MULTI-LEVEL MODEL EXAMINATIONS OF THE RELATIONSHIP BETWEEN
FAMILY AND PEER RISKS AND NEIGHBORHOOD SETTINGS: THE SPECIAL
ATTENTION TO GENDER, ETHNICITY, AND THE TIMING OF ONSET FOR
DELINQUENCY

DISSERTATION

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ABSTRACT

While there is growing evidence regarding the relationship between family and peer risk factors and delinquency, researchers have paid little attention to the tracking of family and peer risks and needs by subgroups (e.g., gender, ethnicity, and the timing of onset for delinquency) among youth who are currently involved in the juvenile court system. Particular combinations of subgroups among court-involved youths often suffer from more serious and continued problematic family related and peer related difficulties, all of which are preceding risk factors for delinquency. Furthermore, while there has been some awareness of the impact of neighborhood settings on family and peer related risks, the relationships among variables in this population have not been properly and concurrently examined in the court-involved youth.

The main purpose of this study was to identify and understand family and peer related risks among court involved youth by subgroups associated with gender, ethnicity, and the timing of onset for delinquency. A final convenience sample of 1,086 youth who came to the attention of four county juvenile courts in Ohio was used in the first set of data analyses conducted as part of this study. Current family and peer risk levels were measured through use of version 1.0 of the Global Risk Assessment Device (GRAD). For the second set of data analyses, neighborhood information obtained from the 2000 National Census was utilized to examine the impact of neighborhood settings on these
risks among court-involved youth.

The present study employed a two-fold data analysis effort. The first step of the analysis examined family/parenting and peer risks according to various subgroup types and was achieved through use of two three-way (Gender x Ethnicity x The Timing of Onset for Delinquency) Multivariate Analyses of Covariance (MANCOVA), with GRAD family/parenting and peer domain scores as dependent variables, controlling for the current age of the youth, household composition, and transitional risks score. In the second step of the analysis effort, other potential indicators that predict family and peer risks factors were entered into the Hierarchical Linear Modeling analysis. That is, 2 neighborhood structural setting factors (i.e., Economic disadvantage and Residential instability) consisted of 5 neighborhood indicators from the 2000 National Census for Ohio as Level 2 predictors were included in order to explain variations in family and peer related risks.

The results demonstrated that there were differentiated levels of family risks according to gender and ethnicity, and various levels of peer risks according to subgroups associated with gender, ethnicity, and onset for delinquency group after controlling for the current age of the youth, household composition, and transitional risks score. The Hierarchical Linear Modeling (HLM) Analyses revealed that there were significant between-neighborhood variations in family and peer related risks. The results of the HLM analyses demonstrated that the neighborhood economic disadvantage variable...
(through use of the 2000 National Census) was associated with family and peer related risks after controlling for individual characteristics variables.

The findings of this study add to the extant literature on juvenile delinquency by providing empirical support for the proposed model that illustrates the significant relationship between a neighborhood setting indicator and family and peer related risks experienced by court-involved youth, and demonstrated the importance of considering subgroups associated with gender, ethnicity, and onset for delinquency grouping when practicing treatment or intervention programs with juvenile offenders.
Dedicated to my parents and my husband
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CHAPTER 1
INTRODUCTION

Even though juvenile arrest rates have stabilized after years of large increases (1986 to 1995), the number of youth who under age 18 committed violent acts continues to account for almost 30% of the overall crime index, and the concern about the stable but still considerable number of juvenile criminal arrests and courts cases has been maintained on the national level (United States Department of Health and Human Services, 2001). Research over the last several decades has been dedicated to uncovering a variety of antecedent factors that initiate and shape these trends in juvenile delinquency and, more recently, to identifying predictive interpersonal and contextual risk factors for delinquency such as delinquent peer relationships, gang involvement, adverse family factors, and disadvantaged neighborhood settings (Brooks-Gunn, Duncan, Klebanov, & Sealand, 1993; Elliott, Wilson, Huizinga, Sampson, Elliott, & Rankin, 1996; Herrenkohl, 1998; Sampson, 1997).

However, relatively less attention has been paid to understanding to what extent interpersonal risk factors are experienced according to subgroup types associated with various combinations of gender, ethnicity, and the timing of onset for delinquency among juvenile offenders and how these risk factors vary across neighborhoods. It is important to track the needs of subgroups and to advance knowledge about the impact of...
neighborhood settings on the interpersonal risk factors in this special population, since effective intervention or treatment programs can be built upon a thorough understanding of the risk factors.

This is thought to be particularly important when family and peer related factors are considered (Burke, Loeber, & Birmaher, 2002; Loeber, Loeber, & White, 1999; Taylor, Malone, Iacono, & McGue, 2002) since family and peer related risk factors have a profound influence on juvenile offenders’ adjustment issues (Furstenberg, 1993). Juvenile offenders often experience family and peer related risks beyond illegal behaviors, and suffer from continued exposure to these detrimental risks. For example, an adverse family environment can be an important risk factor for juvenile offenders, especially for female adolescents, when compared to males, in terms of their involvement in illegal behaviors (Chesney-Lind, 1997; Chesney-Lind & Okamoto, 2001; Hubbard, 2004). In turn, youth who commit their first offenses at an early age (before 14 years) tend to experience more family related risks (e.g., antisocial parents, parental psychopathology, and physical abuse within the home), and greater individual risks associated with mental health related problems including psychopathology (United States Department of Health and Human Services, 2001) when compared to youth who committed their first offenses at later ages. Finally, research has shown that African Americans are more likely to be associated with delinquent peers and display more gang involvement in comparison to Caucasian youth (Heimer, 1997; Keenan, Loeber, Zhang, Stouthamer-Loeber, & Van Kammen, 1995; Thornberry, 1998; Zabel & Nigro, 1999) while Caucasian youth’s delinquent behaviors are more related to poor relationships with
conventional peers (Brannock, Schandler, & Oncley, 1990; Elliott, 1985; Matsueda & Heimer, 1987; Williams & McGee, 1994).

Gender is among the more salient factors in need of further empirical attention. The arrest rate of female juvenile offenders has increased such that, while there has been an eleven percent decline for males from 1980 to 2000, there has been a thirty five percent increase in the arrest rate for females during the same time frame (Child Welfare League of America, 2003). While this increase is consistent across most crime categories, more females are arrested for non-violent offenses such as running away, which are more directly related to family related risk factors (Gavazzi, Lim, Yarcheck & Eyre, 2003). In contrast, more males are arrested for violent crimes such as murder and rape offenses (Howard, 2000).

Race/ethnicity factors also demand the attention of researchers, as minority adolescents (excepting Asian youth) are more likely than Caucasians to be arrested for violent crimes (Sigel & Senna, 1997). For example, African American youth represented twenty six percent of all juvenile arrests and forty five percent of those who were detained, even though they constituted about fifteen percent of the total adolescent population aged 10-17 in 1996-1997 (Hsia, Bridges, & McHale, 2004). Further, African American juvenile offenders are more likely than other racial and ethnic groups to present with delinquent peer relationships (e.g., gang activity and involvement) (Zabel & Nigro, 1998).

Finally, the age of the first-time offender also must be included in further exploration. The downward trend in age of first arrest requires more attention because
first-time offenders who are younger than age 13 (i.e., early onset) are significantly more likely to commit more violent and chronic crime in comparison to those adolescents whose delinquent behavior begins later (Loeber, Farrington & Petechuk, 2003). In addition, youth who commit their first offenses at an early age (i.e., before 14 years) tend to have more serious family related risks, such as antisocial parents, parental psychopathology, and physical abuse within the home (United States Department of Health and Human Services, 2001).

Therefore, specific emphasis should be placed on the advancement of knowledge about how family and peer risk factors in court involved youth can be explained by individual characteristics. In this context, gender, ethnicity, and the timing of onset for delinquency may be among the most significant components needed to examine such subgroup differences among juvenile offenders. The literature supporting the further examination of family/parenting and peer risks of these special populations are discussed in the review of literature section contained in the second chapter.

Beyond the aforementioned individual characteristics, disadvantaged neighborhood characteristics also may have significant influences on family and peer related risks (Brooks-Gunn et al., 1993; Herrenkohl, Hawkins, Chung, Hill, & Battin-Pearson, 2001; Lipsey & Derzon, 1998; Sampson, 1997). Typically, neighborhood effects are small to moderate, yet consistently account for about 5% of the variance in adolescents’ outcomes (e.g., delinquent peer relationship and juvenile delinquency) even after controlling for family-level variables (e.g., family structure) and individual level variable (e.g., age) across studies (Elliott et al., 1996; Leventhal & Brooks-Gunn, 2000).
Over the last couple of decades there has been growing interest in examining the mechanisms by which neighborhood factors such as adolescents’ exposure to community violence (Attar, Guerra, & Tolan, 1994; Gorman-Smith & Tolan, 1998), rates of neighborhood unemployment, government assistance, low levels of education (Simons, Johnson, Beaman, & Conger, 1996), collective efficacy (Rankin & Quane, 2002), and disadvantaged neighborhood structures (Chung, 2004; Herrenkohl, 1998; Sampson & Laub, 1994) operate as delinquency risk factors. Most generally, the literature has contended that disadvantaged neighborhood structures that are characterized by high residential instability, segregation and isolation, and economic disadvantage (Chung, 2004; Herrenkohl, 1998; Sampson & Laub, 1994) consistently lead to negative outcomes such as juvenile delinquency.

In order to study the impact of neighborhood settings on current family and peer risks experienced by juvenile offenders, however, the employment of traditional analysis procedures such as a standard multiple regression and analysis of variance may be inappropriate in large part because the purpose of the study is to examine phenomena where nested data are present. The data analysis issues that are related to examine the impact of disadvantaged neighborhood characteristics on individual level family and peer risk factors are discussed more in the following section.

The Challenges of Data Analysis to Examine Family/Parenting and Peer Risk Factors with Neighborhood Settings

In the present study, youth are nested within neighborhoods, indicating that individual level responses (e.g., family and peer risks) are not independent. That is,
responses from each youth within the same neighborhood tend to be more similar to each other than responses randomly sampled from the entire population. In this context, the application of Hierarchical Linear Modeling (HLM) to the examination of neighborhood influences on current family and peer risks is preferred over traditional models, given that HLM’s coefficients are more precisely and reliably estimated in a nested data structure, and simple HLM models (i.e., ANOVA models in HLM) allow the researcher to estimate how much of the variance in individual outcomes are explained at each level (e.g., variance within-neighborhoods vs. variance between-neighborhoods) (Raudenbush & Bryk, 2002).

Hierarchical Linear Modeling (or multi-level modeling) is a statistical procedure that is designed to investigate relationships between variables that are measured at different levels in a hierarchical or nested data structure. This modeling approach is particularly relevant to an examination of individuals within social contexts such as schools or neighborhoods. Questions can be asked about relationships between variables at a single level as well as about relationships between variables at different levels in a model (Bryk & Raudenbush, 1992) by using HLM programs.

In contrast, use of the traditional strategy such as regression analysis or analysis of variance in nested data sets (e.g., individuals within neighborhoods) violates the assumption that variable values across individuals in a given neighborhood are statistically independent. The violation of the independence assumptions is related to the inaccuracy of significance tests by inflating the probability of type I error (Barcikowski, 1981). Even though a researcher could aggregate individual level variables, this
aggregation approach is also problematic in that it negates all of the variance that may exist among individuals residing within a given neighborhood (Raudenbush & Bryk, 2002). To be sure those neighborhood-level effects in this study were not distorted by the clustering of youth within neighborhood units, HLM what can more accurately describe relations present in multilevel data is used in the present study.

Hence, HLM has been used more recently within the social sciences due to an increased recognition that data are often nested and aforementioned advantages when this procedure is utilized in the nested data (Herrenkohl, 1998). For example, Elliott et al. (1996) used a two-level HLM to identify whether variation in grand mean levels of prosocial competence, involvement with conventional friends, and problem behaviors reported by youth were associated with levels of informal control, social integration and informal networks in neighborhoods as indicators of disadvantaged neighborhood (i.e., level 2 variables). These measures were included as indicators of neighborhood disadvantage that were reported by youth’s parents.

As results of HLM analyses, the effects of neighborhood disadvantage on the adolescent prosocial competence, conventional friends, and problem behaviors were significantly related with informal control. That is, there was a higher level of prosocial competence and involvement with conventional friends, and a lower level of the neighborhood rates of problem behavior when the level of informal control was high in the neighborhood. Also, social integration was significantly related to rates of prosocial competence while the level of informal network was significantly related to conventional friends. Here, the variances on the outcomes explained by these disadvantaged
neighborhood indicators were relatively small (i.e., less than 5%), but explained a substantial part of the variance.

As another example, Herronkohl (1998) used HLM procedures to examine whether individual level risk factors for youth violence vary between neighborhoods. In the study, multi-level models were employed in order to examine neighborhood effects with measures adapted from the 1990 National Census. Risk factors for violence, including weak attachment to neighborhood, poor family management, weak family bonds, weak commitment to school, poor academic achievement, harsh/physical discipline, family conflict, involvement with delinquent peers, and gang involvement, were examined in a sample of 595 youth through use of block group information from the 1990 National Census data. More specifically, the author used variables from the 1990 National Census data (Level 2 variables) as indicators of neighborhood disorganization and residential stability.

Here, results indicated that only youth’s perceptions of neighborhood disorganization and attachment to neighborhoods (both Level 1 variables) varied between block group areas and that variation was associated with levels of neighborhood economic disadvantage (Level 2 variable) taken from the 1990 National Census. Residential stability (a second census measure also used as a Level 2 variable) was related to youths’ level of weak attachment to their neighborhoods as well. However, other risk factors including poor family management, weak family bonds, weak commitment to school, poor academic achievement, harsh/physical discipline, family conflict, involvement with delinquent peers, and gang involvement didn’t vary across
block groups. According to the author, this study could be limited by the small number of individuals in each block group unit which is considered as a relatively small sample size (i.e., 595 youth with 265 block groups) for the HLM.

More recently, Chung (2004) examined whether parenting practices and peer associations mediated the link between neighborhood factors and adolescent delinquency with structural equation modeling with 566 male juvenile offenders only (primarily, African American). Also, to prove that neighborhood effects found in the SEM model were not distorted by the clustering of youth within neighborhood units, HLM was utilized to retest significant relationships found in the SEM analysis, involving neighborhood - and individual - level variables.

The results indicated that higher levels of concentrated poverty (from the 2000 National Census) were related to greater levels of neighborhood disorder reported by youth, and higher levels of residential instability (from the 2000 National Census) were linked to lower levels of social capital reported by youth after controlling for parental education. Even though the author contended that these HLM analyses provided consistent results with SEM analyses, the significant relationship between level 1 neighborhood indicators and level 2 indicators in the HLM analyses do not guarantee that there was no violation of the independence assumption in the SEM analysis.

Thus, it is imperative to uncover current family and peer risks experienced by juvenile offenders as well as the best factors for understanding these issues with an appropriate methodology, a considerable sample size in order to increase the power of
testing the model, and a comprehensive population including male and female as well as minority and majority.

However, no study to date has used this methodological approach to examine the impact of disadvantaged neighborhood settings on family and peer risks by concurrently considering gender (i.e., male vs. female), ethnicity (i.e., Caucasian youth vs. African American youth), and the timing of onset for delinquency (i.e., early onset offenders vs. late onset offenders) among court-involved youth with a comprehensive and a sizable sample. In order to accomplish this aim in the present study, level 2 models are used to address the nested structure of individuals within neighborhoods (defined by zip codes) and examine relationships between neighborhood setting measures derived from the 2000 National Census and individual level variables (i.e., family and peer risks).

Hence, the nested nature of data with a sizable sample (i.e., 1,086 youth with 90 zip code level neighborhoods) in the present study provides an ideal opportunity to apply Hierarchical Linear Modeling (HLM) in refining our understanding of what neighborhood factors increase juvenile offenders’ current family and peer risk levels. The unit of Level 1 data presents individual level data (i.e., gender, ethnicity, the timing of onset for delinquency, current age of the youth, household composition, family transitional risk, family/parenting and peer risks/needs), and Level 2 data present neighborhood structural settings (Economic disadvantage and residential instability; using data from the 2000 National Census). Therefore, the present study estimates simultaneously the effect of individual characteristics and neighborhood structural setting
Purpose of the Study

Based on previous studies that have reported differential family and peer risk factors for delinquency across different types of youth subgroups, the present study examines the relationships between youth reported family and peer risks and the subgroups constructed from variables associated with gender, ethnicity, and the timing of onset for delinquency, along with factors related to neighborhood settings. This approach occurs in a multivariate context by adopting advanced research methods, and extends earlier work by examining a sample of youth who come into contact with the juvenile court. More specifically, the purpose of this exploratory study is two-fold: (a) to examine subgroup specific levels of family/parenting and peer risks/needs in court-involved youth and (b) to test a multi-level model of the relationships between disadvantaged neighborhood structural settings and current family and peer risks experienced by juvenile offenders, after controlling for individual characteristics.

There are two main reasons why the present study is important. First, this study extends previous research by examining current family and peer risks that court-involved youth experience based on a more comprehensive group categorization with a sizeable and comprehensive sample. Second, this study gives us a blueprint of the impact of neighborhood structural settings on family and peer risks experienced by applying an advanced methodological approach to explain the relationships among individual
characteristics (i.e., gender, ethnicity, and the timing of onset for delinquency), household composition and neighborhood structural settings (i.e., variables derived from the 2000 National Census), and current family and peer related risks.

**Definition of Terms**

The following terms are used in this study and are defined as follows.

**Court-Involved youth** – For the present study, youth who come to the attention of county juvenile courts in Ohio. More specifically, the final convenience sample is composed of youth in detention facilities in order to extract homogeneous and at the same time, most seriously delinquent youth.

**Juvenile detention facilities** – According to the United States of Department of Justice (1996), juvenile detention facilities are secure facilities where children are held (for long- or short-term programming) prior to adjudication and disposition of their juvenile delinquency cases, pending hearings on the issue of transfer to adult court or pending placement.

**Gender** – For the present study, perceived biological sex (the male and female duality of biology and reproduction) of the youth is utilized.

**Ethnicity** - According to *Merriam-Webster’s Dictionary* (2005), an ethnic quality or affiliation resulting from racial or cultural ties. For the present study, ethnicity is composed of two groups (i.e., White Caucasian and African American).

**The Timing of Onset for Delinquency** – For the present study, the onset groups that discriminate between two types of youth offenders is utilized (Moffit, 1993): those
who take part in delinquent acts before age of 14 (i.e., early onset or life-course persistent offenders) and those who do so later (i.e., late onset or adolescent limited offenders) (Patterson & Yoeger, 1993).

Family/Parenting Risks – For the present study, family/parenting risks for court-involved youth are measured by the youth’s score on the family/parenting domain of the GRAD. This domain is composed of items that are related to “lack of family support,” “parental tip-toeing,” “poor parenting,” “family conflict,” and “economic hardship” sub-domains (see Appendix A).

Peer Risks - For the present study, peer risks for court-involved youth are measured by the youth’s score on the peer domain of the GRAD. This domain is composed of items that are related to “relationship with delinquent peers (e.g., gang involvement),” “dating relationships with criminally involved youth,” and “poor relationships with conventional peers” sub-domains (see Appendix B).

Transitional Risks – For the present study, the transitional risks score is included as one of control variables in the first step of data analysis procedure, and a supplementary variable to measure the family related risks in the second set of main data analyses. Here, the transitional risks are defined as unstable family environment events in the last calendar year, measured by items including parent’s remarriage, divorce, having a new family member, biological parent’s incarceration, immediate family member involvement in criminal activity, biological parent’s death, close family member’s death, unknown whereabouts of a biological parent, school changes, residential moves, and placement in the custody of Child Protective Services (see appendix D). Many studies
have examined childhood exposure to family transitional risks as a proxy for unstable 
close environmental risk (Attar et al., 1994; Kliwer & Kung, 1998). Findings from these 
studies consistently report that children raised in unstable family environments are more 
at risk than children raised in more stable families. For instance, Attar et al. (1994) found 
that exposure to stressful and transitional events not only was related to higher levels of 
aggression in cross-sectional analyses, but also predicted increased levels of aggression 
for inner-city children one year later.

Neighborhood Structural Settings - For the present study, structural aspects of zip 
code data including percentage of individuals living in the same household for less than 
five years, percentage of families with female, single parents as household heads, 
percentage of residents that are in renter-occupied homes, and percentage of adults 
without a high school diploma are defined as neighborhood settings since research on the 
neighborhood settings has shown that neighborhoods with high rates of offenders tend to 
be characterized by such structural community characteristics as concentrated poverty, 
high residential mobility, and high levels of family disruption (e.g., Sampson, 1993).

Household Composition – The household composition is operationalized in the 
present study as one of the control variables. For the purpose of the data analyses a 
household composition is categorized into female-headed household and all other types 
of household composition since studies have suggested that a household composition is 
one of structural indicators for family environments (Ellis et al., 2003; Gerard & Buehler, 
1999). For example, Gerard and Buehler (1999) reported that male adolescents who 
reside in single parent- headed households, especially mother-headed households, are
particularly susceptible to the risk associated with ineffective parenting. Also, Ellis et al. (2003) found that female adolescents with an absent father were more likely to engage in risky behaviors.

Hierarchical Linear Modeling – A data analysis procedure that addresses relationships in the nested data structure such as individuals within neighborhoods (in the present study, neighborhood is defined by zip codes).

Zip Code - According to U.S. Census Bureau, it defines a Zone Improvement Plan (ZIP) Code that is the numerical code assigned by the U.S. Postal Service to designate a local area or entity for the delivery of mail. ZIP Codes may consist of 5, 7, 9, or 11 digits, and may refer to a street section, a collection of streets, an establishment, a structure, or a group of post office boxes. For the present study, 5 digit zip codes are utilized to present a focal area unit in the present study.

**Research Hypotheses**

1. Gender, ethnic group (Caucasian youth and African American youth) and different onset of delinquency (early onset and late onset) will significantly impact the vectors of means related to family/parenting and peer risks scores.

   1.1. More specifically, female and African American youth who are early onset offenders will display the highest risk scores on the family/parenting domains of the GRAD.

   1.2. More specifically, male and African American youth who are late onset offenders will display the highest risk scores on the peer domains of the GRAD.
2. There will be significant between-neighborhood variances in outcome variables.
   2.1. There will be a significant between-neighborhood variance in the family/parenting related risks.
   2.2. There will be a significant between-neighborhood variance in the family transitional risks.
   2.3. There will be a significant between-neighborhood variance in the peer related risks.

3. Level 1 predictor variables including gender, ethnicity, and different onset of delinquency, after controlling for household composition and current age of the youth, will be significantly associated with family and peer related risks in a proposed model.
   3.1. For example, female, African American youth, and early onset offender, after controlling for household composition and current age of the youth, will be positively associated with the family/parenting related risks level.
   3.2. For example, female, African American youth, and early onset offender, after controlling for household composition and current age of the youth, will be positively associated with the family transitional risks level.
   3.3. For example, male, African American youth, and late onset offender, after controlling for household composition and current age of the youth, will be positively associated with the peer related risks level.
4. Level 2 neighborhood setting variables (i.e., economic disadvantage and residential instability) from the 2000 National Census will be significantly associated with family and peer risks.

4.1. For example, economic disadvantage or residential instability will be positively associated with higher levels of family related risks.

4.2. For example, economic disadvantage or residential instability will be positively associated with higher levels of peer related risks.
CHAPTER 2
REVIEW OF LITERATURE

This review of literature begins with a review of family related risks among juvenile offenders and is followed by a review of peer related risks in this special population. Then, research on the relationships among subgroup indicators related to gender, ethnicity, the timing of onset for delinquency, and the family and peer risk factors is reviewed. Finally, research on the impact of disadvantaged neighborhood settings among delinquent adolescents is presented.

