicate that supervision means were fairly equal across genders, which in contrast to much of the literature. Females in the current study are supervised at generally the same level as the males, which is divergent from Worthen’s (2011) indication that females are supervised at higher levels. The overall importance and even greater impact of parental supervisions on males has been underscored by researchers like Baglivio (2009), Gove and Crutchfield (1982), and Heimer and Decoster (1999). It should be noted that the supervision
findings cannot be ruled out as a product of the sample itself given that the sample is primarily comprised of cases where both juvenile and a guardian were able to be located and followed up with, indicating a higher level of supervision. Surprisingly, no association was found between supervision and any of the risk factors for delinquency, for either the full group or by either gender. This conflicts with the vast majority of research indicating that supervision plays an important direct control role in reducing risk factors for and involvement in delinquency (Frey et al., 2009; Junger-Tas et al., 2004). Is should be noted that supervision came close to significance as a predictor of substance use in the full sample. Perhaps the most surprising finding is that no association was identified between supervision and recidivism, as has been shown by Robertson et al. (2008). In the current study recidivism was not associated with any dimension of attachment (model classification poor), indicating that the variability in recidivism may be better accounted for by covariates not included as predictors (e.g. peer involvement, substance use).

**Time-Involvement, Gender and Delinquency**

Findings related to time-involvement are among the most interesting findings of this study. While between group methods failed to identify gender differences, logistic regression and point biserial correlation revealed a gendered picture in terms of the influence of time-involvement. Contrary to the literature supervision did not emerge as a prominent predictor of male peer involvement; instead time-involvement materialized as a statistically significant predictor of antisocial peer involvement for the full group and female group. Generally supervision is considered a key predictor in the development and involvement with antisocial
friends, particularly for males (Bowman et al., 2006; Edward & Rankin, 1983; Ingram et al., 2007). Point biserial correlation was run and further supported a relationship between time-involvement and antisocial peer involvement in the full sample. Time-involvement also came close to significance as a predictor of substance use in the female group and was shown to be associated with female substance use through point biserial correlation. Specific findings indicate that a juvenile with a higher reported time-involvement is 8.4 times less likely to engage with antisocial peers; and if that juvenile is female it can be expected that she will be 8.2 times less likely to engage with antisocial peers if she reports higher levels of time-involvement. These findings significantly add to the current scarcity of research in the area of gender, time-involvement, and delinquency. The current findings are similar to Worthen’s (2011) finding that an increase in positive time-spent with parents was more important to a reduction in female delinquency, providing support to the importance of time-involvement with an identified caregiver as a protective factor for females. The current findings specifically add further support to the findings that time-involvement is inversely associated with substance use and antisocial peers for the delinquency population (Barnes et al., 2007; Bauer, 2006; Greene & Banerjee, 2009), and indicates that this relationship is stronger for females than males.

It is noted that a separate point biserial correlation was run and further supported a relationship between time-involvement and antisocial peer involvement in both the full sample and the female group. The association between time-involvement and antisocial peer involvement remained non-significant for males. However similar to the association identified between attachment and mental health, when age and family structure were controlled the association identified in both groups became non-significant. The effects of age and family
structure cannot be ruled out; quite to the contrary, as indicated in the literature, age and family structure are frequently found to correlate to delinquency. In the current study the variation in both antisocial peer involvement and substance use appear to be partially accounted for by the effects of age and family structure and should be further explored. While these variables were included as controls, using point biserial correlation, future studies should include these variables as predictors as a means of further identifying predictive power.

