

Parenting Practices as a Mediating Factor between Neighborhood Disadvantage and Delinquency

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Abstract

The present study examines the mediating role of parenting practices between neighborhood disadvantage and adolescent delinquency by analyzing data from the first wave of the National Longitudinal Study of Adolescent Health (ADD-Health). The results showed that neighborhood disadvantage, parenting practices, adolescents' low self-control, and delinquency are significantly interrelated with each other. However, the significant effect of neighborhood disadvantage on delinquency at one time became 'insignificant' after four variables of parenting practices are controlled. Furthermore, parenting practices maintained their significant effects on delinquency even after controlling for adolescents' low self-control and other developmental outcomes. These findings suggest that not only may parenting practices mediate the relationship between neighborhood disadvantage and delinquency, but also parenting practices may have a direct independent effect on delinquency. The present study provides important implications for the development of delinquency prevention programs focused on improving parenting skills.

Keywords

Parenting Practices, Neighborhoods, Delinquency, Mediation

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INTRODUCTION

A large volume of studies have suggested ‘parenting’ as a crucial source of influence among adolescents, showing its relationships with youths’ various developmental outcomes, such as academic performance (e.g., Anunola, Stattin, & Nurmi, 2000; Juang & Silbereisen, 2002; Park & Bauer, 2002), self-esteem (e.g., Bulanda & Majumdar, 2008), mental health (e.g., Aquilino & Supple, 2001), substance abuse (e.g., Shakya, Christakis, & Fowler, 2012), and delinquency (e.g., Mowen & Schroeder, 2015; Schroeder & Mowen, 2014; Wright & Cullen, 2001). Also, numerous empirical studies show that neighborhood structural characteristics affect youth delinquency through social disorganization or ineffective collective efficacy (e.g., Bellair, 1997; Bernburg & Thorlindsson, 2007; Elliott, Wilson, Huizinga, Sampson, Elliott, & Rankin, 1996; Fagan & Wright, 2012; Morenoff, Sampson, & Raudenbush, 2001; Sampson, 2006; Sampson & Grove, 1989; Sampson, Morenoff, & Raudenbush, 2005; Sampson, Raudenbush, & Earls, 1997; Zimmerman, 2010). Thus, it is evident that youth delinquency is influenced simultaneously by both parenting practices within the family and neighborhood characteristics where adolescents and families are embedded.

However, parenting and the neighborhood would not affect delinquency independently in isolation from each other. Since family dynamics occur within the context of neighborhoods, ‘parenting practices’ would be a function of neighborhood structural characteristics. Several studies have reported that disadvantageous structural characteristics of neighborhoods negatively affect parenting, including inconsistent and harsh parenting practices, low expectations, poor care and control, and lack of warmth (e.g., Ardititi, Burton, & Neeves-Botelho, 2010; Kerstenburg, Brooks-Gunn, & Duncan, 1994; Furstenburg, 1993; Kohen, Dahiten, Leventhal, & McIntosh, 2008; Taylor, 2000; Vieno, Nation, Perkins, Pastore, & Santinello, 2010; Zuberi, 2016). Such findings may suggest a mediating role of parenting practices between neighborhood and adolescents’ delinquency.

Also, studies have reported that parenting is significantly related to youth’ level of self-control that is a significant predictor of juvenile delinquency (e.g., Hay, 2001; Muftic & Updegrave, 2018; Perrone, Sullivan, Pratt, & Margaryan,

2004). Therefore, high delinquency involvement among adolescents in more disadvantaged neighborhoods may be partially due to parents' inability to exercise effective parenting practices which, in turn, leads to adolescents' development of low self-control.

A handful of empirical studies suggest that parenting mediates the relationship between neighborhood structural characteristics and delinquency (Beyer, Bates, Petit, & Dodge, 2003; Chung & Steinburg, 2006; Kohen, et. al, 2008; Leventhal & Brooks-Gunn, 2000; Mrug & Windle, 2009; Rankin & Quane, 2002; Sampson & Laub, 1994 & 2004; Tolan, Gorman-Smith, & Henry, 2003; Vieno, et al., 2010). Nevertheless, the generalizability of the findings is somewhat limited due to the fact that each of the studies used a small selective sample, such as African-American youths, male youths from urban cities, serious offenders, and so on.

Addressing the limitations of previous research, the present study aims to improve on the literature regarding the effects of neighborhoods and parenting on juvenile delinquency, by examining the importance of parenting practices as a more proximal and immediate mediating factor between neighborhood structure and youth delinquency with a nationally representative sample of adolescents and their neighborhoods.