Family Related Risks among Court Involved Youth

Juvenile offenders often face many issues beyond illegal behaviors, and suffer from continued exposure to these detrimental risks. Representative examples of these continuing difficulties experienced by court-involved youth include issues associated with adverse family environments and inappropriate peer relationships (Burke et al., 2002; Loeber, Loeber, & White, 1999; Taylor, Malone, Iacono, & McGue, 2002). Family and peer related factors are thought to be particularly important during the adolescent years because these two proximal environments surrounding the youth can buffer or convey the influence of neighborhoods on adolescents (Furstenberg, 1993).
A large body of theoretical and empirical research has linked adolescent delinquency to family variables such as antisocial parents (e.g., Fox & Benson, 2000), lack of family support (e.g., Gorman-Smith & Tolan, 1998; Henggeler, Cunningham, Pickrel, & Schoenwald, 1996), a history of poor attachment to a parent figure (e.g., Hirschi, 1969; Rankin & Wells, 1990; Stern & Smith, 1997), poor monitoring/supervision (e.g., Capaldi & Patterson, 1996; Steinberg et al., 1992), poor parenting skills including inconsistent discipline and extreme disciplinary techniques (e.g., Widom, 1989; Widom & Ames, 1994), family stress (e.g., McLoyd, 1998), and family conflicts (Howard, 2000; Kandel, 1990; Stern & Smith, 1997).

For example, high concentrations of arrests in families, and especially parents’ incarceration, have been linked to delinquency in children who come from those families (Fox & Benson, 2000). Also, serious juvenile offenders tend to have unsupportive or indifferent parents who show low levels of parental warmth and acceptance or show high levels of parental hostility, while supportive parent-youth relationships protect youth from participating in serious antisocial behavior (Gorman-Smith & Tolan, 1998; Henggeler, Cunningham, Pickrel, & Schoenwald, 1996). In addition, a history of poor attachment to a parent figure in juvenile offenders has also been supported by a large body of theoretical and empirical research (Hirschi, 1969; Rankin & Wells, 1990; Stern & Smith, 1997). In Hirschi’s (1969) study with 407 adolescents, a significant inverse relationship between parental attachment and delinquency, regardless of race or social class, was found. That is, parental attachment functioned as a social support and control in inhibiting delinquent behaviors.
Poor monitoring/supervision or weak parenting skill is also one family related risk that juvenile offenders often experience in their families. For instance, research has consistently shown that parents who do not monitor and supervise their adolescents’ activities place their adolescents at a higher risk for delinquency by indirectly encouraging them to make close relationships with delinquent peers (Capaldi & Patterson, 1996). Also, poor parenting skills, including highly punitive and abusive disciplines, are thought to hamper the development of children, and in turn, lead to delinquent behaviors (Sandifer & Kurth, 2000; Widom, 1989; Widom & Ames, 1994). For example, adolescents tend to be physically aggressive, antisocial, and violent if they are abused or neglected by their parents (Bentler et al., 1993), in large part because youth who experienced abuse or neglect use delinquent behaviors as a way to cope with depression and other internalizing problems related to maltreatment (Markowitz, 1993).

In this context, it is also important to note that family stress, including severe socioeconomic disadvantage, can promote parental failure to the effective caretakers (McLoyd, 1998) and is related to other family related issues. That is, parents who experience severe economic disadvantage tend to use more punitive discipline and to be less consistent in monitoring children, and are more likely to be susceptible to severe family conflicts (e.g., Conger, Ge, Elder, Lorenz, & Simons, 1994). In addition, economically distressed parents, especially single mothers, encounter stressors that rigorously challenge their ability to effectively manage and support their children (Elder & Caspi, 1988; Furstenberg, Elder, Cook, Eccles, & Sameroff, 1999; McLoyd, 1998). Finally, in the study with ninety-two incarcerated males that examined the relationship
between the degree of perceived family functioning and severity of delinquency, adolescents with higher severity of gang involvement or involvement in multiple violent activities perceived higher levels of family conflicts in their families (Dana, 1998).

As such, the literature appears to show that family factors have a profound influence on the development of adolescent delinquent behaviors and juvenile offenders’ adjustment issues. Studies also have illustrated that family related risks have both a direct and indirect impact on delinquent behavior by being intertwined with other risk factors, especially peer related risks (Ary, Duncan, Duncan, & Hops, 1999). For example, adolescents faced with inconsistent discipline often develop a coercive interpersonal style, which in turn increases the likelihood of involvement with antisocial peers due to their inability to have relationships with conventional friends (Patterson, 1982; Patterson, Reid, & Dishion, 1992). Also, parents’ poor monitoring/supervision (including parental lack of awareness of their child’s whereabouts and activities) or weak bonds between children and parents, and the association with delinquent peers has been found to be related to one another (Ary et al., 1999) by increasing children’s vulnerability to negative social influences outside of the home. That is, deviant behaviors with peers are more likely to take place in contexts in which teenagers are unsupervised by parents or other adults (Byrnes, 1997).

**Peer Related Risks among Court Involved Youth**

One of the most common links made in the juvenile justice literature is the relationship between criminal activity and delinquent peer groups (Hill & Hood, 1999;
Some of the more frequently mentioned peer related variables include friendships with deviant peers, deviant peer network (Lipsey & Derzon, 1998; Agnew, 1991; Williams, 1994), and gang involvement and gang activity (Hill & Hood, 1999).

Researchers have found that as children move into adolescence, the association with deviant peers becomes an important factor in delinquent involvement and may be the best explanation for youth participation in both initiation and contribution of adolescents’ new delinquent behaviors (Patterson, DeGarmo, & Knutson, 2000). The effect of peers is stronger when the adolescent has intensive interaction with peers who are involved in serious delinquency and the substantial variation in the degree of committing delinquent acts depends on the level of attachment to delinquent peers and the time they spend together (Agnew, 1991). That is, the influence of delinquent peers on adolescent’s delinquency depends on the frequency, duration and intensity of the relationship.

In tandem, researchers who have studied what causes adolescents to join gangs have found that the risk factors for gang membership are virtually the same as those for violence generally (Hill & Hood, 1999). Estimates from law enforcement agencies indicate that gang members are overwhelmingly male and the great majority (almost 80 percent) is African American or Hispanic (Snyder & Sickmund, 1999). However, gang involvement should not be disregarded in explaining delinquent activities among Caucasian offenders or female offenders since surveys in which young people identify themselves as gang members suggest that there are substantially larger proportions of
white and female gang members. In a survey of nearly 6,000 8th graders in 1995, twenty five percent of white students and thirty eight percent of female students reported they were gang members (Esbensen & Osgood, 1997).

Further, the peer group of this youth engaged in activities that will undermine the efforts of parents or other adult caregivers and therefore, the peer group becomes a singular substitute rather than a complementary alternative context for adolescent developmental needs (Ary et al., 1999; Elliott et al., 1985). Together, juvenile offenders suffer from many different issues across family and peer risks, and the extent of family or peer related risks that these youth experience vary according to subgroups as explained in the following section.

Demographic Consideration: Gender, Ethnicity, the Timing of Onset for Delinquency, and Potential Interactions

More recently, research has focused on differences in family and peer risks according to subgroups including gender, ethnicity, and different onset of delinquency in order to understand these risks more systematically and to give us more effective guidelines for referrals and treatment. In this context, risks experienced by court involved youth are more specifically discussed by gender, the timing of onset for delinquency, and ethnicity in the following sections.

Previous delinquency studies have revealed significant differences associated with gender, ethnicity, and the timing of onset for delinquency in terms of family and peer risks (Henggeler, 1989; Hubbard, 2004; Hubbard & Pratt, 2002; Huizinga & Elliott, 1986).
Gender Differences in Family and Peer Risks in Court-Involved Youth

Because males tend to be more involved in illegal behaviors than females (Henggeler, 1989; Hubbard, 2004; Hubbard & Pratt, 2002; Huizinga & Elliott, 1986), their risks and needs have been the focus of most juvenile justice research. However, more recently this attention has shifted to female adolescents due to a growing awareness of different risks/needs according to gender (Hubbard, 2004). For example, Hubbard and Pratt (2002) reported that, while some risk factors of delinquency for female and male adolescents (e.g., personality and antisocial attitudes) were similar, family relationships and favorable peer relations were much stronger predictors of delinquency for female adolescents than for males.

There is accumulating evidence that some family factors are more closely associated with delinquent problem behaviors for female adolescents than male adolescents, such as family dysfunction and a greater likelihood of being maltreated in the home (e.g., Margolin & Gordis, 2000). Various studies have focused on abuse in the home, and have also found that there is the subsequent criminalization of survival reactions to those traumatic events among female offenders (Chesney-Lind, 1997; Chesney-Lind & Okamoto, 2001).

Thus, outright rejection and abuse for females may be more problematic and result in more harmful outcomes than for males because relationships tend to be more important to female adolescents than to male adolescents (Smith & Thomas, 2000). For example, it has been reported that the families of aggressive and delinquent female adolescents are characterized by greater discord, deviance, and conflict than families of
their male counterparts (Smith & Thomas, 2000). Also, Miller et al. (1998) found that those female adolescents that defined their relationship with their parents as poor in quality were more likely to engage in risky behaviors. In addition, the likelihood of sexual abuse and induced internalizing problems is much higher for female adolescents than male adolescents (Acoca, 1998; Chandy, Blum, & Resnick, 1996; Chesney-Lind, 1997; Chesney-Lind & Okamoto, 2001) since it is more likely to be from a family member (Belknap, 1996) when this abuse occurs. Thus, factors related to parental rejection and abuse may be more common and problematic, and therefore result in more harmful outcomes for adolescent females than for their male counterparts.

Peer related risks can be an additional area that male and female adolescents experience differently. Male adolescents are more likely than female adolescents to suffer physical victimization from peers (Crick & Bigbee, 1998) and show higher involvement in gang memberships (Curry, Ball, & Fox, 1994). In turn, female adolescents tend to be involved in more passive forms of aggression often referred to as relational aggression (Crick & Bigbee, 1998), which is emotional violence that female adolescents manipulate the social scene to hurt or psychologically "destroy" their peers. Here, the tendency to internalize problems related to the likelihood of peer victimization is stronger for female adolescents than male adolescents (Hodges & Perry, 1999) given that female adolescents who suffered social isolation and victimization from peers were more likely to think about suicide, compared to male adolescents who had the same experience (Bearman & Moody, 2004).
Also, a few studies have shown that dating relationships with a criminally involved youth is one risk factor for initiating and maintaining delinquent acts, especially for female adolescents, when female adolescents are involved in dating relationships with older male adolescents (Caspi et al., 1993; Giordano, Manning, & Longmore, 2005; Morris, 1964). Female adolescents are more likely to encounter delinquent role models and to be reinforced by their partners who are already involved in delinquent acts to participating in delinquent activities in comparison to male counterparts (Caspi et al., 1993; Giordano et al., 2005; Morris, 1964).

Together, these studies strongly suggest that juvenile justice professionals should take into account gender specific risks and needs and how they relate to both family and peer concerns. Thus, the literature supports the assertion that gender is related to the unique needs of male and female offenders that must be attended to in family risk and peer risk assessment and intervention efforts in the systems that serve juvenile offenders.

**Ethnicity Differences in Family and Peer Risks in Court-Involved Youth**

The issue of ethnicity also has gained increased attention in the juvenile justice literature because of the disproportionate minority representation present in the justice system (DeJong & Jackson, 1998; Hsia et al., 2004; Sigel & Senna, 1997). There are a variety of factors that seem to predispose minority youth to engagement in delinquent behaviors (Taylor & Turner, 2002; National Center for Children in Poverty, 2002; Wilson, 1996). For example, compared to Caucasian adolescents, African American adolescents are disproportionately exposed to severe poverty and disadvantaged neighborhood environments (National Center for Children in Poverty, 2002; Wilson,
of African American children live in poverty compared to nine percent of Caucasian children (National Center for Children in Poverty, 2002) and African American youth are more likely than Caucasian youth to live in neighborhoods characterized by high crime rates, high unemployment rates, and poor schools (Wilson, 1996). As such, larger societal problems (poverty, disadvantaged neighborhood settings, and employment issues) are often examined as risk factors for explaining minority youth’s delinquency.

In addition, African American youth report greater exposure to discrimination events than their Caucasian counterparts (Taylor & Turner, 2002). These discrimination events, in turn, lead to poor self-esteem and undefined social identities that contribute to the willingness of African American males to engage in high-risk behaviors (Zabel & Nigro, 1999). Further, the lack of positive male role models in some African American families also may prompt young males to look outside of their families for male-male relationships that, in turn, can lead to a gang involvement (Garrett, 1995).

A number of studies have identified family or peer risks that are closely related to adolescent delinquency (Hawkins, Catalano, & Miller, 1992; Loeber, Loeber, & Farrington 1993; Williams, 1994) as proximal environments. However, few studies have explored racial differences in these risk factors either cross-sectionally or longitudinally among delinquent youth.

Earlier research has shown that the constructs of peer influence, and family have components that distinguish African American youth’s delinquent activities from those of white youth (Maguin & Loeber, 1996; Peterson, Hawkins, Abbott, & Catalano, 1994;
Williams, 1994). For example, overall peer relationships (e.g., poor relationship with conventional peers) have a significant effect on delinquent behaviors (Brannock et al., 1990; Elliott, 1985; Matsueda & Heimer, 1987; Williams & McGee, 1994), particularly for white youth.

On the other hand, relationships with delinquent peers such as a deviant peer network (Williams & McGee, 1994), and gang involvement were common in African American offenders. That is, the main characteristic of the social network for delinquent youth was gang involvements among African American adolescent (Curry & Spergel, 1992). Actually, involvement with deviant peers is seen as the strongest proximal risk for delinquent involvement (Dishion, Spracklen, Andrew & Patterson, 1996; Klein, Forehand, Armistead, & Broady, 1994). Studies have shown that there is strong evidence that involvement in deviant peer groups plays a critical role in youth crime generally, and youth violence in particular (Heimer, 1997; Keenan et al., 1995; Thornberry, 1998). Therefore, the impact of general peer relationships on adolescent delinquency may be stronger for white youth while the prevalence rate of deviant peer relationships or gang involvement is higher for African American youth.

The issue of ethnicity on family risks among juvenile offenders has recently gained attention in the juvenile justice area and the present literature does not adequately address the degree to which minority youth and majority youth experience family related risk in this special population, although at least one study has reported that African American female offenders are going through much higher level of family related risk (Gavazzi, 2006). In the study (Gavazzi, 2006), potential variation in the family
environment of juvenile offenders was examined with a sample of 1609 court involved youth. Results of the study indicated that the presence of higher family risk and needs was found in African American female offenders followed by Caucasian women, Caucasian men and African American men.

The differential level of family risks in court-involved youth was not detected in another study (Gavazzi, Yarcheck, & Lim, 2005), however. One plausible explanation of non-significant ethnic differences in terms of the level of family related risks is that this study was performed on a sample largely composed of status offenders (e.g., unruly, runaway, incorrigible charge) and having a relatively small sample size ($N=103$).

Hence, more research is necessary to fully examine the family process and peer related risks of minority and non-minority youth in this special population.

**Differences Caused by different Timing of Onset for Delinquency in Family and Peer Risks in Court-Involved Youth**

The term “onset of delinquency” was originally proposed by Moffitt (1993) in order to discriminate two types of youth offenders: those who take part in delinquent acts before age of 14 (i.e., early onset or life-course persistent offenders) and those who do so later (i.e., late onset or adolescent limited offenders) (Patterson & Yoeger, 1993).

The importance of early onset for understanding patterns of criminal offending has been well established (Elliott, 1994; Hawkins, Herrenkohl, Farrington, Brewer, Catalano, & Hirsch, 1998; Moffit & Caspi, 2001) because of the serious adjustment issues and sustaining violent problems of early onset offenders (Hawkins et al., 1998; Thornberry, Huizinga, & Loeber, 1995). For instance, using National Longitudinal Youth Survey data, Elliott (1994) found that forty-five percent of children who initiated
violence before age eleven continued to be violent into their early 20s. In the Rochester Youth Development Study, Thornberry et al. (1995) also found that thirty-nine percent of children who initiated violence at age 10-12 also engaged in violence in later years. Piquero and Chung (2001) found that an early onset before age fourteen was predictive of serious offending by age eighteen with a sample of 220 African American offenders (151 male and 69 female) retrieved from the Philadelphia portion of the National CPP, even though the relationship that the earliest onset ages were associated with the most severe delinquency pattern was held for male offenders only.

Furthermore, there are important implications for intervention and prevention programs. These programs need to be administered to early onset offenders as early as possible with the significant relationship between early onset and sustaining serious offending (Piquero & Chung, 2001). Given the implication for intervention programs to early onset offenders, the risk factors related to different ages of onset for delinquency has been widely studied (Moffit, 1993; Moffit & Caspi, 2001; Silverthorn & Frick, 1999).

For example, the risk factors related to early-onset offending include serious family dysfunction and family psychopathology (Moffit, 1993), as well as individual characteristics such as difficult child temperament and cognitive and neuropsychological dysfunction (Moffit & Caspi, 2001). In the early onset group, the combination of a vulnerable and difficult child and an adverse rearing context initiates a transactional process that evokes a chain of failed parent-child encounters (Moffit, 1993). This transactional process leads a child to lose opportunities to acquire and practice prosocial
patterns of behavior, which in turn leads him or her to become involved in a lifelong pattern of antisocial behavior (Moffit, 1993).

In contrast, late onset offenders typically engage in delinquency by becoming involved with delinquent peers (Moffit & Caspi, 2001), which is also related to a variety of parenting behaviors associated with lack of monitoring/supervision and family support. One plausible reason is late onset offenders’ rebellious personality style that makes them more likely to be involved with delinquent peers as a misguided attempt to gain a sense of maturity (Moffit, 1993). Once societal acceptance of adult status is achieved, however, the major motivation underlying the antisocial behavior of this group is no longer present and as a result, their antisocial behaviors are dramatically decreased.

Therefore, studies have indicated that early onset offenders are more likely to experience family related risks such as family disruption and nonfunctional family processes as risk factors for violence while late onset offenders are more likely to experience peer related risks as risk factors, which lead them to involvement with delinquent behaviors.

Taken together, the literature supports the examination of different timing of onset for delinquency as a potential variable in further research efforts.

Potential Interactions among Gender, Ethnicity, and the Timing of Onset for Delinquency in Family and Peer Risks/Needs

Studies have shown that there are differential levels of family or peer related risks faced by female or male adolescents of different races or onset groups, however (Ensminger, 1990; Gavazzi 2006; Neumark, Story, French, & Resnick, 1997). In one study (Gavazzi, 2006) that examined family related risks according to gender and ethnic group in court-involved youth, African American female offenders reported higher risk
scores in comparison to Caucasian female offenders, while Caucasian male offenders reported higher risk scores in comparison to their African American counterparts. As such, there was a clear interaction effect of gender and ethnicity on family related risks among juvenile offenders.

Also, examination of potential interaction effects between gender and the timing of onset for delinquency on family related risks is supported by studies proposing that there is a unique onset pattern for delinquency among female adolescents. According to Loeber and Stauthamer-Loeber (1998), female adolescents are more likely to become involved in delinquent behaviors at later ages, although female adolescents’ risks do not seem to mimic that of later onset males. That is, most delinquent females show antisocial behaviors in adolescence but, unlike their late-onset male counterparts, tend to show a serious and diverse set of long-term negative outcomes (i.e., illegal behaviors, substance abuse, family related risks) into young adulthood more similar to the early-onset male offenders.

In light of such findings, Silverthorn and Frick (1999) proposed a “third developmental pathway” for antisocial female adolescents labeled “delayed onset.” Here, while the timing of involvement in delinquency is similar to the male “late onset” pathway (i.e., the first offense happened later in adolescence), the correlates (cognitive/neuropsychological deficiency, temperamental characteristics, seriously poor parenting practices, antisocial biological parents) are more similar to the male “early onset” pathway. In addition, females with early onset conduct problems have even more severe risk profiles than early onset male or late onset females (McCabe, Hough, Wooed,
& Yeh, 2001). Also, early onset females tended to have more serious long-term outcomes such as risky sexual behaviors even when they become adults (Leve & Chamberlain, 2004) beyond common long-term consequences for early onset offenders.

Therefore, there appears to be a female-specific effect in which late onset female offenders are more likely to resemble the characteristics of early onset males except the timing of onset for delinquency, and early onset female offenders face a greatest risk of serious adjustment issues (e.g., family related problems) in comparison to other subgroups associated with gender and onset group.

However, no study to date has examined the association between onset group of delinquency and ethnicity systematically. What is known is that African American youth are more likely to develop early onset for delinquency than Caucasian youth, given that African Americans are more likely to display long lasting violence, which is a typical characteristic of early onset offenders. Also, African American youth more frequently exhibit temperamental difficulties, and a history of biological parents’ incarceration, both of which are typical risk factors for early onset delinquency (Moffit & Caspi, 2002). Therefore, the potential interaction effect of onset of delinquency and ethnicity on family and peer related risks needs to be examined.

As mentioned previously, previous studies clearly have shown that there are the separate influences of variables associated with gender, ethnicity and onset of delinquency family and peer risks among court-involved youth. As such, youth who is a male, late onset offender, and African American, all of which are clear indicators of higher peer related risks, is hypothesized to show the highest peer related risks levels
among combinations of subgroups in the present study since the youth concurrently possess those three risk indicators. In the same manner, a given youth who is female, an early onset offender, and African American all of which are indictors of high level family related risks, therefore is hypothesized to be at the highest risk of family related risks.

Exploration of specific combinations of subgroups associated with gender, ethnicity, and onset group in family and peer related risks is necessary for further elaboration of understanding of family and peer related risks experienced by juvenile offenders. There is a need to examine the potential two way interaction effect of ethnicity and onset groups on family and peer related risks, and the three way interaction effect of gender, ethnicity and onset group on those risk factors has never been directly tested. Hence, these studies suggest that consideration of both the separate and interactive influences of variables associated with gender, ethnicity and onset of delinquency are necessary components of a thorough empirical examination that focuses on the assessment of family and peer risks among court-involved youth.

The Influence of Neighborhood Settings on Family and Peer Risks in Court-involved Youth

Research in juvenile delinquency has attempted to identify risk factors for delinquency within multiple domains of influence: individual, family, and neighborhood (Chung, 2004; Herrenkohl et al., 2001; Lipsey & Derzon, 1998). These studies have shown that neighborhood setting indicators account for a significant amount of variance in juvenile delinquency beyond that which is explained by family related variables and
individual characteristics and delinquent related risk factors such as poor parenting and
gang involvement (Chung, 2004; Herrenkohl et al., 2001; Lipsey & Derzon, 1998).

In large part, youth who reside in disadvantaged neighborhoods, when compared
to those living in more advantaged neighborhoods, are exposed to a greater number of
adverse environmental factors, including exposure to different forms of community and
family violence (Attar et al., 1994; Gorman-Smith & Tolan, 1998), an increased
likelihood of affiliation with deviant peers, psychological distress, substance abuse, and
poor parenting practices (Smith, Albus & Weist, 2001).

Specifically, disadvantaged neighborhoods have a higher prevalence of risk effect
for juvenile delinquency through low levels of parental supervision/monitoring (Elliott et
al., 1996; Sampson, 1997), elevated rates of verbal aggression and punitive parenting
with their children (Briggs, 1997; Klebanov, Brooks-Gunn & Duncan, 1994), and a lower
prevalence of protective effects such as high quality relationships with parents
(Stouthamer-Loeber et al., 2002). More recently, Tolan et al. (2003) found that both weak
neighborhood structures associated with poverty, residential instability, ethnic
heterogeneity, and neighborhood crime and low social organization significantly
predicted poor parenting including low monitoring, harsh discipline, and low parental
involvement.