Limitations

Several limitations must be noted in the current study, limiting the generalizability of the study. Several issues related to the sample are of particular consequence to the current study. The small sample size is considered to be a serious limitation to the analysis and while non-parametric measures were used where possible as a cross check, the effects of a small sample must be recognized. It is possible that issues related to measurement or sampling influenced the results of the study so that significant results were not found, resulting in a type II error. The small sample size also made it difficult to compare the presentation and influence of attachment fully by both gender and offense level groups. Furthermore the retrospective nature of the study impacted the researcher’s ability to establish causality as it relates to the association between the dimensions of attachment and risk factors for delinquency and recidivism. The restricted nature of sampling and questioning impacted the researchers ability fully establish associations between the dimensions of attachment and delinquency risk factors.
The self-selecting nature of participants is recognized as a serious limitation of the current study. The researcher takes into account that those juveniles who consented to participate may be descriptively different than those who opted to not participate, or who were unreachable. The self-selection process, while required, impacted the randomness and representativeness of the sample. For example juveniles willing to participate may have been more willing to help, which in turn may indicate a better ability to interact with adults thus normalizing potential gender-differences. Such an ability might indicate that a juveniles attachment to caregivers and chosen others is more stable than those who did not participate, regardless of gender thus resulting in homogeneity of scale. Furthermore the sampling was community-based and did not include juveniles currently committed to a program or in jail, thus limiting the generalizability of the results to more severe and chronic delinquency.

It is also important to note that several variables of significance were not taken into consideration as covariates, due to constraints of the study. Socioeconomic status (SES) may be causally linked to the gendered experience of attachment indicated by study result. Also of importance in the delinquency and attachment literature is the pro-social nature of the juvenile’s caregivers and associations. IRB restraints did not allow for the collection of information on juvenile caregivers’ involvement in criminality. While efforts were taken to control for age and family structure, this researcher was unable to include these covariates as predictors given the already small sample size. Evidence was found that these covariates interact with attachment dimensions and should be further explored in subsequent analyses.
Implications: Attachment and Gender

Given the increase in juvenile female arrests further consideration must be given to the mechanisms most responsible for juvenile females’ road into delinquency and out of delinquency. These results indicate that attachment, in particular the dimensions of time-involvement and emotional attachment are of greater importance to females. To further isolate attachment characteristics and differential influence, future research should seek to examine the impact of attachment in male and female groups of varying offense severity; drawing a sample which includes a broader range of delinquency involvement, including a non-delinquent community, non-violent minor; non-violent serious delinquency, and violent delinquency sample. Seeking a broader sample may help account for the self-selection limitation, as while a voluntary nature of participation is of the utmost importance this may severely restrict representativeness.

The relationship females have with an identified caregiver, who was most often a mother who was a single-parent, appears to be complex. Female emotional attachment was the most strained in the areas of anger and perceived availability. Nevertheless females reported a lower score in goal-corrected partnership, indicating that females as a group feel greater empathy towards and are more willing to help their caregiver (in spite of anger and lack of perceived availability). Surprisingly when the association between dimensions of attachment and risk-factors for delinquency were explored, emotional attachment did not emerge as a significant predictor. Instead time-involvement appears to affect female antisocial peer involvement and came close to significance as a predictor of female substance use. As we have already explored the majority of juveniles (male and female) reported living in a single-parent home at the time of
the eligible offense. The time-pressures associated with being a single parent have been shown to impact time-involvement and monitoring (Schroder et al., 2010, Sen, 2010), and may place juveniles at a greater risk of involvement with delinquency through the influence of peers and substance use. It is interesting that this finding was only identified for the female group, as monitoring is thought to be more influential to male delinquency; however it was previously noted that females reported a lower level of time-involvement than males. It is possible that the problems reported in time-involvement may have much to do with the previously discussed problems females reported in the areas of anger and perceived parental availability. This relationship should be further explored and may hold implications for community-based mentoring interventions that may possibly serve to supplement the time-involvement needs of females.

While no significant associational findings were identified in the male group, several findings emerged within the full group. Emotional attachment was found to be associated with mental health for the full group, and is consistent with previous findings that healthy attachment results in lower levels of mental health problems (Brumariu & Kerns, 2010; Keskin & Cam, 2010, Merlo & Lakey, 2007; Zanussi et al., 2010). It is recognized that this study is retrospective in nature and a causal link cannot be established. Further research should be conducted in the delinquency population to further establish the link between mental health and unhealthy attachment. Time-involvement was associated with antisocial peer involvement, indicating the need to increase opportunities for juveniles at risk for delinquency to engage with parents or positive others in activities. In light of the frequency of reported single-parent homes in this
study, community-based services that focus on supporting both the single-parent and the juvenile may serve to reduce juveniles’ increased risk for antisocial peer involvement.