THEORETICAL BACKGROUNDS

Social Disorganization and Collective Efficacy

The foundation of social disorganization theory can be traced back to the work of Shaw and McKay (1942 & 1969), which examined the effects on delinquency of social structural characteristics of the area called "zone in transition," where concentrations of poverty, a high frequency of people moving in and out of this area, and higher numbers of ethnic minorities residing in this zone disrupted the social cohesion and subsequently weakened the community's ability to exercise informal social controls, resulting in 'social disorganization' (Shaw & McKay, 1942 & 1969).

Following in Shaw and McKay (1942)'s footsteps, numerous researchers have tested the theory by examining the effects of various variables of neighborhood structural characteristics on delinquency. Early research on the theory had focused

mostly on establishing a relationship between the two by utilizing aggregated neighborhood-level data, and reported that certain structural characteristics of neighborhoods (e.g., poverty rates, mobility rates, racial heterogeneity index, and etc.) are associated with high delinquency rates (Bursik, 1984, 1986; Bursik & Webb, 1982; Gordon, 1967; Kornhauser, 1978; Rosen & Turner, 1967; Schuerman & Koblin, 1986).

Later, several researchers tried to find a mechanism explaining how neighborhood structures affect delinquency. Sampson and Grove's (1989) work investigated how exogenous variables defining community structure affect social controls such as friendship and kinship networks along with unsupervised peer groups and local organizational participation. Their findings suggest that low friendship networks and high levels of unsupervised peer groups result in higher rates of victimization. In addition, when family disruption and ethnic heterogeneity increase, the level of adolescent street-corner groups also increases (Sampson & Groves, 1989).

After that, Sampson, Raudenbush, and Earls (1997) proposed the concept of "collective efficacy" to explain a mechanism of how neighborhood-level social structures affect delinquency rates. They defined collective efficacy as "the linkage of mutual trust and the willingness to intervene for the common good..." (Sampson et al., 1997, p. 919). Utilizing a more advanced multi-level approach, researchers attempted to identify and examine various indicators of collective efficacy and reported that the effect of neighborhood structures (e.g., concentrated disadvantage, heterogeneity, residential instability, family disruption, and population size or density) on delinquency is intervened by weakened collective efficacy or ineffective informal social control of neighborhoods (Bellair, 1997; Bernburg & Thorlindsson, 2007; Elliott, et. al., 1996; Fagan & Wright, 2012; Morenoff, et al., 2001; Sampson, 2006; Sampson, et. al., 2005; Sampson, et. al., 1997; Zimmerman, 2010). For example, Morenoff et al. (2001) reported that measures of local organizations, voluntary associations, and friend/kinship networks inhibited delinquency to the extent that they facilitated the collective efficacy of residents.

Despite recent researchers' successful attempts in establishing neighborhood-level social disorganization/collective efficacy as an intervening element between neighborhood structure and youth delinquency (Bernburg & Thorlindsson, 2007; Elliott, et al., 1996; Fagan & Wright, 2012; Osgood & Anderson, 2004; Sampson

et al., 2005), the effect of neighborhood-level social disorganization or collective efficacy on adolescents may be somewhat 'distal' due to the fact that adolescents are simultaneously imbedded in other micro-level socialization units within neighborhoods, such as family and peer groups (Cummings, Davis, & Campbell, 2002). Thus, research on social disorganization/collective efficacy could be expanded further via incorporating more proximal social units or processes that transmit the effects of neighborhood structure on adolescent delinquency. Probably, as an important socialization unit, family or parenting practices would be the best candidate.

Parenting – Social Control Theory and Self-control Theory

Parenting has been a key construct in many criminological theories. Especially, the social control theory and self-control theory emphasize the importance of parenting on adolescent's delinquency involvement. Hirschi's (1969) social control theory proposes that individual's strong social bond (consisting of attachment, commitment, involvement, and belief) functions as an important inhibition mechanism against deviant behaviors. Adolescents' strong attachment to parents may allow parents to become psychologically present when adolescents are tempted, performing a role of a shield against deviant behaviors (Wright & Cullen, 2001). Many empirical studies showed that adolescents' parental attachment is inversely related with their delinquency involvement (e.g., Parker & Benson, 2004; Rankin & Kern, 1994; Sokol-Katz, Dunham, & Zimmerman, 1997; Wright & Cullen, 2001). Also, the General Theory of Crime (or self-control theory) stresses the importance of parenting, proposing that parenting is the main source of children's 'low self-control', which includes traits that cause antisocial behaviors including crime and delinquency. Gottfredson and Hirschi (1990) claim that children fail to develop self-control, resulting in low self-control, if their parents perform inadequate parenting practices such as lack of attachment, supervision, and punishment.