Disadvantaged neighborhoods are also associated with higher levels of negative
peer group affiliations (Elliott et al., 1996), and lack of affiliation with conventional peers
(Stouthamer-Loeber et al., 2002). For instance, Rankin and Quane (2002) found that
neighborhood collective efficacy, defined as social cohesion among neighbors combined
with their willingness to intervene on behalf of the common good, was an important predictor about deviant peer group affiliations and peer deviance along with parenting style among a sample of urban adolescents.

Research that examines the impact of these deprived neighborhoods on juvenile delinquency more often has been conducted in urban communities, largely because urban cities are more heterogeneous in terms of sociodemographics (Farrell & Bruce, 1997; Margolin & Gordis, 2000; Perez-Smith, Albus, & Weist, 2001). However, research has shown that there is significant neighborhood impact on adolescents’ problems in both suburban and more rural areas. For instance, Simons, Johnson, Beaman, and Conger (1996) examined the impact of community structure on conduct problems, parenting problems, delinquent peers, and psychological distress in adolescents in small rural communities. In this study, community disadvantage (i.e., rates of neighborhood unemployment, government assistance, and low levels of education) was found to be related to adolescents’ conduct problems and quality of parenting, and the proportion of single-parent families in the neighborhood influenced the relationship with deviant peers. As such, studies have shown that the impacts of disadvantaged neighborhood settings on juvenile delinquency and risk factors for delinquency are noteworthy regardless of area affiliation of neighborhoods (i.e., urban, suburban, or rural).

The variation in the neighborhood settings themselves can be composed of both individual selection effects and generative neighborhood effects (Bursik & Grasmick, 1993; Tienda, 1991) as Elliott et al. (1996) pointed out. According to Elliott et al. (1996), people select their neighborhoods based on their individual characteristics possibly
associated with education, income, and race/ethnicity, rather than being randomly assigned to neighborhoods and therefore, this selection process can produce a selection effect that is independent of the emerging organizational effects. Bronfenbrenner (1989) also indicated that individuals influence the nature of family, peer groups, school, and neighborhood context. This provides greater assurance that the influence of the neighborhood factors on individuals is not simply a result of individual level characteristics, which may also vary across neighborhoods as a result of selection effects. In this context, the authors recommended that individual characteristics should be controlled when the study is performed on estimating neighborhood effects in multi-level models.

Another rationale that individual characteristics should be controlled in order to estimate pure neighborhood effects can be found in many studies that showed the possible relationship between neighborhood settings and individual characteristics as reviewed in the following section.

**Neighborhood Settings and Gender of Youth**

Juvenile delinquency literature has suggested that there are gender differences in terms of the influence of neighborhoods on juvenile delinquency and risks factors, although there have been some inconsistent results (Farrell & Bruce, 1997; Stouthamer-Loeber et al., 2002; Wikström & Loeber, 2000). For instance, male adolescents are more frequently involved in neighborhood violence, and victimization than are female adolescents and therefore, there is a higher prevalence of neighborhood risk effect for male delinquency (Farrell & Bruce, 1997; Stouthamer-Loeber et al., 2002). Also, several
studies have reported that there was a greater influence of neighborhood setting on poor peer relationships for male adolescents, given that male adolescents had more neighborhood play companions than female adolescents (Kupersmidt, DeRosier, & Patterson, 1995) and tended to have more friends who engaged in delinquent activities such as gangs (Brody et al., 2001; Kim, Hetherington, Reiss, 1999).

Unlike this line of studies, Perez-Smith et al. (2001) reported similar rates of exposure to violence according to gender of the youth. In addition, another study has argued that the impact of neighborhood would be more important for female adolescents than male adolescents because female adolescents tend to have affiliations with older deviant males (e.g., dating relationships) in the same or close neighborhoods, which in turn may result in the onset of female adolescent’s delinquent behavior and precocious sexual behavior (Savin-Williams & Berndt, 1990).

Interestingly, Simons et al. (1996) found a different pattern of association between neighborhood settings and risks with a sample of youth living in single-parent families according to gender of the youth. The proportion of single-parent families in the neighborhood and the presence of more affluent neighborhoods surrounding the neighborhood where the youth resided influenced female adolescents’ delinquent behaviors directly, and the neighborhood characteristics had a direct association with deviant peers and an indirect impact on delinquency via the influence of the associations with delinquent peers among female adolescents. On the other hand, the association between community disadvantage and quality of parenting, and the association between
quality of parenting and delinquency were significantly higher for male adolescents than female adolescents in the same study.

**Neighborhood Settings and Ethnicity of Youth**

There has also been evidence that African American adolescents, compared to Caucasian adolescents, frequently showed a relationship between neighborhood contexts and delinquent behaviors, and tended to reside in more seriously disadvantaged neighborhood settings (Peeples & Loeber, 1994; Wilson, 1996). For example, African American youth have a poverty rate that is more than three times that of European American youth (National center for children in poverty, 2002) and they are more likely than their European American peers to live in neighborhoods characterized by high crime rates, high unemployment rates, and poor schools (Wilson, 1996).

However, the frequently reported significant ethnic differences in the relationship between neighborhood settings and the prevalence of delinquency or crime may be caused by higher probability that African American youth reside in disadvantaged neighborhoods rather than a stronger relationship between disadvantaged neighborhood and delinquency among African American youth. For example, in a study where economic status level of neighborhood was controlled, African American youth showed a similar level of delinquent behaviors, and the impact of neighborhood settings on delinquency were similar to that of the Caucasians when African Americans did not live in underclass neighborhoods (Peeples & Loeber, 1994).
In sum, the impact of neighborhood on risks/needs may vary by ethnic groups even though studies having more systematic approaches to examine the relationship are necessary.

Neighborhood Settings and the Timing of Onset of Delinquency and Age of the Youth

To date, no study examines the neighborhood impacts on risk factors for delinquency according to onset group. However, there was some evidence that neighborhood effects vary by the age of youths, that is, they are minimal on very young children and stronger on older youths, who become increasingly embedded in neighborhood social networks and activities and have longer periods of exposure to the risks in disorganized neighborhoods (Elliott et al., 1996). In addition, the distance that children are able to be away from home tends to increase with age and the number of play companions in the neighborhood increases as children grow older (Kupersmidt et al., 1995), which can lead to more intensive exposure to neighborhood risk factors.

The neighborhood effects on children’s behavior are thought to emerge at around the time of entry into elementary school regardless of gender (Chase-Lansdale & Gordon, 1996) even though previous research also has demonstrated concurrent associations between neighborhood settings and problem behaviors as early as age 5 (e.g., Chase-Lansdale & Gordon, 1996).

Therefore, it is also plausible that the magnitude of the association between neighborhood quality and risks that youth experience can be different according to onset groups since early onset offenders tend to show earlier family disruption, and parental incarceration (Brooks-Gunn et al., 1993; Leventhal & Brooks-Gunn, 2000), which leads
to earlier migration to disadvantaged neighborhoods and therefore, longer residency in disorganized neighborhoods. Therefore, age of the youth and onset groups also need to be taken into account when we examine the impact of neighborhood settings on family and peer related risks experienced by youth.

In conclusion, individual characteristics may create and interact with neighborhood factors in some important ways. In this context, to consider the influence of neighborhood settings on current family/parenting and peer risks/needs after controlling for individual characteristics gives us more clear information about the impact of neighborhoods on juvenile offenders’ needs and current risk levels.

**Theoretical Framework**

Studies in juvenile delinquency have been dedicated to integrating factors from multiple domains by using large-scale studies (Chung, 2004). In this context, the present study tries to examine the impact of neighborhoods on family and peer environments among court-involved youth and differential effects of family and peer environments on the individual (i.e., juvenile offender) by individual characteristics (gender, ethnicity, and onset of delinquency) based on an ecological perspective (Bronfenbrenner, 1979, 1988).

Bronfenbrenner (1979) suggests that a person’s ecological environment is “a set of nested structures, each inside the next, like a set of Russian dolls. At the inner-most level is the immediate setting containing the developing person”. Thus, the ecological approach considers the contextual characteristics or social systems (e.g., family, peer, or community) in which the youth is embedded. More specifically, the distal environment
(e.g., neighborhood setting) is seen as a transactional setting that influences various more proximal social systems, namely, families and peer environments nested within them. From this viewpoint, it is important to consider the potential influence of the characteristics of the neighborhood when attempting to understand proximal environments risks among court-involved youth.

In other words, it can be presumed that the impact of major proximal environments’ influences, such as family or peer groups, is dependent on the characteristics of the communities or the neighborhoods in which youth and families reside (Gorman-Smith, Tolan, & Henry, 2000). Therefore, juvenile offenders’ family and peer environments are very important systems that would mediate neighborhood influences on individuals (i.e., juvenile offenders).

Also, individuals are influenced by the ongoing qualities of the social systems in which the individual lives or participates and the extent and nature of the interaction between these systems (Bronfenbrenner, 1979, 1988) and therefore, juvenile offenders’ adjustment issues can be tied to the connections between the proximal environments (e.g., family and peer environments) and the distal environment (e.g., community or neighborhood). Furthermore, this approach suggests that the effects of social systems, such as family and peer group, may differ for youth with distinct personal characteristics (e.g., gender) (Bronfenbrenner, 1986, 1988). In line with this perspective, several ecologically oriented studies have shown that family and peer environments may not have identical effects for adolescents of different gender or ethnicity (Jacobson & Crockett, 2000).
From this approach, a lack of consideration of neighborhood differences and their potential impact on family and peer environments may lead to overly simplistic explanations (Furstenberg et al., 1999; Gorman-Smith et al., 2000) of family and peer related risks experienced by court-involved youth. However, few studies have examined these associations from an ecological perspective in order to explain the contextual effects among juvenile offenders even though studies in neighborhood effects have shown that there is a strong association between neighborhood settings and family and peer groups (Gorman-Smith et al., 2000; Tolan, Gorman-Smith, & Henry, 2003). In keeping with an ecological perspective, the present study tries to fill a gap in the study of neighborhood influences on the life of juvenile offenders by considering the impact of neighborhood factors on family and peer related risks after controlling for youth gender, youth age, youth ethnicity, household composition, and onset of delinquency in the two-level HLM models.
CHAPTER 3
METHODS

This chapter introduces the methods for the present study. In the sections that follow, the sample, instruments, variables analyzed, and analytic procedures of this study are introduced in order to understand details of this study within a broader research frame. This study involves an examination of family and peer risks according to subgroups of court-involved youth, as well as the impact of neighborhood settings on these risk factors.

Sample

This dissertation used data from an ongoing project, ‘Global Risk Assessment Device (GRAD)’ project. The purpose of this project is to tap into a variety of risk domains commonly associated with adolescent development and well-being in court-involved youth, and generate meaningful information that informs decision-making about how to refer these youth and their families to the most appropriate services.

Of the original 2,646 youth coming to the attention of five county juvenile courts in Ohio, 1009 (38%) were female, and 1637 (62%) were male. A total of 1379 (52 %) were Caucasian, 1107 (42 %) were African American, 55 (2%) were Hispanic American, 9 (.3%) were Asian American, 2 (.1%) were Native American, and 94 (3.6%) were Bi-
racial or representatives of other racial and ethnic groups. Forty-three percent of the adolescents \( (n = 1139) \) reported living with a single parent, including a mother headed household or a father headed household. Regarding annual household income for the sample, 38\% refused to report income, 31\% resided in homes with income under $34,999, 21\% resided in homes with income in the $35,000 - $54,999 range, and 10\% of the youth resided in homes with an income of $55,000 and above.

Of these youth, a subset of the GRAD project participants \( (N = 1086, 41\%) \) was used for this study. Inclusion criteria for the final sample centered primarily on location in a detention facility at the time of the assessment. Since there was thought to be a significant association between severity of delinquency and the relationships explored in this study, the decision was made to study only those individuals in detention in order to obtain a relatively homogeneous sample of seriously delinquent juvenile offenders. Examples of excluded cases included: 1) those who were in probation, diversion, or other court related facilities; 2) those who did not have valid zip code data for the 2000 National Census variables; and 3) those who were not African American or Caucasian youth. Youth with other ethnic backgrounds were excluded because those ethnicities did not contain sufficient numbers of participants to warrant the construction of additional ethnic categories for the comparison.

The detailed data were organized on a resulting final sub-sample of 1086 subjects. At the time of assessment, these youth were between 13 - 17 years old \( (M = 15.3, SD = 1.3) \). The sample of 377 female (35\%) and 709 male adolescents (65\%) included 407 Caucasian (38\%), and 679 African American (63\%) youth. The majority (56\%) of these
youth came from single parent-headed households. The rest of this group consisted of two biological parent households (10%), grandparents-headed households (7.5%), step-parents households (10%), and other types of households (25.5%). The “other” types were composed of foster family, same sex partners, and other household arrangements.

When asked about who was considered to be a primary caregiver, about 66% of youth identified their biological mother, 17% identified their father, 7% identified their grandparent, 4% identified other relatives (e.g., aunt, uncle), and the remaining (6%) identified “others (e.g., foster parent, step-parent, mentor)”. Regarding the annual household income for the final sample, 60% refused to report income, 32% resided in homes with income under $34,999, 5% resided in homes with income in the $35,000 - $54,999 range, and only 3% of the youth resided in homes with income in the $55,000 and above income.

According to information obtained from the 2000 National Census, these youth lived in primarily working class neighborhoods, with 50% of youth living in areas with a median household income of less than $31,000, and 75% of youth living in areas with a median household income of less than $37,500. See Table 3.1 for demographic characteristics of participants.
<table>
<thead>
<tr>
<th>Demographics</th>
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<th>Max.</th>
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<th>SD</th>
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<th>%</th>
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<tr>
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<td>Married, two biological parent</td>
<td>103</td>
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<td>Step-family</td>
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<td>Single parent (mother)</td>
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<td>Single parent (father)</td>
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<td>6.9</td>
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<td>Grandparent</td>
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<td>7.5</td>
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<tr>
<td>Foster family</td>
<td>24</td>
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<td>2.4</td>
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<td>Others (i.e., same sex partners &amp; other)</td>
<td>129</td>
<td></td>
<td>12.7</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Total</td>
<td>1086</td>
<td></td>
<td></td>
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</tbody>
</table>

Table 3.1 Demographic Descriptions of Participants (N = 1086)
Instruments

Data used in this study were drawn from two sources: youth reported responses on the GRAD, and the 2000 National Census. The 2000 National Census data were used to compile measures of neighborhood economic disadvantage and residential instability. A description of variables derived primarily from youth-report data is presented first followed by the overview of measures from the 2000 National Census.

Global Risk Assessment Device (GRAD)

Information on the youth in the present sample was gathered through use of version 1.0 of Global Risk Assessment Device (GRAD: Gavazzi, Slade, Buettner, Partridge, Yarcheck, & Andrews, 2003). This device is an easily accessible and user friendly Internet based instrument that is meant to rapidly and reliably measure potential threats to the overall development and well-being of adolescents penetrating the juvenile justice system (Gavazzi et al., 2003). There are 132 items that represent 11 different risks/needs domains along with demographic information items: prior offenses; family/parenting; peers; substance abuse; education/vocation; leisure; accountability; personality/behavior (mental health); sociability (psychopathy); traumatic events; and health related risk behaviors.

The GRAD is administrable in approximately 20 minutes with an additional 5 to 10 minutes taken in order to input demographic information (e.g., age, gender, and ethnicity) associated with each youth. Professionals who have general experience in working with high-risk youth and their families can administer this device after one full

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1 More information about the Global Risk Assessment Device can be found at http://projectgrad.osu.edu.
day of training. Questions are read to the youth and the respondent’s answers are entered
directly into the computerized database by the professional in order to avoid any
problems caused by reading difficulties.

Youth and caregiver(s) of the youth rate how true each item is now or within the
past 6 months using the following scale: 0 = No/Never; 1 = Yes/A couple of times; 2 =
Yes/A lot. Therefore, a high score in each domain means that this youth is at greater risk
in terms of each domain. These risks scores are linked to important demographic
information that is collected on each youth who is assessed, and all information is
systematically aggregated and available to the user for reporting purposes. Further, there
is a case disposition tracking page that is designed to collect information on referrals and
subsequent service provision, and the database has been constructed in order to facilitate
the collection of information from multiple perspectives (youth, parent, professional)
throughout the case management process.

Examples of items in each domain of the youth version of GRAD are as follows:

**Prior Offenses:**
“How often have you been involved in any kind of illegal activity that did NOT involve law enforcement or that you did NOT get caught for?”

**Family/Parenting:**
“How often are adults who live in your home verbally abusive to you (swearing, calling you names etc.)?”

**Education/Vocation:**
“How have you had a difficult time getting to school or staying in school for the entire day?”

**Peer Relationships:**
“Do you have friends who have been in trouble with the law?”
Substance Abuse:
“Have drugs and/or alcohol played a role in disrupting your academic performance?”

Leisure Activities:
“Do you ever have a lot of spare time?”

Mental Health Issues:
“Do you ever have bad dreams or nightmares?”

Psychopathy:
“Are you ever cold and unfeeling towards others?”

Traumatic Events:
“Have you ever witnessed domestic violence in the home?”

Accountability:
“Do you ever feel more mad instead of guilty when you get caught doing something wrong?”

Health-Related Risks:
“Have you gone without regular medical check-ups?”

Cronbach’s alpha estimates of internal consistency of each subscale ranged from .63 to .90, and a confirmatory analysis displayed the goodness of fit of the construct structure (Gavazzi et al., 2003). Also, previous work has reported on the predictive validity (Gavazzi et al., 2003) and concurrent validity evidence (Gavazzi & Lim, 2003) supporting this tool’s use in referring youth to the most appropriate level of care (Gavazzi et al., 2005). For instance, Gavazzi and Lim (2003) reported the concurrent validity for the Global Risk Assessment Device using a sample of 37 families of adolescents who participated in a family-based program designed to divert youth out of the justice system. Significant correlations among three domains of risk (family/parenting, substance use, and personality/behavior problems) and other measures (i.e., the family Events Checklist,
the Youth Risk Behavior Survey, the Brief Symptom Inventory) generated preliminary evidence of the concurrent validity of this measure. Gavazzi et al. (2003) also reported the predictive validity of this battery in a sample containing 224 families of adolescents who were assessed by intake workers in a juvenile court and subsequently referred for services. Results revealed those youth referred to mental health services had higher risk scores than did those youth who were not referred on all domains of risk contained in this battery (Gavazzi et al., 2003). That is, evidence of acceptable reliability and validity for the GRAD domains have been supported and re-confirmed across studies (Gavazzi & Lim, 2003; Gavazzi et al., 2003; Gavazzi et al., 2005; Gavazzi, Chesney-Lind, Yarcheck, in press).

For the present study, only youth reports on the family/parenting and peer domain scores, along with demographic information and information regarding transitional risks collected by this tool were included in data analyses. More specifically, the family/parenting domain consisted of 17 items (see Appendix A) that addressed family/parenting issues known to be correlated with adolescent delinquent behaviors, including: parental tip-toeing around the youth, lack of family support, inconsistent and poor discipline (e.g., poor monitoring/supervision and extremely harsh discipline), family conflicts, and other family related stress (e.g., economic hardship). The peer domain that linked to adolescents’ criminal activities included 15 items representing friendships with delinquent peers (i.e., gang affiliation and dating relationships with criminally involved youth), and poor relationship with conventional peers (see Appendix B). Finally, the transitional risks were the composite score of 11 items with regard to unstable family
environments surrounding the youth (see Appendix D). Scoring for whether or not the youth experienced each transitional event in the last calendar year was based on the following scale: 0 = No; 1 = Yes. Therefore, a higher score means that this youth experienced more family transition in his/her life in the last year.

**Measures of Neighborhood Settings Derived from the 2000 National Census**

Data for neighborhood settings were drawn from the 2000 national census, linked to zip codes that were used as the focal area unit in this study. That is, neighborhood membership was determined by home zip codes of all participants. Zip codes were chosen as the focal unit in this study because they appeared to tap into underlying constructs of interest for this study and represented residential areas for meaningful comparison given members of households and individuals per unit. Furthermore, measures of neighborhood economic disadvantage and residential instability on zip codes mostly correspond with those from studies in which block groups or census tracts were used as the focal area unit (see Brooks-Gunn et al., 1993; Elliott et al., 1996; Sampson, 1997; Sampson et al., 1997).

Based on previous research (Chung, 2005; Herrenkohl, 1998; Sampson et al., 1997), several indicators of two aspects of community structure were extracted from the census in order to represent disadvantaged neighborhood settings: 1) economic disadvantage (Sampson et al., 1997); and 2) residential instability. Information on the neighborhood characteristics were collected because these characteristics correspond with other studies (Sampson et al., 1997) that measured neighborhood economic disadvantage and residential instability. As indicators of neighborhood disadvantage, percentage of
families below the poverty line, percentage of adults without a high school diploma, percentage of families with female and single parent as household heads were included.

In turn, percentage of residents who had moved within the last five years, and percentage of residents that lived in renter-occupied homes were analyzed as indicators of residential instability in the present study. At the time of enrollment, 100% of the sample lived in 4 counties in Ohio. A map of the state of Ohio with colored area for counties used in this study is shown in Figure 3.1.
Figure 3.1 Map of Ohio with Target Counties

About 27% of the zip codes included just one participant, 11% included two participants, 26% included three through ten participants, 26% included eleven through forty participants, and the remaining included up to 94 participants from the study.
Across all zip codes ($N = 90$), the percentage of households below the poverty line ranged from .7% to 71.4% ($M = 11.67$, $SD = 12.92$), the percentage of adults without a high school diploma ranged from 2.2% to 46.4% ($M = 19.17$, $SD = 10.43$), the percentage of families in a female headed household ranged from 2.5% to 43.9% ($M = 15.50$, $SD = 9.11$), the percentage of residents who have moved within the last five years ranged from 26.9% to 76.5% ($M = 42.20$, $SD = 8.20$), and finally the percentage of residents that were in renter-occupied homes ranged from 4.2% to 99.3% ($M = 35.69$, $SD = 19.38$). As can be seen above, the adolescents and their families were residing in fairly diverse neighborhood environments. Descriptive statistics for each of the neighborhood structural variables is presented in Table 3.2.
Table 3.2 Descriptive Statistics of the Neighborhood Structural Variables (N = 90)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Min.</th>
<th>Max.</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Neighborhood disadvantage</strong></td>
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<td></td>
</tr>
<tr>
<td>% of families below the poverty line</td>
<td>.7</td>
<td>71.4</td>
<td>11.67</td>
<td>12.92</td>
</tr>
<tr>
<td>% of adults without a high school diploma</td>
<td>2.2</td>
<td>46.4</td>
<td>19.17</td>
<td>10.43</td>
</tr>
<tr>
<td>% of families in female headed households</td>
<td>2.5</td>
<td>43.9</td>
<td>15.50</td>
<td>9.11</td>
</tr>
<tr>
<td><strong>Residential instability</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% of residents who have moved within the last five years</td>
<td>26.9</td>
<td>76.5</td>
<td>42.20</td>
<td>8.20</td>
</tr>
<tr>
<td>% of residents that are in renter-occupied homes</td>
<td>4.2</td>
<td>99.3</td>
<td>35.69</td>
<td>19.38</td>
</tr>
</tbody>
</table>

Table 3.2 Descriptive Statistics of the Neighborhood Structural Variables (N = 90)

**Study Variables**

As mentioned above, the present study examines the relationships between several subgroup indicators and family/parenting and peer risks, and the impact of neighborhood settings on these risks in conjunction with several individual characteristics, family structure variables as control variables. The measurement of these variables can be categorized into three groups: individual variables that consist of socio-demographic factors, relational variables that include both family and peer relationship factors, and neighborhood setting variables.
Individual Variables

Gender, ethnicity, and the timing of onset for delinquency group were used as independent individual characteristic variables (level 1 variables for HLM analyses) in the data analyses of this present study.