Furthermore future research should seek to obtain a sample size large enough to accommodate a full range of predictors, including age and family structure, in such analyses. It is suggested in the literature that age (Sedlitz, 1991) and family structure (Kierkus & Baer, 2002; Sokol-Katz & Dunham, 1997) serve to mediate the relationship between attachment and delinquency risk factors. This was found in the full sample and the female group, indicating that these covariates should be further explored in tandem with the dimensions of attachment. This finding is in direct contrast to the recent finding by Krohn et al. (2009) that family structure transitions (from two-parent to single-parent, or blended family) affect males more so than females, especially in the areas of substance use and antisocial peer involvement. While the current study did not measure for transitions, single-parent family structure appears to interact with attachment and affects females more than males and should be more thoroughly measured and explored.
CHAPTER SEVEN: CONCLUSION

While the parental bond is among the most tested elements of the social bond our understanding of the complex dimensions remains incomplete. Identifying and isolating the mechanisms of attachment in the delinquency population is an ongoing challenge for researchers. The findings indicate that two elements of the parental social bond, emotional attachment and time-involvement, are associated with mental health and antisocial peer involvement respectively in the delinquency sample. While generalizability is limited given the sample size and previously stated covariates, this is an important finding for two main reasons. First this finding further supports previous findings that healthy attachment to a parent is associated with lower levels of mental health problems, which have been demonstrated as a risk factor for delinquency. Secondly, the finding that time-involvement is associated to antisocial peer involvement, while supervision is not, adds to previous findings that suggest that supervision is not important to the development of delinquency but rather it may be the interaction of time-involvement that impacts risk factors such as peer influence. This finding further supports the need to examine time-involvement as an important dimension of parental attachment, particularly in the female group.

Emotional attachment and time-involvement appear to be important to the juvenile sample and while gender differences could not be verified in the presentation of attachment several qualitative differences were identified, indicating that emotional attachment problems are more prevalent in females; with females in the violent offense category exhibiting the highest level of emotional attachment problems. This is an important contribution to the literature base as further support is provided for the notion of gender differences in the construct of attachment.
Findings add support to the gendered experience of discrete elements of social control, specifically time-involvement, adding further support for a gendered application of social control to delinquency (Heimer & Decoster, 1999; Erickson et al., 2000; Huebner & Betts, 2002). While support is shown by the current research for a gendered experience of time-involvement as a measure of social control it cannot be overlooked that findings also lend support to literature suggesting that social control [bonding] is more equally applied across male and female populations (Canter, 1982; Chapple et al., 2005; Liu & Kaplan, 1999; Smith & Paternoster, 1987). Future research should further examine the influence of an expanded construct of time-involvement as a component of social control important to the gendered experience of juvenile crime.
APPENDIX A: UCF IRB APPROVAL
Approval of Human Research

From: UCF Institutional Review Board #1  
FWA0000051, IRB00000128

To: Rebekah Hazlett and Co-PIs: Jessica L. Saultz, John Constantine Bricout, John P. Ronnau

Date: August 17, 2010

Dear Researcher,

On 8/17/2010, the IRB approved the following modifications to human participant research until 02/15/2011 inclusive:

- **Type of Review:** IRB Addendum and Modification Request Form
- **Modification Type:** Per Department of Juvenile Justice (DJJ) requirements, four main changes were made to IRB protocol and forms because some of the juveniles are currently held in a DJJ facility.
- **Project Title:** The Influence of Attachment among a Sample of Juvenile Offenders: Gender Group Differences.
- **Investigator:** Rebekah Hazlett
- **IRB Number:** SBE-09-06317
- **Funding Agency:**
- **Grant Title:**
- **Research ID:** 1048573

The Continuing Review Application must be submitted 30 days prior to the expiration date for studies that were previously expedited, and 60 days prior to the expiration date for research that was previously reviewed at a convened meeting. Do not make changes to the study (i.e., protocol, methodology, consent form, personnel, site, etc.) before obtaining IRB approval. A Modification Form cannot be used to extend the approval period of a study. All forms may be completed and submitted online at https://iris.research.ucf.edu.