First, the gender of the adolescent was elicited by a demographic item on the GRAD. The gender variable was coded as a variable with the value of 0 for female and the value of 1 for male.

Second, the adolescent’s ethnicity was determined based on response to a demographic questionnaire item, “What is this youth’s race?” with response categories, including White non-Hispanic, Black non-Hispanic, Hispanic, Asian or Pacific Islander, Bi-Racial, Native American, and Other. However, only two main ethnic categories (i.e., White non-Hispanic and Black non-Hispanic American) were included and analyzed in the present study for the purpose of data analysis since other ethnic categories did not contain enough sample size to make their own categories.

Third, the timing of onset for delinquency category was measured by the first official court contact in the present study. The item of “The first offense/court involvement for this youth occurred” on the section of demographics was utilized to create youth’s onset group. Original response of this item is composed of “age 12 and under”, “age 13”, “age 14”, “age 15”, and “age 16 and up”. In the present study, youth incurring their first court contact prior to the age of 14 were coded as the “early onset” group while all other designations were coded as the “late onset” group. Consistent with other studies (e.g., Patterson et al., 2000; Patterson & Yoerger, 1993) age 14 was utilized
as the critical age marker distinguishing early and late onset. Thirty nine percent of males and females in the present sample had their first court involvement before age 14. Also, current age of the youth was included as a control variable in the data analyses procedures, as there could be confounding effect caused by current age of youth and onset for delinquency grouping.

**Relational Variables**

The family/parenting difficulties were assessed using the family/parenting GRAD scale representing poor discipline (3 items), lack of family support (3 items), family conflict (4 items), parental tip-toeing (4 items) and economic hardship (3 items) sub-domains (see Appendix E). High scores on the sub-domains are indicative of more family related difficulties experienced by the youth. These scores were used as dependent variables in two sets of main data analyses. Cronbach’s alpha of the family/parenting GRAD domain for this sample was .81 in the present study.

To assess youths’ peer related difficulties, youth were asked about several characteristics of their peers and friendships (15 items): relationship with delinquent peers (4 items), dating relationships with criminally involved youth (3 items), and poor relationships with conventional peers (8 items) (see Appendix F). Here, high scores indicate that this youth is exposed to greater peer related risks. Cronbach’s alpha at the peer GRAD domain for this sample was .72.

Beyond the aforementioned family/parenting risks measured by the GRAD, a transitional risks score was included to represent unstable proximal environments (e.g., family) surrounding the youth. This score was retrieved from the composite score of 11
transitional risks indicators. Examples of the indicators are parent’s remarriage, divorce, having a new family member, biological parent’s incarceration, immediate family member’s offense, biological parent’s death, close family member’s death, unknown biological parent’s whereabouts, school change, residential change, and placement in the custody of child protective services in the last year. In this study, high scores on the risk are indicative of family instability as reflected in more frequently occurring transitional risks in the proximal environments of the youth. This variable score was utilized in the first set of main data analyses as a control variable and also included in the second set of main data analyses as an outcome variable to supplement the GRAD family/parenting risk variable in examining the association between neighborhood settings and family related risks.

Also, the household composition of the youth was elicited by a demographic item on the GRAD demographic section in order to be used as another control variable in the two sets of main data analyses (see Appendix C). The household composition variable has 10 possible responses, including ‘married and two biological parents’, ‘step family’, ‘single-parent headed (mother)’, ‘single-parent headed (father)’, ‘single-mother-headed household with live-in boyfriend’, ‘single-father-headed household with live-in girlfriend’, ‘grandparents’, ‘foster family’, ‘same-sex partners’ and ‘others’. For the purpose of the analysis in the present study, a household composition variable was coded as a variable with the value of 0 for a female headed household and the value of 1 for all other responses about youth’s household composition.
Neighborhood Setting Variables

In the present study, five variables from the 2000 National Census that are linked to zip codes were utilized. These variables operated as predictive neighborhood setting variables on family and peer risks in the multi-level modeling analyses.

The aforementioned 5 variables (i.e., percentage of individuals living in the same household for less than five years, percentage of female headed household, percentage of families living in poverty, percentage of adults without a high school diploma, and percentage of residents that are in renter-occupied homes) were used to indicate the degree of representing two neighborhood setting factors, economic disadvantage and residential instability, as Level 2 predictive variables on family and peer related risks. That is, these two neighborhood setting factors were included in order to examine whether or not there were additional contributions to explain family and peer risks after controlling for the variance explained by Level 1 variables (i.e., age, gender, the timing of onset for delinquency, household composition, and current age of the youth).

The table 3.3 indicates what variables served as independent variables, dependent variables, and control variables according to the data analysis procedures.
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<tr>
<td>Onset group</td>
<td>Onset group</td>
</tr>
<tr>
<td><strong>Level 2 predictors</strong></td>
<td></td>
</tr>
<tr>
<td>x</td>
<td>Economic disadvantage</td>
</tr>
<tr>
<td>x</td>
<td>Residential instability</td>
</tr>
<tr>
<td><strong>Control Variables</strong></td>
<td></td>
</tr>
<tr>
<td>Household composition</td>
<td>Household composition</td>
</tr>
<tr>
<td>Current age of the youth</td>
<td>Current age of the youth</td>
</tr>
<tr>
<td>Transitional risks</td>
<td>x</td>
</tr>
<tr>
<td><strong>Family Related Risk</strong></td>
<td></td>
</tr>
<tr>
<td>Poor parenting</td>
<td>Poor parenting</td>
</tr>
<tr>
<td>Lack of family support</td>
<td>Lack of family support</td>
</tr>
<tr>
<td>Family conflict</td>
<td>Family conflict</td>
</tr>
<tr>
<td>Parental tip-toeing</td>
<td>Parental tip-toeing</td>
</tr>
<tr>
<td>Economic hardship</td>
<td>Economic hardship</td>
</tr>
<tr>
<td><strong>Dependent Variables</strong></td>
<td></td>
</tr>
<tr>
<td>x</td>
<td>Transitional risks</td>
</tr>
<tr>
<td><strong>Peer Related Risk</strong></td>
<td></td>
</tr>
<tr>
<td>Poor relationships with conventional peers</td>
<td>Poor relationships with conventional peers</td>
</tr>
<tr>
<td>Relationships with delinquent peers</td>
<td>Relationships with delinquent peers</td>
</tr>
<tr>
<td>Dating relationships with a criminally involved youth</td>
<td>Dating relationships with criminally involved youth</td>
</tr>
</tbody>
</table>

Table 3.3 Summary of Variables Analyzed in the Data Analyses
Analytic Procedure

The analyses for this dissertation were completed in four major steps: 1) data screening; 2) descriptive analyses for the key variables used in the study; 3) a three way-Multivariate Analysis of Covariance (MANCOVA); and 4) Hierarchical Linear Modeling (HLM) analyses. To address the major hypotheses, two three-way MANCOVAs and 2-level Hierarchical Linear Modeling analyses were utilized.

Data Screening

Before performing the main data analyses, the data were screened for missing or invalid data, outliers, and other assumptions for multivariate analysis (i.e., normality, linearity, and homoscedasticity) with frequencies, and scatter plots. Frequency distributions, skewness and kurtosis of the data, and normal probability plots were inspected to examine normality of variables. The distribution with skewness and kurtosis equal to zero were considered as normal. A significant positive skewness value means the distribution has a long right tail and a significant negative skewness value means the distribution has a long left tail. On the other hand, positive kurtosis indicates that the observations cluster more and have longer tails than those in the normal distribution, and negative kurtosis indicates that the observations cluster less and have shorter tails. As a guideline, skewness values more than twice its standard error is taken to indicate a departure from symmetry.

In order to examine linearity, bivariate correlation analysis and scatter plots were utilized. In the case of violation of the linearity or normality assumption, the use of transformed variables was considered to uphold these requirements.
Finally, the tests of homoscedasticity assumption also were performed for dependent variables (i.e., family related risk scores and peer related risk scores) with the examinations of boxplots and Levene’s tests.

Because outliers can contribute to both univariate and multivariate non-normality, outliers also were identified by assessing cases which differed from the estimates of the other cases and modified so that they had less influence on in the analysis.

Descriptive Analyses

In order to explore the characteristics of the sample, analyses of demographics, including frequency, mean, standard deviation, and t-test statistics were performed first. A chi-square test of proportional differences among subgroups in numbers of youth for each categorical demographic variable was also performed.

Because it is important to examine internal consistency of scales, reliability analysis also was performed on the transitional risk scale, as no psychometric evidence has been generated for this scale to date. Reliability analyses of family/parenting and peer GRAD domains also were performed in order to provide further evidence of these scales’ sound psychometric characteristics in these special populations.

Reliability is concerned with the consistency of measurement, and there are different types of reliability such as test-retest reliability, inter-observer reliability, Cronbach’s alpha, and split-half reliability. Cronbach’s alpha was used to evaluate the reliability of measures for the present study because this statistic is considered as more conservative and provides more information about internal consistency than other analysis (Bloom, Fischer, & Orme, 1995).
Multivariate Analysis of Covariance (MANCOVA)

To examine whether or not subgroup indicators associated with gender (male vs. female), ethnicity (Caucasian American vs. African American), and age of onset for delinquency (early onset vs. late onset) influence family/parenting and peer problems, two three way Multivariate Analysis of Covariance (MANCOVA) were performed after controlling for the current age of youth, household composition (female headed households vs. other types of household compositions), and a transitional risk score.

Beyond three main effects (i.e., gender, ethnicity, and the timing of onset for delinquency) on these risks, three two-way interaction effects (i.e., gender x ethnicity, gender x the timing of onset for delinquency, and ethnicity x the timing of onset for delinquency) and one three-way interaction effect (gender x ethnicity x the timing of onset for delinquency) also were included in the analyses. Due to a relatively large sample size ($N = 1086$), the examinations of effect sizes also were reported in the present data analyses.

Hierarchical Linear Modeling (HLM) Analyses

As the core set of analyses, Hierarchical Linear Models (i.e., multi-level models) were constructed using the HLM program of Bryk, Raundenbush, & Congdon (1996). Because the present study focused on neighborhood settings as well as individual level outcomes, the data represented two hierarchical levels of analysis: individuals within neighborhoods (Level 1), and neighborhoods themselves (Level 2). Given the multi-level nature of the data, it was possible that the independence assumption – that the error in predicting Y from X for one case is unrelated to that of another case – would be violated.
This is because observations that share similar environments or experiences are likely to be more similar than observations that do not share these same factors. That is, youth that live in the same neighborhoods tend to be more similar to each other than youth randomly sampled from the entire population.

As such, the present study addressed the nested structure of individuals within neighborhoods (defined by zip codes) and examined the effects of neighborhood setting variables derived from the 2000 National Census, after controlling for Level 1 variables (including gender, ethnicity, and the timing of onset for delinquency). Two-level linear models with family related risks or peer risks as outcome variables along with gender, ethnicity, and the timing of onset for delinquency at Level 1 and neighborhood setting at Level 2 were modeled. Also, current age of the youth at Level 1 was included to control the impact of these variables on outcome variables.

These analyses allowed for the separation of the residual variance of outcome variable into two components: residual variance at the individual–level, and residual variance that is constant across individuals within a neighborhood but random across neighborhoods. By separating the residual variance in this way, the HLM analyses took into account the potential dependence among adolescents within the same neighborhood. As such, these analyses could provide more accurate and conservative estimates of the relations between neighborhood settings and individual level outcome variables.

In sum, sociodemographic variables and neighborhood setting variables were hypothesized to have direct effects on family and peer related risks in court-involved youth.
CHAPTER 4
RESULTS

Research findings presented in this chapter consist of four parts. The first part of this chapter presents the data screening procedure of variables utilized in this study. The second part of the chapter provides descriptive statistics of the sample included in this study. The third part of the chapter discusses results of Multivariate Analysis of Covariance (MANCOVA) on family/parenting and peer related risks. Finally, the last part discusses Hierarchical Linear Modeling (HLM) analyses and the power issue of the analysis. The results of these analyses involve an examination of neighborhood context variables measured by the 2000 National Census, along with youth reported GRAD family/parenting and peer risks, and several demographic variables.

Data Screening

Before performing the main data analyses, the data were screened for missing or invalid values first. Less than 10 cases that had missing or invalid values (e.g., zip code) were excluded in the step of acquiring the final sample (see the sample section in the Chapter 3).

With the final convenience sample (N = 1086), assumptions of normality, linearity, and homoscedasticity (i.e., equal variance) also were checked for Level 1
variables (i.e., family/parenting risks, peer risks, transitional risk, current age of the youth, and demographic variables) as these assumptions are very critical for estimating parameters accurately. More specifically, frequency distributions, histograms, tests of normality (i.e., skewness and kurtosis), normal probability plots, scatter plots, bivariate correlations, boxplots, and Levene’s tests were inspected to examine normality, linearity, and homoscedasticity of variables.

Here, a variable is regarded as reasonably close to normal if its skewness and kurtosis have values between -1.0 and +1.0. Severe violations of the normality assumption for Level 1 variables were not detected except for the parental tip-toeing variable and the dating relationships with criminally involved youth variable. These two variables showed positively skewed distributions (see Appendix G). Appendix G shows the data screening results for the variables analyzed in the study with means, standard deviations, minimum and maximum values, ranges, skewness coefficients, and kurtosis coefficients.

In terms of examining the assumption of linearity using scatter plots and bivariate correlation matrices, the data showed linear relationships among variables except for the relationships between the current age of the youth and other Level 1 variables. Therefore, several conventional transformations (i.e., the logarithmic transformation, the square root transformation, and the inverse transformation) were applied to current age of the youth, but the result showed that the violation of linearity was not reduced. Therefore, the decision was made to include current age of the youth in its present format (i.e., raw data
format) because this variable was not a main variable but a control variable even though including a non-normally distributed variable leads to loss of power in data analyses.

Finally, the tests of homoscedasticity assumption also were performed for the dependent variables (i.e., family related risk scores and peer related risk scores) with the examinations of boxplots and Levene’s tests. As results of the tests, the violations of equal variance were detected for both family and peer related risk variables, which were dependent variables in the present study.

More specifically, results of the Levene’s test and the examination of boxplots showed that the variance in dating relationships with criminally involved youth was not homogeneous for the gender ($F = 18.14$, $df = 1, 1084$, $p < .001$) and ethnic group ($F = 5.39$, $df = 1, 1084$, $p < .05$), while the variance in gang involvement was not homogeneous for ethnic group ($F = 5.78$, $df = 1, 1084$, $p < .05$) and onset groups ($F = 6.23$, $df = 1, 1084$, $p < .05$), and the variance in poor relationships with conventional peer was not homogeneous for onset groups ($F = 4.33$, $df = 1, 1084$, $p < .05$). Also, the variances in lack of family support ($F = 24.72$, $df = 1, 1084$, $p < .001$), family conflict ($F = 12.33$, $df = 1, 1084$, $p < .001$) and poor parenting ($F = 5.46$, $df = 1, 1084$, $p < .05$) were not homogeneous for gender. In sum, the variances in these three family related risks were not homogenous for gender. Finally, the variance in parental tip-toeing were not homogeneous for ethnic group ($F = 4.83$, $df = 1, 1084$, $p < .05$) and different onset ($F = 5.13$, $df = 1, 1084$, $p < .05$) as well.

Since violations of the equal variance assumption for family/parenting related and peer related risk variables were detected and the violation of normality was detected, the
use of several transformations (i.e., the logarithmic transformation, the square root transformation, and the inverse transformation) were tried in order to find the most appropriate transformation that would uphold the assumption. In these cases, an adjustment of .01 was added to each value for both variables because these transformations use functions that cannot be defined for zero.

By applying the square root transformation to these variables, the violation of homoscedasticity was entirely removed and even the violation of normality was somewhat remedied, such that the skewness coefficients of parental tip-toeing and problematic dating relationships became close to zero (from 1.20 to .23 for the parental tip-toeing variable and from 1.11 to .11 for the problematic dating relationships variable), indicating that the distribution of the observed variables were normal. That is, results of the Levene’s test showed that the variances in the transformed family related and peer related risk variables were homogeneous according to gender, ethnic group, and different onset groups.

Because outliers can contribute to both univariate and multivariate non-normality, outliers also were identified by assessing cases which differed from the estimates of the other cases so that they had less influence on the analysis. There was no evidence in the present study for outliers, however, as all continuous estimates (GRAD family/parenting related risks, GRAD peer related risks, current age of the youth, GRAD transitional risk, and 5 measures from the 2000 National Census) were distributed within the desirable range of values. Therefore, square root transformations of only dependent variables (i.e., family/parenting risks and peer related risks) were chosen for the main data analyses.
Descriptive Statistics Analyses

In order to explore the characteristics of the sample, analyses of demographics were performed first. Chi-square tests of proportional differences among subgroups in numbers of youth for each categorical demographic variable also were performed.

A summary of the key variables used in this dissertation are presented in Table 4.1., including means, standard deviations, ranges, and Cronbach’s alphas, while zero-order correlations for all study variables are displayed in Table 4.2. With the exception of demographic variables and the transition risk score among Level 1 variables, all study variables evidenced acceptable levels of internal consistency.

In terms of standards of reliability, there is general agreement as to what constitutes sound reliability (i.e., coefficient values of .7 or higher). Therefore, the reliability coefficients of the family/parenting (Cronbach’s $\alpha = .81$) and peer GRAD (Cronbach’s $\alpha = .72$) domains were considered to be sound in terms of internal consistency.
<table>
<thead>
<tr>
<th>Measure</th>
<th>Mean</th>
<th>SD</th>
<th>Cronbach’s alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>0.65</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Ethnicity</td>
<td>0.63</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Timing of onset</td>
<td>0.38</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Current age</td>
<td>15.30</td>
<td>0.04</td>
<td>x</td>
</tr>
<tr>
<td>Household composition</td>
<td>0.79</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Transitional risks</td>
<td>2.78</td>
<td>1.70</td>
<td>.42</td>
</tr>
</tbody>
</table>

**Family/Parenting Risk**

<table>
<thead>
<tr>
<th>Measure</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Family support *</td>
<td>1.12</td>
<td>.84</td>
</tr>
<tr>
<td>Family conflict *</td>
<td>1.34</td>
<td>.79</td>
</tr>
<tr>
<td>Parental tip-toeing*</td>
<td>.98</td>
<td>.74</td>
</tr>
<tr>
<td>Poor parenting*</td>
<td>.94</td>
<td>.66</td>
</tr>
<tr>
<td>Economic hardship*</td>
<td>1.10</td>
<td>.69</td>
</tr>
</tbody>
</table>

**Peer Related Risk**

<table>
<thead>
<tr>
<th>Measure</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poor relationship with conventional peer*</td>
<td>1.64</td>
<td>.86</td>
</tr>
<tr>
<td>Relationship with delinquent peers*</td>
<td>1.45</td>
<td>.67</td>
</tr>
<tr>
<td>Dating relationships with criminally involved youth*</td>
<td>.83</td>
<td>.68</td>
</tr>
</tbody>
</table>

**Neighborhood Structural Setting Variables**

<table>
<thead>
<tr>
<th>Measure</th>
<th>Mean</th>
<th>SD</th>
<th>Cronbach’s alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>% of families below the poverty line</td>
<td>11.67</td>
<td>12.92</td>
<td>x</td>
</tr>
<tr>
<td>% of female-headed households</td>
<td>15.50</td>
<td>9.11</td>
<td>x</td>
</tr>
<tr>
<td>% of adults without a high school diploma</td>
<td>19.17</td>
<td>10.43</td>
<td>x</td>
</tr>
<tr>
<td>% of residents who have moved within the last five years</td>
<td>42.20</td>
<td>8.20</td>
<td>x</td>
</tr>
<tr>
<td>% of residents of renter-occupied homes</td>
<td>35.69</td>
<td>19.38</td>
<td>x</td>
</tr>
</tbody>
</table>

* Variables transformed.

Table 4.1 Descriptive Statistics for Key Variables (N₁ = 1086, N₂ = 90)
Table 4.2 Correlation Matrices for Level 1 and Level 2 Variables

<table>
<thead>
<tr>
<th>Variables</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Age</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Transitional risks</td>
<td>-.08*</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Lack of family support</td>
<td>.01</td>
<td>.09*</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Family conflict</td>
<td>-.13**</td>
<td>.11**</td>
<td>.56**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Tip-toeing</td>
<td>-.13**</td>
<td>.05</td>
<td>.31**</td>
<td>.41**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Poor parenting</td>
<td>-.09*</td>
<td>.05</td>
<td>.52**</td>
<td>.43**</td>
<td>.31**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Economic hardship</td>
<td>-.05</td>
<td>.17**</td>
<td>.34**</td>
<td>.34**</td>
<td>.25**</td>
<td>.25**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Conventional peer</td>
<td>-.08*</td>
<td>.14**</td>
<td>.34**</td>
<td>.34**</td>
<td>.30**</td>
<td>.33**</td>
<td>.31**</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Gang involvement</td>
<td>-.04</td>
<td>.16**</td>
<td>.19**</td>
<td>.18**</td>
<td>.25**</td>
<td>.21**</td>
<td>.13**</td>
<td>.33**</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>10. Dating relationships</td>
<td>.14**</td>
<td>.13**</td>
<td>.21**</td>
<td>.17**</td>
<td>.15**</td>
<td>.17**</td>
<td>.17**</td>
<td>.28**</td>
<td>.37**</td>
<td>1</td>
</tr>
<tr>
<td>1. Families below the poverty line</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Female-headed households</td>
<td>.75**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Without a high school diploma</td>
<td>.81**</td>
<td>.74**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Residents moved within the last 5 years</td>
<td>.56**</td>
<td>.23*</td>
<td>.31*</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Renter-occupied homes</td>
<td>.88**</td>
<td>.64**</td>
<td>.72**</td>
<td>.74**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p< .01  **p< .001
Further analyses were conducted to examine whether or not the proportional differences between groups associated with gender (male vs. female), ethnicity (Caucasian vs. African American), and delinquency onset grouping (early onset vs. late onset) in the present study were significant.

Results showed that Caucasian youth were more likely to be labeled as late onset offenders. Additionally, African American youth were more likely to be labeled as early onset offenders in the case of female adolescents only ($\chi^2 (1) = 7.72, p < .01$). On the other hand, there was no significant association between ethnicity and delinquency onset grouping in the male offenders ($\chi^2 (1) = .21$, ns) (see Table 4.3). That is, African American female offenders were more likely to be labeled as early onset offenders, and Caucasian female offenders were more likely to be labeled as late onset offenders.

Two more three-way chi-square tests were performed in order to examine the full associations of the subgroups. Similar to the previous analyses, a significant onset grouping difference between male adolescents and female adolescents was found in the Caucasian youth only ($\chi^2 (1) = 8.82, p < .01$) and not in African American youth ($\chi^2 (1) = .43$, ns.). That is, female offenders were more likely to be labeled as late onset offenders, and male offenders were more likely to be labeled as early onset offenders in the Caucasian youth only.

The last chi-square test showed that there was a significant association between gender and ethnicity among early onset offenders ($\chi^2 (1) = 8.45, p < .01$), while there was no significant association according to gender or ethnic groups among late onset
offenders ($\chi^2 (1) = .27, \text{ns.}$). That is, among early onset offenders, females were more likely to be African American, and male adolescents were more likely to be Caucasian.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Early Onset (n = 419)</th>
<th>Late Onset (n = 667)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$f$</td>
<td>$f$</td>
<td>$f$</td>
</tr>
<tr>
<td><strong>White</strong></td>
<td></td>
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</tr>
<tr>
<td>Female (n = 377)</td>
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<td></td>
<td></td>
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<tr>
<td></td>
<td>$f$</td>
<td>31</td>
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<td></td>
<td>$\varepsilon (f)$</td>
<td>43</td>
<td>84</td>
</tr>
<tr>
<td></td>
<td></td>
<td>129</td>
<td>248</td>
</tr>
<tr>
<td><strong>African American</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>$f$</td>
<td>98</td>
<td>153</td>
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<tr>
<td></td>
<td>$\varepsilon (f)$</td>
<td>86</td>
<td>165</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td>178</td>
<td>250</td>
</tr>
<tr>
<td><strong>White</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male (n = 709)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>$f$</td>
<td>112</td>
<td>169</td>
</tr>
<tr>
<td></td>
<td>$\varepsilon (f)$</td>
<td>115</td>
<td>166</td>
</tr>
<tr>
<td><strong>African American</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>$f$</td>
<td>178</td>
<td>250</td>
</tr>
<tr>
<td></td>
<td>$\varepsilon (f)$</td>
<td>175</td>
<td>253</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td>290</td>
<td>419</td>
</tr>
</tbody>
</table>

Table 4.3 Frequencies ($f$) and Expected Frequencies ($\varepsilon(f)$) Corresponding to Subgroups Associated with Gender, Ethnicity, and Onset for Delinquency Groups

In sum, the proportions of three cases (female – Caucasian - late onset offender, female - African American - early onset offenders, and male – Caucasian - early onset offender) out of eight possible combinations of these subgroups were significantly high in comparison to other five combinations of gender, ethnic group and onset group cases (i.e., female – Caucasian - early onset, female - African American - late onset, male –
Caucasian - late onset, male - African American - early onset, and male - African American - late onset).

Further comparisons of different subgroups associated with gender, ethnicity, and delinquency onset groups on another main demographic variable (i.e., current age of the youth) were performed. A series of t-tests revealed significant age differences according to ethnic and onset groups, such that Caucasian youth ($M = 15.5, SD = 1.3$) and late onset offenders ($M = 15.7, SD = 1.1$) were significantly older than their counterparts ($M = 15.2, SD = 1.3$ for African American youth; $M = 14.7, SD = 1.4$ for early onset group). That is, mean age differences were significant for both ethnic groups ($t = 3.89, p < .001$) and onset groups ($t = -13.59, p < .001$), respectively. However, there was no statistically significant mean age difference according to the gender of the youth ($t = -1.50, ns; M = 15.2, SD = 1.3$ for female offenders and $M = 15.4, SD = 1.3$ for male offenders).

Furthermore, chi-square analyses regarding the household composition variable showed that early onset offenders (54% vs. 48%) and African American youth (58% vs. 37%) were significantly more likely to reside in mother-headed households in comparison to late onset offenders and Caucasian youth ($\chi^2 (1) = 45.09, p < .001$ and $\chi^2 (1) = 3.85, p = .05$, respectively) even though there was no gender difference in terms of the household composition.

Since there were significant mean age differences and household composition differences according to ethnic groups and onset groups that were the main study variables in the present study, current age of the youth and household composition variables also were included in the main data analyses as control variables.
**Multivariate Analysis of Covariance (MANCOVA)**

Research questions are introduced separately according to the data analysis procedures in order to avoid confusion about the different analytic techniques used in the present study. For the main data analyses, a convenience sample of 1086 juvenile offenders in detention facilities was used. As can be seen in the bivariate correlations among studied variables, there were statistically significant associations among transformed subscale scores of family/parenting related risks (see Table 4.2). The pattern of significant associations among subscale scores was also detected in peer related risks in the present sample, which supported the use of Multivariate Analysis Covariance (MANCOVA) as a superior analysis technique in comparison to a series of Analysis of Covariance (ANCOVA).

In this context, two three-way Multiple Analyses of Covariance (MANCOVA) were used to study the first research hypothesis as follows:

1. **Gender, ethnic group (Caucasian youth and African American youth) and different onset of delinquency (early onset and late onset) will significantly impact the vectors of means related to family/parenting and peer risks/needs scores.**

   1.1. More specifically, female and African American youth who are early onset offenders will display the highest risk scores on the family/parenting domains of the GRAD.
1.2. More specifically, male and African American youth who are late onset offenders will display the highest risk scores on the peer domains of the GRAD.

To test the first research hypothesis, two 2 (gender) X 2 (ethnicity: African American vs. White Caucasian) X 2 (the timing of onset for delinquency: early onset and late onset) Multivariate Analysis of Covariance (MANCOVA) procedures were performed after controlling for the current age of youth, household composition, and transitional risks score (i.e., one for family/parenting risks and one for peer related risks).

First, results of the three-way MANCOVA on family/parenting related risk scores (i.e., lack of family support, family conflict, parental tip-toeing, poor parenting practice, and economic hardship) revealed two significant multivariate main effects (based on Wilks’ Lambda) for gender \([F (5, 999) = 14.73, p < .001]\), and ethnicity \([F (5, 999) = 13.24, p < .001]\), whereas there was no significant main effect of different onset groups on family related risks.

Also, all three control variables showed significant effects. That is, there were a significant transitional risks covariate effect \([F (5, 999) = 11.47, p < .001]\), a significant age covariate effect \([F (5, 999) = 6.66, p < .001]\), and household composition effect \([F (5, 999) = 3.44, p < .01]\). No significant three-way interaction effect and no two-way interaction effects were displayed, however.

Nearly 8% of the total variance in “lack of family support” and 15% of the total variance in “family conflict”, 5% of the total variance in “parental tip-toeing”, 3% of the
total variance in “poor parenting”, and 9% of the total variance in “economic hardship” were accounted for by the proposed model.

Subsequent univariate analyses were conducted in order to identify the source of the significant multivariate main effects regarding ethnicity and gender. The main effects of gender were located in all family/parenting sub-domains \( [F (1, 1013) = 48.73, p < .001] \) for lack of family support; \( F (1, 1013) = 58.87, p < .001 \) for family conflict; \( F (1, 1013) = 7.16, p < .01 \) for parental tip-toeing; \( F (1, 1013) = 8.86, p < .01 \) for poor parenting; \( F (1, 1013) = 11.53, p < .01 \) for economic hardship. Here, female offenders consistently reported higher risk scores on all five family/parenting sub-domains in comparison to male counterparts in the present sample (\( M = 2.02 \) vs. \( M = .94 \) for lack of family support; \( M = 2.68 \) vs. \( M = 1.42 \) for family conflict; \( M = 1.20 \) vs. \( M = .84 \) for parental tip-toeing; \( M = 1.08 \) vs. \( M = .77 \) for poor parenting; \( M = 1.45 \) vs. \( M = 1.10 \) for economic hardship). Because all family/parenting related risks scores were altered by using a square root transformation in the present data analysis, the presented means were values that were converted back into raw data units by squaring the results and subtracting .01. From now on the presented mean values are ones that are transformed back into the raw scores.

The main effects of ethnicity also were located in family/parenting sub-domains except poor parenting \( [F (1, 1013) = 7.62, p < .01] \) for lack of family support; \( F (1, 1013) = 46.20, p < .001 \) for family conflict; \( F (1, 1013) = 9.06, p < .01 \) for parental tip-toeing; \( F (1, 1013) = 29.55, p < .001 \) for economic hardship; \( F (1, 1013) = 1.02, ns. \) for poor parenting]. Here, Caucasian offenders consistently reported higher risk scores on four
family/parenting risk sub-domains in comparison to African American counterparts in the present sample \( (M = 1.49 \text{ vs. } M = 1.12 \text{ for lack of family support}; \ M = 2.35 \text{ vs. } M = 1.51 \text{ for family conflict}; \ M = 1.14 \text{ vs. } M = .85 \text{ for parental tip-toeing}; \ M = 1.48 \text{ vs. } M = 1.06 \text{ for economic hardship}) \), whereas there was no significant mean difference on the poor parenting risk scores according to ethnic groups. Overall, Caucasian offenders were experiencing significantly higher family/parenting risks in comparison to African American offenders at the time of assessment in the present sample.

Finally, subsequent univariate analyses to identify the source of the significant multivariate effects regarding control variables also were performed. The effects of current age of the youth were located in the family conflict \( [F (1, 1013) = 16.02, p < .001]) \), parental tip-toeing \( [F (1, 1013) = 11.74, p < .01]) \), and poor parenting \( [F (1, 1013) = 3.88, p < .05]) \) in the present sample. Also, the effects of transitional risks were located in lack of family support \( [F (1, 1013) = 11.58, p < .01]) \), family conflict \( [F (1, 1013) = 22.68, p < .001]) \), parental tip-toeing \( [F (1, 1013) = 4.75, p < .01]) \), and economic hardship \( [F (1, 1013) = 47.43, p < .001]) \) in the present study. Here, older youth reported less family/parenting related risks than their younger counterparts. In addition, significantly higher family/parenting related risk scores were present when transitional risks scores were higher. On the other hand, the subsequent univariate analysis did not detect the source of the multivariate effect regarding household composition since no univariate analysis showed the significant household composition effect.

Due to the use of a relatively large data set \( (N = 1086) \) in the present study, an examination of effect size was warranted. Effect size quantifies the magnitude of the
difference between populations, or alternatively the relationship between explanatory and response variables (Olejnik & Algina, 2003). For the purpose of reporting effect size, a measure of the partial eta squared ($\eta_p^2$) was utilized. This measures the proportion of total variability that is attributable to the factors being analyzed. It ranges from 0.00 to 1.00 and should be interpreted as a percentage. According to Cohen’s suggested rule, a $\eta_p^2$ equal to .01 is considered to be a small effect size, a $\eta_p^2$ equal to .06 is considered to be a medium effect, and a $\eta_p^2$ equal to .10 is considered to be a large effect.$^2$

$$\eta_p^2 = \frac{SS_{\text{effect}}}{SS_{\text{effect}} + SS_{\text{error}}}$$

In the present study, the mean differences on the lack of family support and family conflict risk factors between female and male offenders were associated with a small to medium effect size (partial eta squared = .05 and .06, respectively) whereas the mean differences on parental tip-toeing, poor parenting and economic hardship according to gender were associated with a small effect size (partial eta squared <.01 for these risk factors).

Also, the mean differences on the family conflict and economic hardship risk factors were associated with a small to medium effect size according to ethnicity (partial eta squared = .05, and .03, respectively) whereas the mean differences on the lack of family support and parental tip-toeing according to ethnicity were associated with a small effect size (partial eta squared <.01 for both variables).

$^2$ A guideline established by Cohen (1988)
Furthermore, the impacts of current age of the youth on the family conflict, parental tip-toeing and poor parenting all were associated with a small effect size (partial eta squared $\approx .01$). The findings for the transitional risks variables were associated with a small effect size (partial eta squared $\approx .01$) for lack of family support and family conflict, while the effect of the transitional risks variable for family conflict and economic hardship were associated with a small to medium effect size (partial eta squared = .02, and .05, respectively). Therefore, hypothesis 1.1 is partially supported in the present data analysis.

In order to examine hypothesis 1.2, a three-way MANCOVA on peer related risk scores was performed with poor relationship with conventional peers, relationship with delinquent peers, and dating relationships with criminally involved youth as dependent variables and current age of youth, household composition, and transitional risks score as control variables. This analysis revealed that there were three significant multivariate main effects (based on Wilks’ Lambda) for gender [$F (3, 1001) = 13.32, p < .001]$], ethnicity [$F (3, 1001) = 6.11, p < .001$], and onset group [$F (3, 1001) = 3.32, p < .05$], and a significant three-way interaction effect [$F (3, 1001) = 2.66, p < .05$] on peer related risks.

Furthermore, two control variables showed significant effects. That is, there was a significant transitional risks covariate effect [$F (3, 1001) = 11.85, p < .001$], and a significant age covariate effect [$F (3, 1001) = 14.01, p < .001$]. Nearly 7% of the total variance in “poor relationships with conventional peers”, 4% of the total variance in
“friendship with delinquent peers”, and 5% of the total variance in “dating relationships with criminally involved youth” were accounted for by this proposed model.

Subsequent univariate analyses were conducted in order to identify the source of the significant three-way interaction effect and multivariate main effects regarding gender, ethnicity, and onset groups. The three-way interaction effect was located only in the dating relationships with the criminally involved youth factor \( F (1, 1013) = 2.09, p < .05 \), even though the mean differences on this risk factor was associated with a small effect size (partial eta squared = .005). Further examination of this three-way interaction effect on dating relationships with criminally involved youth showed that there were different associations between ethnicity and onset groups on the dating relationships risk according to gender. That is, early onset female offenders reported significantly higher risk scores on the risk factor in comparison to late onset female offenders among African American females. In contrast, there was no significant mean difference between early onset females and late onset females among Caucasian females (see Figure 4.1.).

Therefore, status of onset group was important in predicting risky dating relationships among African American females only. In sum, there was no mean difference on the risk score among late onset offenders but the mean difference on the risk score became large among early onset offenders, such that early onset African American female offenders reported significantly higher scores on the domain in comparison to early onset Caucasian female offenders.
On the other hand, there was no interaction effect regarding onset groups and ethnicity on risky dating relationships among male adolescents. Instead, African American male offenders consistently reported higher risk scores on the domain compared to Caucasian male offenders, and early onset males reported higher risk scores on the risk factor in comparison to late onset counterparts (see Figure 4.2.). Here, African American male offenders showed higher risk scores on the factor regardless of the status of delinquency onset group while Caucasian male offenders reported higher risk scores on the domain when they were labeled as early onset offenders.
According to subsequent univariate analyses, the main effects of gender were located in poor relationships with conventional peers \([F (1, 1013) = 22.25, p < .001]\), and dating relationships with criminally involved youth \([F (1, 1013) = 13.73, p < .001]\). Here, female offenders reported higher risk scores on these risks in comparison to male counterparts in the present sample \((M = 3.30 \text{ vs. } M = 2.39 \text{ for poor relationships with conventional peers; } M = .87 \text{ vs. } M = .57 \text{ for risky dating relationships})\). The mean differences on the poor relationship with conventional peers and risky dating relationships between female and male adolescents were associated with a small effect size \((\text{partial eta squared } = .02 \text{ and .014, respectively})\). Therefore, female offenders were experiencing significantly higher peer related risks in comparison to male offenders at the time of assessment.
On the other hand, the main effects of ethnicity were located in poor relationship with conventional peers and friendship with delinquent peers domains [$F (1, 1013) = 6.76, p < .01$] for poor relationships with conventional peers, and [$F (1, 1013) = 3.97, p < .05$] for friendship with delinquent peers]. Here, Caucasian youth reported higher risk scores on poor relationships with conventional peers ($M = 2.85$ vs. $M = 2.58$) in comparison to African American counterparts, whereas African American youth reported higher risk scores on friendships with delinquent peers (i.e., gang involvement) ($M = 1.89$ vs. $M = 2.21$). These mean differences on the peer related risk scores between Caucasian and African American adolescents were associated with a small effect size (partial eta squared = .007 for poor relationships with conventional peers and .004 for friendships with delinquent peers, respectively).

Also, the main effects of onset for delinquency group were located in poor relationships with conventional peers and friendship with delinquent peers [$F (1, 1013) = 7.93, p < .01$] for poor relationships with conventional peers, and [$F (1, 1013) = 4.66, p < .05$] for friendships with delinquent peers]. Here, early onset offenders reported consistently higher risk scores on poor relationships with conventional peers ($M = 3.05$ vs. $M = 2.45$) and gang involvement ($M = 2.36$ vs. $M = 1.92$) in comparison to late onset offenders. These mean differences on the peer related risk scores between early onset offenders and late onset offenders were associated with a small effect size (partial eta squared = .008 for poor relationships with conventional peers, and partial eta squared =.005 for friendships with delinquent peers, respectively).
Finally, subsequent univariate analyses to identify the source of the significant multivariate effects regarding control variables were performed. The effect of current age of the youth was located in the risky dating relationships \(F(1, 1013) = 16.02, p < .001\) in the present study. Also, the effects of transitional risks were located in all three peer related risk factors \(F(1, 1013) = 11.58, p < .01\) for poor relationships with conventional peers; \(F(1, 1013) = 22.68, p < .001\) for gang involvement; \(F(1, 1013) = 4.75, p < .01\) for risky dating relationships in the present study. Here, older youth reported higher dating relationships with criminally involved youth risk than their younger counterparts (a small to medium effect size; partial eta squared = .03). In addition, significantly higher peer related risk scores were present when transitional risks scores were higher in all three domains and effect sizes for these three domains were a small to medium effect size (partial eta squared = .02 for all three domains). Therefore, hypothesis 1.2 is partially supported here.

Hierarchical Linear Modeling Analyses (HLM)

In the second set of main data analyses, important questions were asked about the influence of neighborhood context on family/parenting risks and peer risks in seriously delinquent youth, and attempts are made to isolate neighborhood variables that are most salient in predicting these risks in this special population. That is, the purpose of this part was to provide a foundation for identifying the extent to which youth living in economically disadvantaged and residentially unstable neighborhoods also were more
likely to experience family and peer related difficulties. In the sections that follow, the
details of the procedure to acquire neighborhood setting variables is provided.

**Constructed Neighborhood Setting Variables**

Before performing the Hierarchical Linear Modeling analyses, two components of
neighborhood settings used in the main data analyses as Level 2 variables were retrieved
from the results of the principal component analysis, as previous research has used these
variables when examining the Census data (Chung, 2004; Herrenkohl, 1998; Leventhal &
Brooks-Gunn, 2000; Sampson et al., 1997). This procedure was necessary to consolidate
variables representing the neighborhood characteristics listed above, given that there was
the possibility of multi-collinearity among the five neighborhood setting indicators
mentioned previously. There were moderate to strong inter-correlation coefficients
among neighborhood setting indicators (see Table 4.2.) and therefore, there could be a
problem of over-fitting in the main data analyses model caused by redundant data when
those five variables would be concurrently included in the data analyses.

Previous studies have suggested that there are two aspects of community structure
thought to affect neighborhood social functioning or individual outcomes (e.g.,
delinquency and children’ adjustment): 1) Economic Disadvantage; and 2) Residential
Instability (Chung, 2004; Herrenkohl, 1998; Leventhal & Brooks-Gunn, 2000; Sampson et
al., 1997). Therefore, data were obtained at the zip code level to indicate neighborhood
levels of economic disadvantage (i.e., percentage of adults without a high school
diploma, percentage of households below the poverty line, and percentage of female-
headed households) and residential instability (i.e., percentage of residents who have
moved within the last five years, and the percentage of renter-occupied households in the community).

The five neighborhood indicators were analyzed in a principle component analysis using varimax rotation to obtain factor scores of each indicator. The reason behind choosing the method of varimax rotation in this analysis is that the rotation method produced the clearest structure of the factors, thereby improving interpretability of the factor structure. According to the result of the principle component analysis, the first component explained 52% of the total variance (eigenvalue = 2.6) and the second component explained 33% of the total variance (eigenvalue = 1.7), and therefore this solution accounted for 84% of the total variance in five neighborhood setting indicators driven from the 2000 National Census.

The loadings of indicators for each factor following rotation are shown in Table 4.4. Three variables loaded highly on the first factor representing economic disadvantage of the neighborhood including items of education level, household composition, and economic status. This factor appeared to capture the overall level of economic deprivation in neighborhoods (labeled “economic disadvantage”). Two variables, those including the percentage of individuals living in a neighborhood for less than five years and percentage of renter-occupied homes loaded highly on a second factor. This factor reflected the instability of neighborhoods (labeled “residential instability”). Even though the factor loadings were not very desirable, the suggested factor structure was utilized in the study because several previous studies that measured neighborhood structural characteristics proved that the two-factor solution obtained in this study was valid.
(Chung, 2005; Herrenkohl, 1999; Leventhal & Brooks-Gunn, 2000). In addition, the main purpose of this analysis was not to find the factor structure but to obtain factors scores that would be used in the subsequent data analyses.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Economic Disadvantage</th>
<th>Residential Instability</th>
</tr>
</thead>
<tbody>
<tr>
<td>% of adults without a high school diploma</td>
<td>.91</td>
<td>.23</td>
</tr>
<tr>
<td>% of families living in poverty</td>
<td>.81</td>
<td>.52</td>
</tr>
<tr>
<td>% of female-headed household</td>
<td>.93</td>
<td>.09</td>
</tr>
<tr>
<td>% of individual living in the same household for less than 5 years</td>
<td>.10</td>
<td>.98</td>
</tr>
<tr>
<td>% of percentage of renter-occupied homes</td>
<td>.52</td>
<td>.74</td>
</tr>
</tbody>
</table>

Table 4.4 Factor Loadings for Census Measure Addressing Economic Disadvantage and Residential Instability in Neighborhood

In order to create two neighborhood setting variables (i.e., economic disadvantage and residential instability), factor score coefficients for these two factors were utilized, such that factor scores were assigned that represented a weighted combination of scores on each variable, for each zip code level neighborhood. Standardized scores on the economic disadvantage factor ranged from -1.49 to 2.95 with high scores indicating high levels of economic disadvantage in the neighborhoods and scores on the residential instability factor ranged from -1.8 to 4.2, with high scores indicating high levels of residential instability in the neighborhoods.
HLM Analyses Procedures

The data in this study were nested, in that there were youth (Level 1 unit) within neighborhoods (Level 2 unit), and therefore the characteristics of youth in the same neighborhood would be more likely to be related than those of youth randomly selected. Given this, multi-level models (i.e., HLM) were used to examine neighborhood effect beyond the impact of Level 1 variables on the family and peer risk domains in this section.

The HLM procedure simultaneously addresses both levels in a hierarchically nested data set and provides independent estimates of the relationships among constructs at the lower level (within neighborhoods) and models them at the upper level (between neighborhoods). The Level 1 unit of analysis consisted of 1086 seriously delinquent youth who were in detention facilities, while the Level 2 unit of analysis consisted of 90 neighborhoods linked to zip codes.

In developing these models, the family/parenting GRAD risks, family transitional risks and peer relationship risks domains operated as outcome variables (i.e., dependent variables). The family transitional risks factor was a newly included outcome variable in this analysis as a supplement to the GRAD family/parenting risks because a number of scholars have found unstable familial environment to be important in the development of offending and the association with family functioning factors, and research shows that unstable familial environments are very dominant factors in seriously delinquent adolescents and disadvantaged neighborhoods (Henry, Caspi, Moffitt, & Silva, 1996; Smith & Jarjoura, 1988).
Youth gender, youth ethnicity, and youth onset group affiliation as Level 1 indicators and economic disadvantage and residential instability as Level 2 variables also were included in the proposed models. Finally, current age of the youth and household compositions were included as control variables in the models. To organize a model for individuals nested within neighborhoods using family and peer related risks as outcomes, the following process is used with HLM program (Bryk et al., 1996).

**ANOVA Models.** When using multilevel modeling procedures, the researcher needs to test a series of models, typically moving from an unrestricted model to more restricted models. For this current study, three models were estimated and compared. The first was the unrestricted (or unconditional) model, which involved partitioning variance on outcome variables (i.e., family/parenting related risks and peer related risk) within and between groups (i.e., neighborhood) without other Level 1 variables.

This model was estimated in order to examine the variability in these outcome variables, as well as to discern whether further analysis of this data was warranted. In this context, several unconditional two-level models were developed for family/parenting related risks, family transitional risks, and peer related risks. Also, to test the ANOVA models is essential to examine the second research hypothesis as follows:

2. There will be significant between-neighborhood variances in outcome variables.

2.1. There will be a significant between-neighborhood variance in the family/parenting related risks.
2.2. There will be a significant between-neighborhood variance in the family transitional risks.