If continuing review approval is not granted before the expiration date of 02/15/2011, approval of this research expires on that date. When you have completed your research, please submit a Study Closure request in IRIS so that IRB records will be accurate.

Use of the approved, stamped consent document(s) is required. The new form supersedes all previous versions, which are now invalid for further use. Only approved investigators (or other approved key study personnel) may solicit consent for research participation. Participants or their representatives must receive a copy of the consent form(s).

In the conduct of this research, you are responsible to follow the requirements of the Investigator Manual.

On behalf of Joseph Bielitzki, DVM, UCF IRB Chair, this letter is signed by:

Signature applied by Joanne Muratori on 08/17/2010 03:30:45 PM EDT

Page 1 of 2
APPENDIX B: UCF IRB CONTINUING REVIEW APPROVAL
Approval of Human Research

From: UCF Institutional Review Board #1
FWA00006351, IRB00001128

To: Rebekah Hazlett and Co-PIs: Jessica L. Sautz, John P. Romnau, Mirella A. Del Pino

Date: February 07, 2011

Dear Researcher:

On 2/7/2011, the IRB approved the following human participant research until 2/6/2012 inclusive:

Type of Review: IRB Continuing Review Application Form
Project Title: The Influence of Attachment among a Sample of Juvenile Offenders: Gender Group Differences.
Investigator: Rebekah Hazlett
IRB Number: SBE-09-06317
Funding Agency: National Institute of Justice
Grant Title: 
Research ID: 1048573

The Continuing Review Application must be submitted 30 days prior to the expiration date for studies that were previously expedited, and 60 days prior to the expiration date for research that was previously reviewed at a convened meeting. Do not make changes to the study (i.e., protocol, methodology, consent form, personnel, site, etc.) before obtaining IRB approval. A Modification Form cannot be used to extend the approval period of a study. All forms must be completed and submitted online at [https://iris.research.ucf.edu].

If continuing review approval is not granted before the expiration date of 2/6/2012, approval of this research expires on that date. When you have completed your research, please submit a Study Closure request in IIRIS so that IRB records will be accurate.

Use of the approved, stamped consent document(s) is required. The new form supersedes all previous versions, which are now invalid for further use. Only approved investigators (or other approved key study personnel) may solicit consent for research participation. Participants or their representatives must receive a copy of the consent form(s).

In the conduct of this research, you are responsible to follow the requirements of the Investigator Manual.

On behalf of Joseph Bielizki, DVM, UCF IRB Chair, this letter is signed by:

Signature applied by Joanne Muratori on 02/07/2011 11:47:02 AM EST

IRB Coordinator
APPENDIX C: DJJ IRB APPROVAL
December 28, 2010

Rebekah Hazlett
University of Central Florida
School of Social Work
P.O. Box 163358
Orlando, FL 32816

Re: The Influence of Attachment Among a Sample of Juvenile Offenders: Gender Group Differences

Dear Rebekah Hazlett,

I am pleased to inform you that the Florida Department of Juvenile Justice (DJJ) Institutional Review Board (IRB) has approved your proposed study. This approval covers only the study identified in your proposal.

The following conditions apply:
- All information obtained from DJJ is confidential. It may not be disclosed to any person, business, government agency, or other entity unless the disclosure is authorized in writing by DJJ.
- You may not disclose any information that could reasonably lead to the identification of any individual youth. All data resulting from this research project must be published in aggregate form.
- Any person working on this research project must agree to be bound by these conditions concerning confidentiality of information.
- Any person working on this research project that has direct contact with youth or is working with identifiable data must submit proof of a completed DJJ background screening to the DJJ IRB prior to the start of the project.
- We require that you provide DJJ with a review copy of the final publication with a reasonable comment period prior to publication of the study findings. Additionally, we require that you provide us a one to five page summary of the final project. This summary will be reviewed by the DJJ IRB. Please send the items to the IRB at the address listed below.