2.3. There will be a significant between-neighborhood variance in the peer related risks.

Results for unconditional models including within - and between - group variance estimates, reliability estimates, and chi-square values for family related risk variables are presented in Table 4.5.

<table>
<thead>
<tr>
<th>Family/Parenting Risks</th>
<th>Transition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Family support</td>
<td>1.12 (0.03)</td>
</tr>
<tr>
<td>Family Conflict</td>
<td>1.06</td>
</tr>
<tr>
<td>Family Conflict</td>
<td>0.5412</td>
</tr>
<tr>
<td>Poor Parenting</td>
<td>0.705</td>
</tr>
<tr>
<td>Economic Hardship</td>
<td>0.03</td>
</tr>
<tr>
<td>Transition Risks</td>
<td>89</td>
</tr>
<tr>
<td>Chi-square</td>
<td>101.86</td>
</tr>
<tr>
<td>p</td>
<td>ns</td>
</tr>
</tbody>
</table>

Table 4.5 Variance Estimates, Reliability and Chi-Square Values for the One-Way ANOVA Models of Family Related Risk Variables
This procedure is called as an ANOVA model, as this approach is analogous to a traditional one-way analysis of variance with random effects. The formula and notation for Level 1 of this unconditional level (individual-level) model is as follows:

\[ Y_{ij} = B_{0j} + R_{ij} \]

The formula for Level 2 is:

\[ B_{0j} = G_{00} + u_{0j} \]

A significant between-neighborhood variation was found in the youth’s experienced poor parenting (\( \chi^2 = 111.82 \) with \( df = 89, p = .05 \)) and transitional risks factors (\( \chi^2 = 186.53 \) with \( df = 89, p < .001 \)) only. On the other hand, most of the variance in outcome means was at the individual level for family support (\( \chi^2 = 101.86 \) with \( df = 89, \) ns), family conflict (\( \chi^2 = 106.00 \) with \( df = 89, \) ns), parental tip-toeing (\( \chi^2 = 74.73 \) with \( df \))

\(^3\) \( Y_{ij} \) is a outcome variable score (here, family/parenting related risks scores, transitional risk score or peer related risk scores) for youth \( i \) in neighborhood \( j \)

\(^4\) \( B_{0j} \) is the average score (or intercept) of family/parenting risks scores, a transitional risk score or peer risks scores for all youths in neighborhood \( j \)

\(^5\) \( r_{ij} \) is the residual for youth \( i \) in neighborhood \( j \) (\( r_{ij} \) measures the extent to which youth \( i \) varies from the mean of neighborhood \( j \); here, \( r_{ij} \sim N(0, \sigma^2) \))

\(^6\) Where \( B_{0j} \) is the average score (or intercept) for neighborhood \( j \)

\(^7\) \( G_{00} \) is the grand mean

\(^8\) \( u_{0j} \) is the residual for neighborhood \( j \) (\( u_{0j} \) measures the extent to which neighborhood \( j \) varies from the grand mean for the outcome variable; here, \( u_{0j} \sim N(0, \tau^2) \) )
Based on the covariance estimates, the proportion of the total variance that occurs between neighborhoods is 2% (i.e., the intra-class correlation) for the poor parenting practice risk variable, and 9% for a family transitional risks variable. Unexpectedly, there were no systematic between-neighborhoods variances in other family/parenting related risks scores.

Here, the average lack of family support risk score across all youth was 1.12 (converted back into the raw score = 1.24), average family conflict risk score across all youth was 1.35 (converted back into the raw score = 1.81), average parental tip-toeing risk score across all youth was .98 (converted back into the raw score = .95), average poor parenting risk score across all youth was .92 (converted back into the raw score = .84), average economic hardship risk score across all youth was 1.10 (converted back into the raw score = 1.20) and finally, average transitional risks score across all youth was 2.69 (converted back into the raw score = 7.18).

Next, results for a set of unconditional models including within - and between - group variance estimates, reliability estimates, and chi-square values for peer related risk variables are presented in Table 4.6. Here, a significant between-neighborhood variation was found in the youth’s experiencing friendships with delinquent peer ($\chi^2 = 122.20$ with $df = 89$, $p < .05$) and dating relationships with criminally involved youth ($\chi^2 = 125.10$ with $df = 89$, $p < .01$). However, there was no significant between-neighborhood variation in the poor relationships with conventional peers ($\chi^2 = 97.12$ with $df = 89$, $p < .05$). That is, there were systematic between-neighborhood variances in two peer related risks scores.
Based on the covariance estimates, the proportion of the total variance that occurs between neighborhoods is 2% (i.e., the intra-class correlation) for a relationship with delinquent peers risk variable, and 3% for dating relationships with criminally involved youth risk variable.

<table>
<thead>
<tr>
<th></th>
<th>Conventional Peers</th>
<th>Delinquent Peers</th>
<th>Dating Relationships</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fixed Effect:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coefficient (se)</td>
<td>1.64 (0.03)</td>
<td>1.45 (0.03)</td>
<td>.83 (.03)</td>
</tr>
<tr>
<td>Reliability</td>
<td>.09</td>
<td>.26</td>
<td>.21</td>
</tr>
<tr>
<td>Random effect</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Variance Component) u</td>
<td>0.007</td>
<td>0.010</td>
<td>0.016</td>
</tr>
<tr>
<td>r</td>
<td>0.742</td>
<td>0.441</td>
<td>0.454</td>
</tr>
<tr>
<td>df</td>
<td>89</td>
<td>89</td>
<td>89</td>
</tr>
<tr>
<td>Chi-square</td>
<td>97.12</td>
<td>122.20</td>
<td>125.10</td>
</tr>
<tr>
<td>p</td>
<td>ns</td>
<td>0.01</td>
<td>0.007</td>
</tr>
</tbody>
</table>

Table 4.6 Variance Estimates, Reliability and Chi-Square Values for the One-Way ANOVA Models of Peer Risk Variables

Here, average lack of relationship with conventional peers scores across all youth was 1.64 (converted back into the raw score = 2.68), average friendship with delinquent peers across all youth was 1.45 (converted back into the raw score = 2.09), and average dating relationship with a criminally involved youth score across all youth was .83 (converted back into the raw score = .68). Therefore, hypothesis 2.1 and 2.3 were partially supported here while hypothesis 2.2 was fully supported here.
In order to examine family related risks and peer related risks more comprehensively, the next model included gender of the youth, ethnicity, and delinquency onset grouping variables as Level 1 predictors, and current age of the youth, household composition, and transitional risks variables as control variables.

**ANCOVA Models.** Because significant between-neighborhood variances were found with regard to poor parenting, transitional risks, friendship with delinquent peers, and dating relationships with criminally involved youth outcome variables, covariates were added at Level 1, and variance estimates again were computed for these five outcome variables only. Level 1 covariate variables added to each model were gender of the youth (females coded 0 and males coded 1), ethnicity of the youth (Caucasian coded 0 and African American coded 1), and the timing of onset for delinquency grouping (late onset coded 0 and early onset coded 1) as main study variables, and household composition (female-headed household coded 1 and other types of household composition coded 0), and current age of the youth.

To enhance interpretability, current age of the youth was centered on its respective group mean. In so doing, $B_{0j}$ represents the adjusted mean on each outcome variable for neighborhood $j$ when the youth is a female, Caucasian, late onset offender who does not reside in a female-headed household and is the average age. Including these Level 1 variables in each outcome model provides an estimate of the variance within - and between – groups adjusted for the effect of these level 1 covariates (i.e., gender, ethnicity, delinquency onset group, current age of the youth, and household composition).
Here, it was expected that gender, ethnicity, and the timing of onset for delinquency grouping of the youth would predict family related risks and peer related risks along with both current age of the youth and household composition covariate variables. Also, the purpose of testing the ANCOVA models is to examine the third research hypothesis as follows:

3. Level 1 predictor variables including gender, ethnicity, and different onset of delinquency, after controlling for household composition and current age of the youth, will be significantly associated with family and peer related risks in a proposed Model.

3.1. Female, African American youth, early onset offender, after controlling for household composition and current age of the youth will be positively associated with the family/parenting related risks.

3.2. Female, African American youth, early onset offender, after controlling for household composition and current age of the youth will be positively associated with the family transitional risks.

3.3. Male, African American youth, late onset offender, after controlling for household composition and current age of the youth will be positively associated with the peer related risks.
The formula and notation for the ANCOVA models at Level 1 is:

\[ Y_{ij} = B_{0j} + B_{1j} \text{ (Male)} + B_{2j} \text{ (African American race)} + B_{3j} \text{ (Early Onset group)} + B_{4j} \text{ (female-headed household)} + B_{5j} \text{ (current age of the youth – Group mean age)} + r_{ij} \]

The model for Level 2 is:

\[ B_{0j} = G_{00} + U_{0j} \]
\[ B_{1j} = G_{10} \]
\[ B_{2j} = G_{20} \]
\[ B_{3j} = G_{30} \]
\[ B_{4j} = G_{40} \]
\[ B_{5j} = G_{50} \]

Using this formulation, we estimated a random-intercept model with Level 1 covariates, in which each Level 1 covariate was fixed. Results of ANCOVA models

\(^9\) Where \( Y_{ij} \) is a outcome variable score (i.e., family/parenting risk scores, the transitional risk score or peer risk scores) for individual \( i \) in neighborhood \( j \)
- \( B_{0j} \) is the adjusted mean on each outcome for neighborhood \( j \)
- \( B_{1j} \) is the slope for male gender
- \( B_{2j} \) is the slope for African American race
- \( B_{3j} \) is the slope for early onset offenders
- \( B_{4j} \) is the slope for female-headed household
- \( B_{5j} \) is the adjusted slope for the current age of the youth
- \( r_{ij} \) is the residual for individual \( i \) in neighborhood \( j \)

\(^{10}\) Where \( B_{0j} \) is the adjusted mean for neighborhood \( j \)
- \( B_{1j} \) through \( B_{5j} \) are fixed coefficients (slopes are constrained to be equal across neighborhoods; this is indicated by the omission of an error term, \( U_{ij} \), in the equations for \( B_{1j} \) through \( B_{5j} \))
- \( G_{00} \) is the adjusted grand mean
- \( U_{ij} \) is the residual for neighborhood \( j \)
showed that, after considering the variance accounted for by above individual characteristics, significant between-neighborhood variability remained for measures of poor parenting risk, transitional risks, friendships with delinquent youth, and dating relationships with criminally involved youth variables.

Coefficients and conditional error variance estimates for the ANCOVA models pertaining to poor parenting risk, transitional risks, friendship with delinquent youth risk, and dating relationships with criminally involved youth risk outcome variables are presented in Table 4.7.
Table 4.7 Coefficients, Conditional Variance Estimates, and Reliabilities for ANCOVA Models

<table>
<thead>
<tr>
<th>Fixed Effect: Coefficient (se)</th>
<th>Family Related Risks</th>
<th>Peer Related Risks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Poor Parenting</td>
<td>Transitional Risks</td>
</tr>
<tr>
<td>B₀(adjusted mean)</td>
<td>1.03(.05)***</td>
<td>2.36(.16)***</td>
</tr>
<tr>
<td>Gender</td>
<td>-.17(.04)***</td>
<td>-.08(.11)</td>
</tr>
<tr>
<td>African American</td>
<td>-.06(.05)</td>
<td>.65(.14)***</td>
</tr>
<tr>
<td>Early Onset</td>
<td>.10(.04)*</td>
<td>.19(.11)</td>
</tr>
<tr>
<td>Current age</td>
<td>-.03(.02)</td>
<td>-.05(.05)</td>
</tr>
<tr>
<td>Household</td>
<td>-.00(.04)</td>
<td>-.07(.14)</td>
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<tr>
<td>Reliability (B₀)</td>
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<td>.219</td>
</tr>
<tr>
<td>Random effect (Variance Component)</td>
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<td></td>
<td>r</td>
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</tr>
<tr>
<td>df</td>
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<td>89</td>
</tr>
<tr>
<td>Chi-square</td>
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<td>147.22</td>
</tr>
<tr>
<td>P</td>
<td>&lt;.05</td>
<td>&lt;.001</td>
</tr>
</tbody>
</table>

* p < .05, ** p < .01, *** p < .001

Table 4.7 Coefficients, Conditional Variance Estimates, and Reliabilities for ANCOVA Models
For the two outcome variables, gender was a significant Level 1 covariate variable. All coefficients for gender had negative values, such that female adolescents displayed significantly higher risks on exposure to poor parenting, and dating relationships with criminally involved youth. In terms of ethnicity, African American race was a significant covariate for friendship with delinquent peers (e.g., gang involvement) risk and the transitional risks variable. That is, African American offenders reported higher risk scores on friendship with delinquent peers risk and transitional risks. Also, onset group was a significant Level 1 covariate variable for three outcome variables. The coefficients for the onset groups all had positive values, thereby indicating that early onset offenders showed significantly higher risks on poor parenting risks, friendships with delinquent peers, and dating relationships with criminally involved youth risk in comparison to late onset counterparts in the present sample.

Further, current age of the youth was a significant variable for the dating relationships with criminally involved youth risk variable only. That is, older youth reported higher dating relationship-related risks than their younger counterparts. Household composition was not a significant control variable for any outcome, however. Therefore, hypotheses 3.1, 3.2, and 3.3 were partially supported here.

The results of the ANCOVA model tests suggested that the adjusted mean of poor parenting risk level experienced by the youth was significantly different than zero ($t = 20.92; p < .001$) and gender and onset group affiliation were predictive of the variance in this measure. However, ethnicity, current age, and household composition were not predictive of the variance in this measure.
The adjusted mean of the transitional risks factor \((t = 14.44; p < .001)\) was also significantly different from zero, and ethnicity significantly predicted the variance in the risk scores, yet gender, onset group affiliation, age, and household composition variables did not. In addition, the adjusted mean of friendship with delinquent peers risk \((t = 26.62; p < .001)\) also was significantly different from zero, and the onset grouping variable significantly predicted the variance in the risk scores, while the other variables did not. Finally, the adjusted mean of dating relationships with criminally involved youth risk \((t = 16.28; p < .001)\) was also significantly different than zero, and gender, onset grouping, and age significantly predicted the variance in the risk scores, while ethnicity and household composition variables did not.

These analyses indicated that systematic variance between neighborhoods (after controlling for individual characteristics) existed on measures of poor parenting risk, transitional risks, friendship with delinquent peers risk, and dating relationships with criminally involved youth risk.

In the models that follow, the census measures of neighborhood economic disadvantage and residential instability were added as predictors at Level 2 in an effort to explain variance between neighborhoods that remained on those four measures after controlling for the effect of level 1 covariates.

**Final HLM Full Models.** The final step in the HLM analyses involved adding predictors at Level 2 representing neighborhood economic disadvantage and residential instability as measured by the 2000 National Census. These two variables were hypothesized to explain between-neighborhood differences in each outcome variable
(youth-reported poor parenting risk, transitional risks, friendship with delinquent peers risk and dating relationships with criminally involved youth risk) that remained after the effects of individual characteristics were removed.

Previous ANCOVA models were performed separately for family and peer related risk factors to determine the predictive ability of the individual characteristics. On the other hand, the final level 2 models were examined to see the impact of pure neighborhood settings on the individual levels outcomes, after controlling for individual level covariates as mentioned previously.

In order to achieve this goal, all level 1 covariates were centered on its respective grand mean (see Elliott et al., 1996; Bryk & Raudenbush, 1992). Therefore, $B_{0j}$ measures the adjusted true mean of the outcome variable for group j after controlling for the Level 1 variables. Hence, at Level 2, the HLM coefficients represent the effect of neighborhood characteristics on the adjusted mean. Also, independent variables with significant mean slopes only were detained for the final models. That is, the household composition variable was omitted, as this variable was not predictive of any outcome variable in the ANCOVA models.

Here, at Level 1, the outcomes (poor parenting, transitional risks, friendship with delinquent peers, and dating relationships with a criminally involved youth) were modeled as a function of the mean (intercept) and gender, ethnicity, onset group, and current age of the youth. Within-unit models provided information about neighborhood means (intercepts), variability in intercepts, and relationships between individual characteristics and outcome variables.
At Level 2, randomly varying intercepts are modeled as a function of the grand mean and two neighborhood characteristics. Two neighborhood setting variables previously noted as important in the literature were selected for inclusion: disadvantaged neighborhood and residential instability. Coefficients associated with slope estimates for individual characteristics in the model were fixed across neighborhoods. As previously suggested, a notable reduction in conditional error variance at the neighborhood level with the inclusion of Level 2 predictors indicates important explanatory effects of those variables.

In this way, questions can be asked about the extent to which neighborhood characteristics explain intercept differences after controlling for the effects of the individual level covariates. In other words, it was hypothesized that economic disadvantage and residential instability would predict higher family related risks and peer related risk in this special population. The model is examined to research hypothesis 4 as follows:

4. **Level 2 neighborhood setting variables (i.e., economic disadvantage and residential instability) from the 2000 National Census will be significantly associated with family and peer related risks.**

4.1. Economic disadvantage or residential instability will be positively associated with higher levels of family related risks.

4.2. For example, economic disadvantage or residential instability will be positively associated with higher levels of peer related risks.
The formula and notation for the Level 1 equation for an observation on person i in the jth neighborhood is as follows:

\[ Y_{ij} = B_{0j} + B_{1j} \text{ (Gender)} + B_{2j} \text{ (African American race)} + B_{3j} \text{ (Onset group)} + B_{4j} \text{ (current age of the youth)} + r_i \]

At Level 2

\[ B_{0j} = G_{00} + G_{01} \text{ (Economic Disadvantage)} + G_{02} \text{ (Residential Instability)} + U_{0j} \]
\[ B_{1j} = G_{10} \]
\[ B_{2j} = G_{20} \]
\[ B_{3j} = G_{30} \]
\[ B_{4j} = G_{40}^{11} \]

As shown in Table 4.8., the 2000 National Census measure of neighborhood economic disadvantage was a significant predictor of transitional risks, friendship with delinquent peers, and dating relationships with criminally involved youth risk. However, residential instability was not predictive of any outcome variable. Results of the two level hierarchical linear models indicated that higher levels of economic disadvantage were related to greater levels of transitional risks (\( t = 38.80, p < .001 \)), higher levels of friendship with delinquent peers (\( t = 33.71, p < .001 \)), and higher levels of dating relationships with criminally involved youth risk (\( t = 29.87, p < .001 \)).

\[ ^{11} \text{Where } B_{0j} \text{ is the adjusted intercept for neighborhood } j \]
\[ B_{1j} \text{ through } B_{4j} \text{ are adjusted slope estimates fixed to be equal across neighborhoods} \]
<table>
<thead>
<tr>
<th>Fixed Effects: Coefficients (se)</th>
<th>Family Related Risks</th>
<th>Peer Related Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Poor Parenting</td>
<td>Transitional Risks</td>
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<tr>
<td>Intercept (G₀₀)</td>
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<td>2.69(.07)***</td>
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<td>Economic Disadvantage (G₁)</td>
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<td>.18(.07)**</td>
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<td>Residential Instability (G₂)</td>
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<td>.10(.07)</td>
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<tr>
<td>Gender (B₁)</td>
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<td>African American (B₂)</td>
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<tr>
<td>Early Onset (B₃)</td>
<td>.12(.05)**</td>
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<td>Current age (B₄)</td>
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Random effect (Variance Component)

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<th>df</th>
<th>Chi-square</th>
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<td>ns</td>
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<tr>
<td>.06</td>
<td>2.60</td>
<td>87</td>
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<td>.002</td>
<td>.44</td>
<td>87</td>
<td>105.44</td>
<td>ns</td>
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<tr>
<td>.006</td>
<td>.44</td>
<td>87</td>
<td>103.66</td>
<td>ns</td>
</tr>
</tbody>
</table>

Note. N = 90, 1012

Indented and italicized variables indicate level 2 variables.

* p < .05, ** p < .01, *** p < .001

Table 4.8 Coefficients, Conditional Variance Estimates, and Reliabilities for Full Models
With the inclusion of the Level 2 predictors in each model, clear reductions in error variance between neighborhoods were found for these youth reported family/parenting related risks and peer related risks. Between-neighborhood variance in poor parenting risk was dropped by additional 13% from the ANCOVA model. For transitional risks, the reduction in between-neighborhood variance from the ANCOVA model was approximately 39%. Also, between-neighborhood variance in friendship with delinquent youth risk was dropped by additional 60% from the ANCOVA model. Finally, the reduction in between-neighborhood variance from the ANCOVA model was approximately 33% for dating relationships with delinquent youth.

In sum, HLM analyses showed that youth’s report of family/parenting related risks and peer related risks differed systematically between neighborhoods and that variation in reports was associated with the level of the neighborhood economic disadvantage measure constructed from the 2000 National Census. However, the lack of a relationship between residential instability and family and peer related risks suggest that, mobility among residents is not indicative of these risks. Rather, youths living in economically impoverished neighborhoods were more likely to experience family and peer related risks in this special population. Also, the links between neighborhood economic disadvantage and family and peer related difficulties were in the expected direction. That is, higher levels of neighborhood economic disadvantage were related to a higher level of transitional risks, friendship with delinquent peers and dating relationships with criminally involved youth. Also, the direction of the relation between residential instability and family and peer related difficulties were in the expected direction even
though the relationships were not significant. Therefore, the results partially supported hypotheses 4.1, and 4.2.

**Power Analyses.** In order to determine whether or not the sample size for this analysis is appropriate, confidence intervals of each estimate were carefully investigated since there is thought to be a clear relationship between the sample size and confidence intervals (Snijders, 2002). That is, the confidence intervals become smaller as the sample size becomes larger even though the relationship is not linear, such that doubling the sample size does not halve the confidence interval.

Snijders (2002) responded to the sample size issue in the multi-level modeling as follows:

> The issue posed is about a post hoc power analysis, which is not very meaningful: it will be better to report a confidence interval to express the fact that non-significance may not point to the effect being zero but rather to small sample size. Specifically, if one wishes to get more information about whether a non-significant result provides support for the null hypothesis, a power study is not the answer. Statistical power is the probability to reject the null hypothesis, if a given effect size obtains. Its interpretation cannot be inverted as being the degree of support of the null hypothesis in case of non-significance. Power studies are important in the stage of planning a study. Once the study has been conducted, and one wishes to see in more detail to what extent the null and alternative hypotheses are supported, a confidence interval is the adequate procedure (See also Wilkinson and TFSI, 1999, p. 596).

Examinations of confidence intervals of each estimate supported that the sample size of the proposed models in the present study was not inappropriately small since the confidence intervals were not improperly wide.
CHAPTER 5
DISCUSSION

The present study was designed to understand family and peer related risks and needs experienced by court-involved youth. More specifically, the main purposes of this study were to identify and understand family and peer related risks by subgroups associated with gender, ethnicity, and the timing of onset for delinquency as well as examine the impact of neighborhood settings on these risks among court-involved youth. Data was collected through use of version 1.0 of the Global Risk Assessment Device (GRAD) with a convenience sample of 1,086 youth who came to the attention of four county juvenile courts in Ohio, along with the 2000 National Census data of 90 zip code areas linked to the current residence of those 1,086 youth. The family related risks reported by the youth included lack of family support, parental tip-toeing, poor disciplining, family conflicts, and economic hardship. Peer related risks reported by the youth included poor relationships with conventional peers, friendship with delinquent peers, and dating relationships with criminally involved youth.

Results of Multivariate Analysis of Covariance (MANCOVA) supported the hypothesis that there were differentiated levels of family and peer related risks according to subgroups associated with gender, ethnicity, and the timing of onset of delinquency.
after controlling for the effect of transitional risks, current age of the youth, and household composition. Results of Hierarchical Linear Modeling Analyses (HLM) indicated that the neighborhood economic disadvantage factor (through use of the 2000 National Census) was significantly related to youth reports of GRAD family/parenting risks, transitional risks, and GRAD peer risks even when controlling for salient demographic characteristics (i.e., gender of the youth, ethnicity of the youth, current age of the youth, and onset for delinquency grouping of the youth) factors. A summary and discussion of the major findings of the present study are presented for each major research hypothesis and related findings.

**Summary and Discussion of Main Findings**

1. **Gender, ethnic group (Caucasian and African American) and different onset for delinquency (early onset and late onset) will significantly impact the vectors of means related to family/parenting and peer related risks scores.**

   This study identified differences across gender, ethnicity, and different onset for delinquency in family/parenting and peer related risks after controlling for current age of the youth, transitional risks, and household composition. Also, the significant relationship between these risks scores and current age of the youth and transitional risks scores supports the need to consider these control variables in future research efforts. Further explanation of each sub-hypothesis follows below.
1.1. Female and African American youth who are early onset offenders will display the highest risk scores on the family/parenting domains of the GRAD.

Consistent with previous research (Chesney-Lind, 1997; Chesney-Lind & Okamoto, 2001; Margolin & Gordis, 2000; Miller et al., 1998; Smith & Thomas, 2000), there were gender differences on family/parenting related risks experienced by court-involved youth. As hypothesized, female offenders consistently reported higher risk scores on all five family/parenting sub-domains (i.e., family support, parental tip-toeing, poor discipline, family conflict, and economic hardship) in comparison to male counterparts in the present sample.

In addition, further examination of effect size due to the use of a relatively large data set (N = 1086) in the present study showed that the significant results were caused, not just by the large sample size of the present study, but by actual mean differences on the domains according to gender. That is, mean differences on the lack of family support and family conflict risk factors between female and male offenders were associated with medium effect size (partial eta squared = .05 and .06, respectively), which were not trivial effects. On the other hand, the mean differences on parental tip-toeing, poor parenting and economic hardship were associated with a small effect size, which needs further examination of these domains according to gender. Therefore, female offenders’ higher levels of family related risks, especially lack of family support and family conflict risks were detected in the present study. These results are explicitly supported by accumulating evidence that families of aggressive and delinquent female adolescents are characterized
by greater discord, family dysfunction, lack of support and conflict than families of their male counterparts (Margolin & Gordis, 2000; Miller et al., 1998; Smith & Thomas, 2000).

Main effects for ethnicity also were found regarding the family/parenting sub-domains except for poor parenting. Unexpectedly, Caucasian youth offenders consistently reported higher risk scores on four family/parenting risk sub-domains in comparison to African American counterparts in the present sample. The mean differences on the family conflict and economic hardship risk factors were associated with a small to medium effect size according to ethnicity (partial eta squared = .05, and .03, respectively) whereas the mean differences on the lack of family support and parental tip-toeing were associated with a small effect size. Therefore, Caucasian youth seemed to experience higher levels of family related risks including family conflict, economic hardship risk, and the lack of family support and parental tip-toeing in comparison to African-American youth and especially, ethnic differences on family and economic hardship among juvenile offenders were evident in the present study.

These unexpected results seemed to be caused by the gender composition of the present sample. In one previous study of youth (Gavazzi, 2006) that indicated the presence of higher family risk and needs of African American youth in comparison to Caucasian youth, further examination of the results showed that the actual differences were caused by relatively higher risks experienced by African American female offenders in comparison to Caucasian female offenders. In the same study, Caucasian male offenders reported higher family/parenting risk scores compared to African American counterparts. The majority of the present sample was male (70%) and therefore, higher
family related risks scores for Caucasian youth in comparison to African American youth were from higher scores of Caucasian male offenders relative to those of African male offenders.

Unexpectedly, there was no different onset for delinquency effect on family related risks. The result is inconsistent with previous research that reported significant onset group differences on family related risks (Moffit, 1993; Widom, 1989). The present insignificant findings raise two possibilities: (1) consideration of an alternative categorization of onset grouping, or (2) the different timing of assessment of family related risks. In the present study, age 14 was utilized as an age marker for onset grouping, which was consistent with Patterson’s criterion (1993). However, Moffit (1993) who was the first proponent of onset for delinquency markers, utilized age 13 as the cut-off for the grouping. Therefore, the present study’s insignificant findings could be associated with the age marker criterion. Another plausible reason is the timing of family related risk assessment, as previous studies (Moffit & Caspi, 2001; Silverthorn & Frick, 1999) assessed family related risks before the onset group affiliation was determined, and examined whether or not family related risks predicted later categorization of the onset grouping. However, the scores of family related risks in the present study is the current level of family related risks experienced by the juvenile offenders.

Among control variables used in the first set of main data analysis (i.e., MANCOVA), there were significant control variable effects of transitional risks, and current age of the youth. Consistent with the previous research (Attar et al., 1994; Kliewer & Kung, 1998), transitional risks operated as a significant control variable in the
present study. That is, significantly higher levels of lack of family support, family conflict, parental tip-toeing and economic hardship were present when transitional risks scores were higher. Previous studies have examined the exposure to family transitional risks as a proxy for unstable close environmental risk (Attar et al., 1994; Fox & Benson, 2000; Kliwer & Kung, 1998) and consistently report the relationship between the unstable family environments and other risks experienced by adolescents. For example, Patterson, Bank, and Stoolmiller (1990) examined the impact of transitional risks including the number of residence changes, family structure changes, non-normative school changes, normative school changes and level of pubertal maturation on juvenile delinquency and family functioning, and found that these transitional risks were stressors that served the function of disrupting family processes. Therefore, family transitional risks scores need to be considered as another indicator of poor family environments in future research.

In addition, current age of the youth also operated as a significant control variable. Here, older youth reported less family conflict, parental tip-toeing and poor parenting risk scores than their younger counterparts. This result is consistent with previous research findings that children are able to be away from the influencing power of families and tend to be close with their peers as they grow older (Kupersmidt et al., 1995).

However, there was no household composition effect in the present study. The result is inconsistent with previous research that reported adolescents who reside in single parent- headed households, especially mother-headed households, are particularly susceptible to the risk associated with ineffective parenting (Gerard and Buehler, 1999).
Also, Ellis et al (2003) found that female adolescents living in the United States and New Zealand with an absent father were more likely to engage in risky behaviors. One plausible reason for the non-significant household composition effect was the way that this variable was constructed. In the present study, household composition categories included female headed households along with other types of household composition (grandparent headed, single father headed, and stepparent). Therefore, this category lumps all other possible household composition types together as a comparison category. Hence, non-significant household composition effect might be attributed to the lack of discrimination between various types of household composition categories.

1.2. Male and African American youth who are late onset offenders will display the highest risk scores on the peer domains of the GRAD.

In the examination of subgroup specific risks and needs among court-involved youth, there also were some significant subgroup variations associated with gender, ethnicity, and onset of delinquency in peer related risks scores after controlling for the current age of the youth, transitional risks, and household composition.

First, there was an interaction effect of gender, ethnicity, and onset for delinquency group on dating relationships with criminally involved youth. That is, being African American, female and early onset for delinquency status placed youth at the highest risk levels for problematic dating. This is hard to interpret since there was no study that concurrently considered gender, ethnicity, and onset for delinquency group to explain dating relationships with criminally involved youth. However, the results can be
compared to previous studies that have shown relationship with delinquent peers and
gang involvement are more common in African American offenders in comparison to
Caucasian offenders (Curry & Spergel, 1992; Williams & McGee, 1994). Also, negative
dating relationships may be more impactful on African-American adolescents, and
particularly those disadvantaged minority youth (Coates, 199). Dating relationships with
criminally involved youth is one of the risk factors in delinquency, especially for female
adolescents (Caspi et al., 1993; Giordano et al., 2005; Morris, 1964), as the antisocial
behaviors of these girls are more likely to be reinforced by intimate partners who are
already involved in delinquent acts (Caspi et al., 1993; Giordano et al., 2005; Morris,
1964). In addition, African-American youth report starting dating relationships at an
ever earlier age relative to white youths (Giordano et al., 2005). Therefore, the relatively
higher probability that African American female adolescents date criminally involved
male adolescents at an earlier age seemed to create a unique effect on the domain.

Also, gender played an important role in elucidating peer related risks. Consistent
with previous studies (Crick & Bigbee, 1998; Silverthorn & Frick, 1999), female
offenders displayed significantly greater risk scores on the poor relationship with
conventional peers (e.g., relational aggression) and problematic dating relationships in
comparison to male counterparts in the present sample. Studies have shown that female
adolescents tend to be involved in relational aggression problems as one of indicators to
show problematic relationship with non-violent peers (Crick & Bigbee, 1998).

In terms of dating relationships with criminally involved youth, female youth or
older youth showed greater risk in this domain. That is, there was a significant gender
difference on the risk according to gender, and current age of the youth also was a significant covariate for this risk domain. This may be explained by the more typical pathway to juvenile delinquency among female adolescents. For example, female adolescents tend to become antisocial soon after puberty and show delinquent behaviors when they are under the influence of relationships with delinquent male friends (Silverthorn & Frick, 1999). Females are typically socialized to invest more heavily in the romantic arena (Eder, Evans & Parker, 1995). Also, these romantic involvements become increasingly salient for older relative to younger adolescents (Lauren & Jensen-Campbell, 1999). However, the mean differences on the poor relationship with conventional peers and risky dating relationships between female and male adolescents were associated with a small effect size, suggesting replication of the study results may be necessary.

Also, the results indicated that Caucasian youth reported higher risk scores on poor relationships with conventional peers in comparison to African American counterparts, while African American youth reported higher risk scores on relationship with delinquent peers (i.e., gang involvement) in comparison to Caucasian youth in the present study. The mean differences on the peer related risk scores between Caucasian and African American adolescents were associated with a small effect size.

The finding associated with Caucasian youth’s higher risk score on poor relationships with conventional peers is consistent with previous studies that showed lack of relationships with conventional peers are more important for white youth (Brannock et al., 1990; Elliott, 1985; Matsueda & Heimer, 1987; Williams et al., 1994). Also, the
finding that African-American offenders showed higher risk scores on friendship with delinquent peers is consistent the previous research (Garrett, 1995) that showed African Americans are more likely to be associated with delinquent peers and display more gang involvement in comparison to Caucasian youth (Heimer, 1997; Keenan et al., 1995; Thornberry, 1998; Zabel & Nigro, 1999). That is, the lack of positive male role models in some African American families may prompt young males to look outside of their families for male-male relationships that may include gang involvement.

Unexpectedly, early onset offenders reported consistently higher risk scores on poor relationships with conventional peers and friendship with delinquent youth in comparison to late onset offenders, although the mean differences on the risks were small. Previous studies have shown that the risk factors related to early-onset offending include serious family dysfunction and family psychopathology (Moffit, 1993) and late onset offenders typically engage in delinquency by becoming involved with delinquent peers (Moffit & Caspi, 2001). This inconsistent finding may be explained by a unique transactional process that early onset offenders experience (Moffit, 1993). That is, the dysfunctional transactional process between early onset offenders and their parents, which is due to their extremely aggressive or antisocial predisposition, is also applied to the relationship with conventional peers and leads a child to lose opportunities to acquire and practice prosocial patterns of behavior. The underdeveloped social skills finally result in lack of relationships with conventional peers (e.g., peer rejection) and in turn, intensive relationship with delinquent peers (e.g., gang involvement). Actually, this explanation is consistent with Patterson’s argument (1982) that adolescents faced with inconsistent
discipline often develop a coercive interpersonal style, which in turn increases the likelihood of involvement with antisocial peers due to their inability to make friendships with conventional friends (Patterson et al, 1992). Thus, early onset offenders seem to show long lasting adjustment problems in comparison to late onset offenders even in the domain of peer relationship.

2. There will be significant between-neighborhood variances in outcome variables.

The present study showed significant between-neighborhood variations in poor parenting risk, transition risks and all three peer related risks as hypothesized. The proportion of the total variance that occurred between neighborhoods ranged from 2% to 9%, which is consistent with previous studies (Elliott et al., 1996; Leventhal & Brooks-Gunn, 2000). According to Leventhal and Brooks-Gunn (2000), neighborhood effects are small to moderate, yet consistently account for about 5% of the variance in adolescents’ outcomes across studies. More specific explanation of each sub-hypothesis follows below.

2.1. There will be a significant between-neighborhood variance in the family/parenting related risks level.

In the present study, a significant between-neighborhood variation was found in the youth’s experience of poor parenting (i.e., lack of monitoring and harsh discipline) while most of the remaining variance in outcome means was at the individual level.
regarding family support, family conflict, parental tip-toeing, and economic hardship. Hence, there were little systematic between-neighborhoods variances in most of family/parenting risk scores. This result is consistent with previous research (Herrenkohl, 1998) that showed non-significant or small amount of variations between neighborhoods in poor family management, weak family bonds, harsh/physical discipline, and family conflicts. The significant between-neighborhood variance in the poor parenting risk in the present study seemed to be related to the use of a larger sample, which provided the power to detect the significant between-group variations. More importantly, the significant between neighborhood variations in the poor parenting risk is also supported by the studies that detected variations in parental supervision/monitoring (Elliott et al., 1996; Sampson, 1997) and punitive parenting with their children (Briggs, 1997; Klebanov et al., 1994) across neighborhoods.

The proportion of the total variance that occurred between neighborhoods was 2% (i.e., the intra-class correlation) for the poor parenting risk variable, which was expected given the results of previous studies that showed small to moderate amounts of variance accounted for in adolescents’ outcomes (Leventhal & Brooks-Gunn, 2000).

2.2. There will be a significant between-neighborhood variance in the family transitional risks level.

In the present study, significant between-neighborhoods variation was found in the youth’s experience of family transitional risks. According to the covariance estimates, the proportion of the total variance that occurs between neighborhoods is 9% for the
family transitional risks variable, which is considerable. To date, most prior research has not examined transitional risks scores as an indicator of unstable family environments across neighborhoods. However, it can be expected that indicators of family transitional risks (e.g., residence changes, family structure changes, and school changes) are closely related to structural characteristics of disadvantaged neighborhoods such structural community characteristics (e.g., high residential mobility, and high levels of family disruption) (Sampson, 1993).

2.3. There will be a significant between-neighborhood variance in the peer related risks level.

As hypothesized, significant between-neighborhood variations were found in friendship with delinquent peers, and dating relationships with a criminally involved youth. That is, there were systematic between-neighborhoods variances in all three peer related risks scores. Based on the covariance estimates, the proportion of the total variance that occurred between neighborhoods is 2% for a relationship with delinquent peers risk variable, and 3% for dating relationships with criminally involved youth risk variable, which was consistent with previous studies (Herrenkohl, 1998; Leventhal & Brooks-Gunn, 2000).

3. Level 1 predictor variables including gender, ethnicity, and different onset of delinquency, after controlling for household composition and
current age of the youth, will be significantly associated with family related and peer related risks in a proposed Model.

Results of the present study supported this hypothesis partially and also showed that, after considering the variance accounted for by individual characteristics, significant between-neighborhood variability remained for measures of poor parenting risk, transitional risks, friendships with delinquent youth, and dating relationships with criminally involved youth variables. Further explanation of each model follows below.

3.1. Female, African American youth, and early onset offenders, after controlling for household composition and current age of the youth, will be positively associated with the family/parenting related risks level.

Here, the hypothesis was examined for poor parenting risk only since the variable showed significant between-neighborhood variance in the previous analysis (i.e., ANOVA model). As a result, only gender and onset for delinquency grouping differences were reported, such that females displayed significantly greater poor parenting risks than males and early onset offenders reported higher scores on the risk. Although no previous studies have examined the relationship between aforementioned individual characteristics and poor parenting in an HLM analysis, the finding is consistent with the results of studies that have focused on the gender specific or delinquency onset group specific impact of family characteristics on juvenile offenders (Mazerolle, 1998; Moffit & Caspi, 2001).
3.2. *Female, African American youth, and early onset offender, after controlling for household composition and current age of the youth, will be positively associated with the family transitional risks level.*

Here, only ethnic group differences were reported, such that African American youth reported significantly higher transitional risks than Caucasian counterparts. This finding was expected, as African American youth are more likely than their Caucasian peers to live in family environments characterized by high parental incarceration rates and high unemployment rates (Wilson, 1996), which lead to representative transitional events.

3.3. *Male, African American youth, and late onset offender, after controlling for household composition and current age of the youth, will be positively associated with the peer related risks level.*

Findings in the present analysis are similar to those found in the previous MANCOVA analysis in that African American offenders and early onset offenders showed greater risk on friendship with delinquent peers such as gang involvement. Finally, early onset offenders, female offenders and older youth reported higher risk scores on problematic dating relationships.

In terms of gender differences on the domains, explanations of the significant effects are the same as the explanation about results of the previous MANCOVA analyses that showed gender differences on the domains. The significant age effect on problematic dating relationships among juvenile offenders is in agreement with earlier
research findings (Elliott & Menard, 1996; Thornberry, 1987; Warr, 1993) that reported an age-varying effect of dating relationships with criminally involved youth risk that was more pronounced during the mid- to late-teen years since the age range of the present sample was 13 - 17.

4. Level 2 neighborhood setting variables (i.e., economic disadvantage and residential instability) from the 2000 National Census will be significantly associated with family and peer risks.

The findings of the present study that showed a significant neighborhood economic disadvantage effect across family and peer related risks were consistent with previous studies: disadvantaged neighborhood conditions are associated with individual level risks (Hawkins et al., 1998; Leventhal & Brooks-Gunn, 2000). More specific explanation of each sub-hypothesis follows below.

4.1. Economic disadvantage or residential instability will be positively associated with higher levels of family related risks.

Here, there was no association between neighborhood setting indicators and poor parenting risks, while neighborhood economic disadvantage was predictive of the transitional risks experienced by the youth. It is quite likely that the neighborhood structure variables did not detect differences between neighborhoods on the family process variable, as the result is consistent with the findings from previous studies that neighborhood structure was not directly associated with parenting practices (Herrenkohl,
1998; Rankin & Quane, 2002). According to Elliott et al. (1996), many studies have tried to estimate neighborhood effects by focusing narrowly on neighborhood structural variables, and have found relatively weak neighborhood effects in family risks. However, a broader construct that reflects community social functioning may be a more powerful predictor of parenting practices than neighborhood structural composition (Sampson et al., 1997; Elliott et al., 1996).

The significant association between neighborhood economic disadvantage and family transitional risks experienced by the youth can be explained by studies that have shown that neighborhoods with high rates of offenders tend to be characterized by concentrated poverty and high levels of family disruption (e.g., Sampson, 1993). Also, Bronfenbrenner (1989) noted that one type of ecological risk (i.e., economically disadvantaged neighborhood) may well compound the effects of other ecological risks (i.e., unstable family environments), producing multiplicative negative effects on youth. Therefore, many serious and violent juvenile offenders live in both poor family environments and disadvantaged neighborhood (Loeber & Farrington, 1998). Further analyses need to be undertaken in order to more fully understand the association since no prior study examined the relationship systematically.

4.2. Economic disadvantage or residential instability will be positively associated with higher levels of peer related risks.

Here, only economic neighborhood disadvantage was predictive of friendship with delinquent peers and dating relationships with criminally involved youth risks. Also,
the links between neighborhood economic disadvantage and peer related difficulties were in the expected direction. That is, higher levels of neighborhood economic disadvantage were related to higher levels of peer related risks. This result is consistent with previous research in that disadvantaged neighborhood characteristics are related to increased likelihood of affiliation with deviant peers (Elliott et al., 1996; Smith et al., 2001).

Apart from economic factors, the influence of high residential turnover on peer related risks was less pronounced. Consistent with Herrenkohl’s study (1998), the lack of a relationship between residential instability and family and peer related risks suggest that mobility among residents is not indicative of these risks. Rather, youths living in economically impoverished neighborhoods were more likely to experience family and peer related risks in this special population. Therefore, results provided partial support for each hypothesis, and indicated areas of refinement for further examination of the relationship.

In sum, the HLM analyses provides greater assurance that the influence of the neighborhood factors on individual outcomes is not simply a result of individual level characteristics, but an integration of individual and neighborhood-level factors that is important for understanding juvenile offenders, suggested by other studies (e.g., Chung, 2004; Gorman-Smith et al., 2000).
Limitation of the Study

Although there are many valuable findings for professionals working with juvenile offenders and/or conducting research on this population, the study has several limitations that should be noted.

First, the results are limited in their generalizability. The presented results were limited to Caucasian and African American juvenile offenders who were in detention facilities in four counties in the state of Ohio. This study did not include other ethnic categories (e.g., Asian, Native American, Hispanic, and Bi-racial), nor youth who were in other types of court-involved facilities (e.g., youth who were placed in probation and diversion facilities). As a result, the findings should not be generalized beyond Caucasian and African-American juvenile offenders who are currently placed in detention facilities. In addition, the results do not generalize beyond juvenile offenders in four counties of the state of Ohio, as the neighborhood characteristics may vary tremendously in other geographical areas.

Second, zip code is a less used proxy measure for the focal area unit in the study of neighborhood or community environments. Instead, block groups or census tracts more frequently are used as the focal area unit to retrieve the neighborhood information from the National Census data set (Chung, 2004; Elliott et al., 1996; Herrenkohl, 1998). However, zip codes had to be used in the present study because the exact street address that can be linked to block groups or census tracts was not provided. Therefore, it would be beneficial to use block groups and census tracts to measure neighborhood structure.
variables since acquiring more comprehensive neighborhood data information was possible.

Third, due to general usage of the term ‘gender’ in the professional literature of the social sciences, ‘gender’ was utilized to indicate the perceived biological sex of the youth by professionals. However, the definition of gender used in the social science areas is “the behavioral, cultural, or psychological traits typically associated with one sex” (Merriam Webster Dictionary, 2005) and therefore, use of the youth’s own perceived sex designation will be more appropriate when measuring the traits pertaining to gender.

Fourth, offense types of the youth were involved were not controlled in the present study even though studies have shown that there are different types of offense and thereby, can be different risk factors according to the type (Loeber & Farrington, 1998). For instance, according to Loeber and Farrington (1998), there are two types of serious offenses (i.e., violent serious offenses and nonviolent serious offenses). Violent serious offenses are a type of offense charged with homicide, rape (or attempted rape), arson (of an occupied building), kidnapping, robbery (including armed robbery), voluntary manslaughter, or aggravated assault (including weapons offenses and attempted murder), and nonviolent serious offenses are the type charged with felony larceny/theft, auto theft, burglary, carjacking, extortion, forgery and counterfeiting, fraud, embezzlement, drug trafficking, dealing in stolen property, arson (other than of an occupied dwelling), or weapons violation and firearms regulations/statutes. Even though a few studies have linked offense types with risk factors (Chung, 2004; Loeber & Farrington, 1998), there will be differential levels of risks currently experienced by juvenile offenders according
to offense types due to the different characteristics and antecedent risk factors of each offense.

Fifth, all data collected through the GRAD were youth reported data and thus considered only the youth’s perspective. Consequently, to use only this type of data may introduce some measurement error, rater bias, and the problem of dishonest responses even though the use of self-reported data is well supported in the field as a viable method for understanding the complexities of youth problems. Therefore, a multiple perspective report of GRAD domains may improve future studies.

Sixth, this study used a cross-sectional design that examined the impact of neighborhood effects on family and peer related risks experienced by juvenile offenders. Therefore, evidence for causal interpretations of the present findings is weak. Ideally, this model would have been tested with longitudinal data, specifying the temporal ordering of variables.