Sincerely,

Mark A. Greenwald
Institutional Review Board

2737 Centerview Drive • Tallahassee, Florida 32309-3100 • (850) 488-1850
http://www.djj.state.fl.us

The mission of the Department of Juvenile Justice is to increase public safety by reducing juvenile delinquency through effective prevention, intervention and treatment services that strengthen families and turn around the lives of troubled youth.
Rebekah Hazlett, MSW
University of Central Florida
College of Health and Public Affairs
4000 Central Florida Parkway
HPA 255
Orlando, FL 32816

Dear Ms. Hazlett:

The Office of the State Attorney strongly supports your National Institute of Justice research proposal which seeks to explore gender differences in attachment style by using a sample of violent juvenile offenders. This research is important to assisting the understanding of gender differences in the commission of juvenile violent crime. This research holds many implications for policy and practice, as well as for advancing the state of our knowledge.

My office is committed to addressing juvenile crime and understanding what causes juveniles to become involved in crime.

Once again, the Office of the State Attorney offers strong support for the proposed research. We look forward to working with you in your efforts.

Very truly yours,

Lawson Lamar

LL:rh:dh
Dear Rebekah,

You have permission to reprint and use the Adolescent Attachment Questionnaire in your research. Good luck with your research project and I hope you have very interesting results.

Sarah

M. Sarah Rose, PhD
Biostatistician
Calgary Health Research, Alberta Health Services
Rm 1101, 11th Floor, South Tower
Foothills Medical Centre
1403 - 29th Street NW
Calgary, AB Canada
phone: 403-944-4865
fax: 403-944-4775

Greetings Dr. Rose,

I am a Ph.D. student at the University of Central Florida currently working on finalizing my dissertation research prospectus. My research agenda focuses on exploring attachment within a population of violent juvenile offenders to further identify gender differences within this population.

In my research I have been fortunate in locating the AAQ which you and your colleagues developed in 1998:


I have contacted Dr. West at the only email account I can locate for him but have not heard back from him. I am seeking permission to reprint and use this questionnaire in my research. It will be administered to approximately 100 juvenile violent crime offenders.

I look forward to hearing from you!!
With respect and admiration,

~Rebekah
APPENDIX F: ARCHIVAL DATA COLLECTION TOOL
Archival Record Type (Indicate in R-hand Column):
A - Official record (Arrest, Mental Health, School, Juvenile Justice)
B – Mentioned in Narrative – no official record or not clear

Variable Information:
Eligible charge: ________________________ (Circle): Violent/Non-Violent
Date of charge: _______________________

1) Age in Years and Months (99) missing
   _____   _____

2) Age in Years and Months (99) missing
   (At the time of first offense)
   First Offense Charge: __________________________

3) Race
   (1) White/non-Hispanic
   (2) White/Hispanic
   (3) Black
   (4) Asian
   (5) Other
   (9) Missing

4) Gender
   (1) Male
   (2) Female
   (9) Missing

5) Living arrangements
   (0) Alone
   (1) With One Parent
   (2) With Both Parent
   (3) With Relative (not parent)
   (4) With Girlfriend/Wife
   (5) With Friends
   (6) Other
   (9) Missing

6) Substance abuse history
   (0) No
   (1) Yes, mentioned in a narrative
   (2) Yes, officially recorded in a document
   (9) Missing

7) Evidence of drug or alcohol use at time of offense
   (0) No
   (1) Yes, mentioned in a narrative
   (2) Yes, officially recorded in a document
   (9) Missing

8) Evidence of abuse history by caregiver
   (0) No
(1) Yes, mentioned in a narrative
(2) Yes, officially recorded in a document  Type (if available): ________________
(9) Missing

9) Evidence of other abuse history  _____  _____
(0) No
(1) Yes, mentioned in a narrative
(2) Yes, officially recorded in a document  Type (if available): ________________
(9) Missing

10) Mental health history  _____  _____
(0) No
(1) Yes, mentioned in a narrative
(2) Yes, officially recorded in a document  DX (if available): ________________
(9) Missing

11) Suicide flag  _____  _____
(0) No
(1) Yes, mentioned in a narrative
(2) Yes, officially recorded in a document
(9) Missing

12) Evidence of gang involvement  _____  _____
(0) No
(1) Yes, mentioned in a narrative
(2) Yes, officially recorded in a document
(9)Missing

13) Number of prior arrests: Violent ___________
    Total ___________

14) Risk Assessment Score (for eligible offense): ______________

15) Number of rearrests/reoffense post 6 months of eligible study offense: Total ________
    Violent__________

Incarcerated since eligible offense: Y/N

I appreciate your willingness to answer the following questions. You do not need to respond to any question which makes you feel uncomfortable however your complete answers are appreciated. You can be assured that your responses to the following questions will be held strictly confidential. At no time during this study will your responses be revealed individually.