Seventh, only variables from the 2000 National Census were utilized in the present study as indicators of neighborhood settings. More specifically, economic disadvantage and residential instability variables used in the study measure only neighborhood structural characteristics. However, Chung (2004) argued that neighborhood structural features were indirectly related to individual outcomes via their impacts on community social processes. In addition, several neighborhood studies involving adolescent samples have not found a consistent link between structural disadvantages and either parenting practices or levels of peer relationships, but have indicated a generally consistent link between neighborhood social organization and the
types of relationships that adolescents have with their parents and peers (Chung, 2004; Elliott et al., 1996; Herrenkohl, 1998). For example, collective efficacy (Rankin & Quane, 2002), levels of informal control, social integration and informal networks (Elliott et al., 1996) in neighborhoods as indicators of disadvantaged neighborhood were significantly associated with family related problems, deviant peer group affiliation, involvement with conventional friends, and problem behaviors such as delinquency reported by youth.

Unfortunately, the present study did not actually consider the mechanisms or processes by which neighborhoods influence these risks, even though the effect of neighborhood disadvantage on individual outcomes could be mediated by the organizational structure and culture of the neighborhood. Thus, there is the need to use data from multiple measures in research on neighborhood context.

Finally, the variable of area (i.e., urban, suburban, and rural) is not controlled or examined in the present study. However, the degree of important neighborhood structural indicators (e.g., residential instability) is much higher in urban communities in comparison to suburban or rural communities, and the direct impact of poverty on individual outcomes is more evident in non-metropolitan communities (Osgood & Chambers, 2003). Therefore, further refinements of multi-level modeling test necessitate the consideration of area.

**Implications**

To date, neighborhood studies involving community adolescent samples have not found a consistent link between structural neighborhood disadvantage and either levels of family related risks or peer related risks. However, the present study empirically
examined the relationship between neighborhood settings and individual outcomes with a large sample of adolescent serious offenders even though more theoretical than empirical work has addressed this issue (see Leventhal & Brooks-Gunn, 2003).

Also, no previous studies have examined family related and peer related risks according to subgroups associated with gender, ethnicity, and onset for delinquency group among juvenile offenders. Because delinquent behaviors are more common among males than females and among minority than non-minority, the majority of delinquency research has focused on males or African American adolescents and almost all research has examined the impact of neighborhood factors on delinquency using only African American male samples (Chung, 2004; Herrenkohl, 1998).

However, the present study demonstrated links between disadvantaged neighborhood settings and family and peer related risks in a large comprehensive sample of juvenile offenders that included both male and female offenders, both Caucasian and African-American youth, and two different onset groups for delinquency. As there currently exists little research across race, gender, and delinquency onset subgroups on these risks, the current study has implications for research and treatment programs in the juvenile justice system.

The findings of this study advance our knowledge of the impact of neighborhood structures on family and peer related risks among court-involved youth. That is, the study showed that a neighborhood economic disadvantage indicator is capable of explaining variation in the family and peer related risks experienced by court-involved youth. From
a methodological point of view, this study successfully examined neighborhood structural
effects on lives of juvenile offenders by using Hierarchical Linear Modeling.

While most prior research findings were indistinct in risks and needs experienced
by juvenile offenders to a large extent, this study extends our understanding in subgroup
specific risks and needs among juvenile offenders. That is, the results of this study
suggest that court-involved youth experience different levels of family and peer risks by
subgroups associated with gender, ethnicity, and onset for delinquency group. Therefore,
practitioners, program developers, and policymakers should consider subgroup specific
risk factors when developing treatment strategies and intervention programs.

The existing referral and treatment strategies for juvenile delinquency may have
had limited understanding of these risks and needs in juvenile offenders because of the
failure to integrate subgroup specific differences into practice. Therefore, juvenile justice
professionals should keep in mind that female offenders or Caucasian offenders need to
target reducing family related risks by utilizing family-based programs in order to amend
disrupted family functioning, develop family support systems or enhance appropriate
parental disciplines since female juvenile offenders and Caucasian youth reported higher
risk scores on the family related risks domains in comparison to males or African-
Americans in the current study.

Also, there is a special need to develop and practice health related education
programs with female offenders, as well as social skill training programs for female
offenders, since female offenders reported higher risk scores on poor relationships with
conventional peers and dating relationships with delinquent peers, both of which could
lead to health related problems. The utilization of social skill programs may also be essential for Caucasian juvenile offenders since they reported significantly higher risk scores on poor relationship with conventional peers.

Early onset offenders consistently reported higher risks on peer related risks such as poor relationships with conventional peers and friendship with delinquent peers. Since a significant relationship between early onset offenders and sustained peer related risks exist, practitioners may need to design and implement effective programs that improve social skills and teach resistance to friendships with delinquent youth, such as gang involvement among juvenile offenders, especially for early onset offenders.

For program evaluators, programs developers, and professionals working with juvenile offenders, therefore, the findings of the present study provide evidence and rationale for the subgroup specific intervention or treatment programs among juvenile offenders and at the same time, give professionals working with juvenile offenders more effective guidelines for referrals.

According to the main findings of the present study, neighborhood economic disadvantage appears to be associated with family transitional risks, friendship with delinquent peers, and dating relationships with criminally involved youth among juvenile offenders in the present study. That is, residence in economically disadvantaged neighborhoods seems to be coupled with serious family and peer related risks in this special population. Therefore, clinicians and educators also need to consider how the neighborhood economic characteristics serve to facilitate or reduce family and peer related risks (Chung, 2004) when they work with juvenile offenders.
In this context, community based treatment programs that try to reduce the known risk factors within the family and peer contexts (Chung, 2004) are more necessary for juvenile offenders residing in economically disadvantaged neighborhoods. For example, Multisystemic Treatment (MST), which is a comprehensive family and community-based therapeutic model that addresses the multifaceted needs of juvenile offenders who exhibit serious antisocial behaviors, is one of representative community based programs (Henggeler et al., 1996). This treatment approach focuses on the interrelations among risk factors in several contexts and tries to promote family strengths (Henggeler et al., 1996).

In light of the increasing dissemination of MST, Curtis, Ronan and Borduin (2004) examined the effectiveness of MST by quantifying the magnitude of effects across all eligible MST outcome studies with 7 primary outcome studies and 4 secondary studies involving a total of 708 participants. Results indicated that across different presenting problems and samples, youth and their families treated with MST were functioning better than other youth and families treated alternatively. In addition, MST demonstrated larger effects on measures of family relations than on measures of individual adjustment or peer relations. However, as this and other studies have not examined the effectiveness of MST in different neighborhood settings, further evaluation of such treatment methods in light of the present study’s findings will be a very interesting direction to study.

Therefore, comprehensive examination of family and peer related risks/needs in broader contexts such as neighborhood settings among court-involved youth help professionals working with these youth make the most appropriate treatment recommendations.
Recommendations for Future Research

The findings from the current study provide numerous directions for further research of the subgroup specific risks and needs and the impact of neighborhood structural settings on these risks in court-involved youth. The significant effect of neighborhood economic disadvantage on family and peer related risks, as well as significantly different levels of family and peer related risks according to subgroups associated with gender, ethnicity, and onset for delinquency group leads to a need to examine the relations of other types of risks and needs frequently experienced by court involved youth. For example, do the significant neighborhood settings impact and subgroup differences exist with regard to risks associated with mental health, educational, or substance abuse among other variables measure by the GRAD?

In the present study, the impact of neighborhood setting on family and peer related risks currently experienced by juvenile offenders were directly examined. More recently, however, several studies examined the neighborhood setting variables along with family or peer related risk factors to explain delinquency related outcomes (Chung, 2004; Gorman-Smith et al., 2003) such as violent behaviors, violent or non-violent delinquency, and externalizing problems. That is, delinquency related outcomes are predicted by the disadvantaged neighborhood settings via family or peer related factors. Therefore, future research is needed to study the degree of delinquency or recidivism explained by neighborhood settings through family or peer related factors.

Gender and ethnic differences in family and peer related risks found in the present study can be traced at least in part to other factors closely correlated with policing bias, as
such partiality tends to be related to more frequent arrests of certain type of offense for female and a higher arrest rate for minority youth (MacDonald & Cheseny-Lind, 2001; Snyder, 2001). Studies have shown that females are more likely to be arrested for status and non-violent offenses such as running away and larceny, while males are more often arrested for violent crimes such as robbery and for drug offenses (MacDonald & Cheseny-Lind, 2001; Snyder, 2001). These status offense or non-violent offense types are inherently more related to mental health or interpersonal issues (Gavazzi et al., 2003). Therefore, considering the policing bias in examining interpersonal risks (e.g., family and peer related risks) experienced by court-involved youth according to gender or ethnic group needs to be performed in future research.

Although the present study does not include protective factors, it is important to consider these factors in studying juvenile offenders and thereby, in designing intervention or treatment programs. Protective factors such as involvement in religious organizations (Chard-Wierschem, 1998) can lower severity and duration of the current risk levels experienced by court-involved youth, for instance. Furthermore, intervention programs need to consist of multiple components to increase multiple protective factors and decrease multiple risk factors for optimal effectiveness in treating juvenile offenders (Kim, 2003). Therefore, devoting additional attention to research in this area is necessary in order to improve the efficacy of the programs.

Also, multiple informants’ reports of the GRAD family and peer related risks may also improve future studies since the perspectives of primary caregivers or professionals working with these youth, in addition to the youth themselves, could bolster the power of
the study and improve understanding of these risks and needs.

Lastly, future research needs to replicate the present study with a longitudinal design using a representative sample in terms of age, ethnicity and area to achieve greater generalizability since causal relationships among neighborhood effects and family and peer related risks could not be drawn from the cross-sectional data used in this dissertation. This approach is necessary to understand more clearly the relationship between neighborhood structural settings and family and peer related risks in this special population. Also, longitudinal data enable researchers to explore and assess the sequence of events.

**Conclusion**

This study is the first to examine the impact of neighborhood structure settings on family and peer related risks with such a large sample size of juvenile offenders in detention facilities, concurrently considering gender, ethnicity, and onset for delinquency group. A unique aspect of the study is that it endeavored to examine the proposed relationship by using a large sample of juvenile offenders. Further, the use of most recent National Census data (the 2000 National Census data) affords a reliable and valid measure of neighborhood structural settings in which the youth currently resided.

Based on the results of this study, there appears to be subgroup specific levels of family and peer related risks and the significant impact of neighborhood economic disadvantage on family and peer related risks, even though residential instability was not predictive of these risks. Continuing to examine other types of risks and needs beyond
family and peer related risks experienced by juvenile offenders is very much needed in order to improve the effectiveness of treatment programs and develop subgroup specific treatment programs in the juvenile justice systems. Also, including other neighborhood indicators is necessary to understand risks and needs experienced by juvenile offenders more clearly.
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APPENDICES
APPENDIX A

FAMILY/PARENTING GRAD DOMAIN (17 ITEMS)
Responses for the items:

- **No evidence/No concern (0)**
- **Some evidence/Some concern (1)**
- **Strong evidence/Major concern (2)**

1. Are there any adults in the home in conflict with this youth?
2. Do adults in the home have difficulty keeping track of this youth?
3. Are family members too critical of this youth?
4. Is this youth not welcome to stay in the family home?
5. Is this youth at-risk of harm or in eminent physical danger if he/she remains in the home?
6. Do adults have to come down hard on this youth (i.e. harsh punishment)?
7. Do physical altercations happen between this youth and adults in the home because of the youth’s misbehavior?
8. Do adults in the home get into verbal shouting matches with this youth?
9. Does the youth become more uncontrollable after he/she has been punished?
10. Do family members seem to take extra care not to upset this youth?
11. Do adults in the home tip-toe around this youth in order not to upset him/her?
12. Is there is too much conflict or fighting between this youth and his/her siblings?
13. Do adults in the home find it easier to do things themselves instead of asking the youth to do them?
14. Is the quality of the youth’s relationship with his/her mother/primary female caregiver poor or non-existent?
15. Is the quality of the youth’s relationship with the father/primary male caregiver poor or non-existent?
16. Is the family experiencing financial hardship?
17. Is the family at-risk for homelessness?
APPENDIX B

PEER GRAD DOMAIN (15 ITEMS)
Responses for the items:

- No evidence/No concern (0)
- Some evidence/Some concern (1)
- Strong evidence/Major concern (2)

1. Does the youth not have any SAME sex friends?
2. Does the youth not have a best friend or confidante?
3. Does the youth prefer to hang around with friends who are older than themselves (at least two years)?
4. Are the youth’s dating relationships with significantly older/younger persons (by four or more years)?
5. Does the youth get into trouble (at school, with the police, etc.) with the persons he/she dates?
6. Does the youth have frequent conflict with the people he/she dates?
7. Does the youth associate with other young people who are known to be gang involved or are loosely associated with a gang?
8. Does the youth report that he/she is gang involved or has been identified as being gang involved by school, law enforcement or family members?
9. Does the youth have contact with other young persons who get into trouble with the law?
10. Does the youth have longstanding arguments with other youth?
11. Does the youth frequently lie, gossip, and/or spreads rumors about other youth?
12. Is the youth cruel or does he/she bully other youth?
13. Does the youth refuse to bring friends home to meet adult family members?
14. Do other youth frequently lie, gossip, and/or spread rumors about this youth?
15. Do other youth bully or are they cruel to this youth?
Youth Demographics

1. Gender
   a. Male
   b. Female

2. Youth month of birth (pull down menu of months; January-December)

3. Ethnicity of youth
   a. Asian or Pacific Islander
   b. Bi-Racial
   c. Black, Non-Hispanic
   d. Hispanic
   e. Native American
   f. Other
   g. White, Non-Hispanic

4. Zip Code: ________________ (type in)

5. County Code (drop down of counties alphabetically/numerically assigned 1-88)

6. Does the youth have any children?
   a. Yes
   b. No

7. Name of school: _______________________________ (type in complete name of school)
8. Name of last school attended: _______________________________ (type in complete name of school)

9. Last grade completed ______(drop down menu 1-12)

10. Cumulative Grade Point average _______ (type in three digits)

11. School Type
   a. Alternative Education
   b. Charter School
   c. Home School
   d. Other
   e. Private
   f. Public (mainstream track)
   g. Public (Special education track)
   h. Residential
   i. Vocational

12. Public School District: ___________________ (type in complete name of district)

13. Does this youth receive any of the following services in their current school?
   a. 504 Plan
   b. Behavioral Plan
   c. Court does not have this information
   d. Deaf-Blind
   e. Deafness/Hearing impaired
   f. Emotional Disturbance/SBH
   g. Gifted/Talented Services
   h. Individual Education Plan/IEP
   i. Intervention Plan
j. Limited English proficiency/LEP
k. Multiple Disabilities
l. No. This youth does not receive any services in the school
m. School does not have this information
n. Special Education (Inclusion model)
o. Special Education involving inclusion and pull-out models
p. Special Education (Pull-out Model)
q. Speech/Language Impairment
r. Youth not in school long enough to assess
s. _____________________(open text box to 300 characters for note)

14. Household composition
   a. Foster family
   b. Grandparents
   c. Married, two-parent biological
   d. Other
   e. Same sex partners
   f. Single Father headed with live-in girlfriend
   g. Single Mother headed with live-in boyfriend
   h. Single-parent headed (mother)
   i. Single-parent headed (father)
   j. Step-Family

15. Total number of siblings: ______ (type in number)

16. Total number of persons living in the family home: _____ (type in number)

17. Total number of arrests among people in the household: ______(type in number)
18. Annual Household Income
   a. Not assessed
   b. $0-$4,999
   c. $5,000-$14,999
   d. $15,000-$24,999
   e. $25,000-$34,999
   f. $35,000-$44,999
   g. $45,000-$54,999
   h. $55,000-$99,999
   i. $100,000 or more

19. Does this youth/family participate in the free/reduced lunch program?
   a. Yes
   b. No
   c. Court does not have this information

20. Does the youth/family participate in any of the following assistance programs?
   a. Child Care Subsidies
   b. Children’s Health Insurance
   c. Court unable to obtain this information
   d. Family does not receive assistance
   e. Food Stamps
   f. Medicaid
   g. Temporary Assistance to Needy Families (TANF)

21. Primary language spoken in the home
   a. English
   b. Spanish
   c. Other
22. Does the primary caregiver speak/comprehend the English language
   a. Yes
   b. No
   c. School/Court does not have this information

23. Does the court/school encourage the use of an interpreter for this family
   a. Yes
   b. No

24. Does the court/school **require** parent volunteerism and/or participation in this youth’s school/educational setting
   a. Yes
   b. No
   c. School/Court does not have this information

25. Does the court/school **strongly encourage** parent volunteerism and/or participation in this youth’s school/educational setting
   a. Yes
   b. No
   c. School/Court does not have this information

26. Does this youth’s primary caregiver volunteer his/her time and/or services in the schools/educational setting?
   a. Yes
   b. No

27. If yes, what types of activities does the primary caregiver participate in?
   a. Boosters/Sports
   b. Classroom Aid
   c. Monitor/study hall, lunchroom, hallways, etc.
   d. Office/Clerical
   e. PTO/PTA
   f. This parent does not participate in any activities
APPENDIX D

TRANSITIONAL RISKS
TRANSITIONAL RISKS

1. The primary parent in the home has remarried in the last year?
   a. Yes
   b. No

2. There has been a divorce in the household in the last year?
   a. Yes
   b. No

3. The household has gained a new family member in the last year (birth, adoption, moving in/out)?
   a. Yes
   b. No

4. One or both biological parents are incarcerated?
   a. Yes
   b. No

5. One or both biological parents are deceased?
   a. Yes
   b. No

6. The whereabouts of one or both biological parents are unknown?
   a. Yes
   b. No

7. An immediate family member has a recorded offense history?
   a. Yes
   b. No
8. In the last year the youth has experienced the death of a close family member?
   a. Yes
   b. No

9. The youth has changed schools in the last year?
   a. Yes
   b. No

10. The youth has moved to a new home or neighborhood in the last year?
    a. Yes
    b. No

11. The youth has been in the custody of a children’s services bureau?
    a. Yes
    b. No
APPENDIX E

FACTOR STRUCTURE OF FAMILY/PARENTING GRAD DOMAIN
## Factor Structure of Family Risk

### Family/Parenting

<table>
<thead>
<tr>
<th>Items</th>
<th>Family support</th>
<th>Poor discipline</th>
<th>Tip-toeing</th>
<th>Family Conflict</th>
<th>Economic hardship</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Adults in the home are in conflict with this youth</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>2. Adults have difficulty keeping track of this youth</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Family members to critical of this youth</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. This youth isn’t welcome to stay in the home</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. This youth at-risk of harm or in physical danger</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Adults have to come down hard on this youth</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Physical altercations happen this youth and adults</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Adults get into verbal shouting matches with this youth</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. The youth becomes more uncontrollable after he/she has been punished</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Family members take extra care not to upset this youth</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. Adults tip-toe around this youth</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. Too much conflict between this youth and his/her siblings</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>13. Adults find it easier to do things themselves instead of asking the youth to do them</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>14. The youth’s relationship with his/her mother poor</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15. Youth’s relationship with his/her father poor or non-existent</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>16. The family is experiencing financial hardship</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>17. The family at-risk for homelessness</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>
APPENDIX F

FACTOR STRUCTURE OF PEER GRAD DOMAIN
## FACTOR STRUCTURE OF PEER RISK

<table>
<thead>
<tr>
<th>Items</th>
<th>PEER</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Conventional Peers</td>
</tr>
<tr>
<td>1. Not have any SAME sex friends</td>
<td>X</td>
</tr>
<tr>
<td>2. Not have a best friend or confidante</td>
<td>X</td>
</tr>
<tr>
<td>3. Hangs around with friends who are older than themselves (at least two years)</td>
<td></td>
</tr>
<tr>
<td>4. Dating relationships significantly older/younger (by four or more years)</td>
<td></td>
</tr>
<tr>
<td>5. Gets into trouble with the persons they date</td>
<td></td>
</tr>
<tr>
<td>6. Frequent conflict with the people they date</td>
<td></td>
</tr>
<tr>
<td>7. Associates with other young people who are known to be gang involved</td>
<td></td>
</tr>
<tr>
<td>8. Gang involved or has been identified as being gang involved by school</td>
<td></td>
</tr>
<tr>
<td>9. Has contact with other young persons who get into trouble with the law</td>
<td></td>
</tr>
<tr>
<td>10. Have longstanding arguments with other youth</td>
<td></td>
</tr>
<tr>
<td>11. Frequently lies, gossips, and/or spreads rumors about other youth</td>
<td></td>
</tr>
<tr>
<td>12. Is cruel and/or bullies other youth</td>
<td></td>
</tr>
<tr>
<td>13. Refuse to bring friends home to meet adult family members</td>
<td></td>
</tr>
<tr>
<td>14. Lies, gossips, and rumors spread about this youth</td>
<td></td>
</tr>
<tr>
<td>15. This youth is target of bullying and/or cruelty</td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX G

DESCRIPTIVE STATISTICS FOR STUDY VARIABLES
### DESCRIPTIVE STATISTICS FOR LEVEL 1 STUDY VARIABLES (N = 1086 YOUTH REPORTS)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>SD</th>
<th>Min</th>
<th>Max</th>
<th>Range</th>
<th>Kurtosis*</th>
<th>Skewness**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current age</td>
<td>15.30</td>
<td>0.04</td>
<td>13</td>
<td>17</td>
<td>4</td>
<td>1.00</td>
<td>-.23</td>
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<tr>
<td>Gender</td>
<td>.65</td>
<td>x</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Ethnicity</td>
<td>.63</td>
<td>x</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Age of onset</td>
<td>x</td>
<td>x</td>
<td>1</td>
<td>5</td>
<td>4</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Composition</td>
<td>.79</td>
<td>x</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>x</td>
<td>x</td>
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<tr>
<td>Transitional risks</td>
<td>2.78</td>
<td>1.70</td>
<td>0</td>
<td>11</td>
<td>11</td>
<td>.20</td>
<td>.42</td>
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<tr>
<td>Family/Parenting related risks</td>
<td>8.85</td>
<td>5.93</td>
<td>0</td>
<td>27</td>
<td>27</td>
<td>-.50</td>
<td>.53</td>
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<tr>
<td>Lack of family support</td>
<td>1.94</td>
<td>1.96</td>
<td>0</td>
<td>6</td>
<td>6</td>
<td>-.72</td>
<td>.71</td>
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<tr>
<td>Economic hardship</td>
<td>2.42</td>
<td>2.03</td>
<td>0</td>
<td>8</td>
<td>8</td>
<td>-.50</td>
<td>.60</td>
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<tr>
<td>Family conflict</td>
<td>1.68</td>
<td>1.43</td>
<td>0</td>
<td>6</td>
<td>6</td>
<td>-.35</td>
<td>.56</td>
</tr>
<tr>
<td>Tip-toeing</td>
<td>1.50</td>
<td>1.59</td>
<td>0</td>
<td>8</td>
<td>8</td>
<td>1.28</td>
<td>1.20</td>
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<tr>
<td>Poor discipline</td>
<td>1.30</td>
<td>1.26</td>
<td>0</td>
<td>6</td>
<td>6</td>
<td>.42</td>
<td>.89</td>
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<tr>
<td>Conventional peers</td>
<td>3.45</td>
<td>2.74</td>
<td>0</td>
<td>15</td>
<td>15</td>
<td>.61</td>
<td>.87</td>
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<tr>
<td>Delinquent youth</td>
<td>2.55</td>
<td>1.77</td>
<td>0</td>
<td>8</td>
<td>8</td>
<td>-.01</td>
<td>.60</td>
</tr>
<tr>
<td>Dating relationship</td>
<td>1.14</td>
<td>1.29</td>
<td>0</td>
<td>6</td>
<td>6</td>
<td>.71</td>
<td>1.11</td>
</tr>
</tbody>
</table>

*Kurtosis SE = .15, **Skewness SE = .07