Begin here:

What do you consider to be your ethnicity or race: _______________________________

In the questions below please circle the response that best fits your situation at the time of your arrest:

Living arrangements at the time of your arrest:

(0) Alone
(1) With One Parent
(2) With Both Parents
(3) With Relative (not parent)
(4) With Girlfn/Wife/Boyfn/Husband
(5) With Friends
(6) Other __________________________

Who do/did you consider your primary caregiver at the time of your arrest?

(1) Mother
(2) Father
(3) Aunt or Uncle
(4) Older Brother
(5) Older Sister
(6) Grandmother
(7) Grandfather
(8) Family friend
(9) Other __________________________

What was your age at the time of your first arrest? ___________________
Thinking of the caregiver you just indicated, and back to the time of your arrest, please respond to the following questions as you remember things being at that time:

Please circle only one for each statement.

1. My caregiver only seems to notice me when I am angry. 
   - Strongly Disagree 
   - Disagree 
   - Neither agree nor Disagree 
   - Agree 
   - Strongly Agree

2. I often feel angry with my caregiver without knowing why. 
   - Strongly Disagree 
   - Disagree 
   - Neither agree nor Disagree 
   - Agree 
   - Strongly Agree

3. I get annoyed at my caregiver because it seems I have to demand his/her caring and support. 
   - Strongly Disagree 
   - Disagree 
   - Neither agree nor Disagree 
   - Agree 
   - Strongly Agree

4. I know that my caregiver will listen to me. 
   - Strongly Disagree 
   - Disagree 
   - Neither agree nor Disagree 
   - Agree 
   - Strongly Agree

5. I know that my caregiver will try to understand my feelings. 
   - Strongly Disagree 
   - Disagree 
   - Neither agree nor Disagree 
   - Agree 
   - Strongly Agree

6. I talk things over with my caregiver. 
   - Strongly Disagree 
   - Disagree 
   - Neither agree nor Disagree 
   - Agree 
   - Strongly Agree

7. I enjoy helping my caregiver whenever I can. 
   - Strongly Disagree 
   - Disagree 
   - Neither agree nor Disagree 
   - Agree 
   - Strongly Agree

8. I feel for my caregiver when he/she is upset. 
   - Strongly Disagree 
   - Disagree 
   - Neither agree nor Disagree 
   - Agree 
   - Strongly Agree

9. It makes me feel good to be able to do things for my caregiver. 
   - Strongly Disagree 
   - Disagree 
   - Neither agree nor Disagree 
   - Agree 
   - Strongly Agree

Thinking of the caregiver you just indicated, and back to the time of your arrest, please respond to the following questions as you remember things being at that time:

On how many days out of 7 days (a week) would your caregiver:
*Indicate a number of days

1. Check to see if your homework or chores were completed? _________
2. Limit the amount of television you watch? _________
3. Check to see where you were during the day? _________


On how many days out of 7 days (a week) would you and your caregiver:
*Indicate a number of days

1. Prepare or eat a meal together? _________
2. Watch a television show, spend time playing video games, playing music, or exploring the internet together? _________
3. Shop together? _________
4. Go to church or religious services together? _________
5. Drive to school or work together? _________
6. Do something not listed here for fun or enjoyment together? _________
What was this something? ________________________________

Do any of your friends:

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Smoke cigarettes or use tobacco products?</td>
<td></td>
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<tr>
<td>2. Use alcohol or drugs?</td>
<td></td>
<td></td>
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<tr>
<td>3. Steal?</td>
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<tr>
<td>4. Belong to a gang?</td>
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<tr>
<td>5. Ever used violence on you or someone else?</td>
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REFERENCES


doi:10.1016/j.jcrimjus.2009.02.008


doi:10.1111/j.1365-2850.2009.01540.x