However, despite the fact that Gottfredson and Hirschi's (1990) self-control theory itself treats parenting as an important exogenous variable for the development of self-control, most previous empirical research on the theory focused on identifying indicators of low self-control and on examining its effects on various behavioral outcomes, rather than paying attention to the examination of

the relationship between parenting and self-control (Perrone et. al., 2004; Cullen et al., 2014). A handful of empirical studies examined the relationship between parenting and self-control, and supported Gottfredson and Hirschi's claim. For example, Perrone et. al. (2004) analyzed the relationships among parental efficacy, self-control, and delinquency by using a nationally representative sample of youth and reported that parental efficacy (a combined measure with attachment, effectiveness in recognizing and responding to problematic behavior) is a significant predictor of youths' level of self control, which 'partially' mediate the effects of parental efficacy on delinquency.

Parenting – Styles

The socialization efforts from parents play an important role in the child's development of conscience (e.g., guilt and empathy), especially since the child must gain the ability to conform to societal standards and restrain antisocial or destructive impulses (Kochanska, 1993). Kochanska's work (1991, 1993, 1995, 1997) found that emotional arousal and temperament was key to the development of conscience. The optimal level of arousal, which is needed for moral socialization, is best realized through the appropriate interaction between the child's temperament and the type of parenting the child receives (Frick & Morris, 2004). Thus, a child with a fearful temperament requires parenting to be gentle, consistent, and non-power-assertive because harsh and power-assertive approaches to parenting will impair conscience development (Kochanska, 1995, 1997).

In the case of a fearless child, a mutual interpersonal orientation between parent and child is especially important (Frick & Morris, 2004) because temperament moderates the association between parenting and conscience development in the child. Therefore, children who lack fearful inhibitions or possess callous unemotional (CU) traits may exhibit undue child effects that disrupt parental attempts at socialization (Frick & Morris, 2004). Although certain temperamental styles make socialization tasks more difficult, such tasks are not rendered impossible because the quality of parental socialization may prove to be more important in determining whether the child will avoid developing an antisocial interpersonal style (Frick, Kimonis, Dandreaux, & Farell, 2003; Frick & Morris, 2004; see also, Larsson, Viding, & Plomin, 2008, p.209).

Perhaps the most influential research on parenting styles comes from the work

of Diana Baumrind (1966, 1991). Baumrind's findings reveal that parents often differ on four important dimensions: (1) Expressions of warmth, (2) Strategies for discipline, (3) Communication, and (4) Expectations for maturity (Baumrind, 1966). Based on these four dimensions, Baumrind (1991) developed four distinct parenting styles that are present prior to adolescence. Permissive parents are more responsive than they are demanding, they are lax on discipline, they do not require mature behavior, and they nurture the child but avoid confrontation. Authoritative parents are demanding yet responsive and their disciplinary methods are supportive rather than punitive. Additionally, authoritative parents set limits and enforce rules; however, they listen to the child and do not restrict the child's autonomy. Also, authoritative parents communicate well, explain the reasons for the discipline, and usually forgive rather than resort to punishment. Conversely, authoritarian parents are demanding, obedience-oriented, set high standards for behavior, strictly punish misconduct, restrict the child's autonomy, and are not responsive. Finally, rejecting-neglecting parents are disengaged from their children and are neither demanding nor responsive. Instead, rejecting-neglecting parents do not provide structure, are not supportive, and neglect their childrearing responsibilities (Baumrind, 1966, 1991).

Authoritative parenting has proven to be successful in preventing children from developing drug use problems as well as generating competence within the child (Baumrind, 1991). As a result, authoritative parenting is a favorable form because it engages the parents so that they are committed with high levels of responsiveness and "demandingness," which creates a healthy balance for the child (Baumrind, 1991, p.62). As such, authoritative parenting could easily be associated with "positive parenting," which has previously been measured with items including parental involvement, positive reinforcement, and consistent discipline (see Frick & Morris, 2004; Shelton, Frick, & Wootton, 1996).

When broader parenting variables (e.g., parental acceptance-involvement, psychological autonomy granted to the child, use of fair discipline, and use of non-physical discipline), which are linked to Baumrind's authoritative parenting style, were included in addition to monitoring-discipline, it was found that the additional parenting factors tripled the amount of variance explained (Hay, 2001). Thus, the context and manner in which parental control is administered is important beyond mere parental monitoring and discipline (Hay, 2001, p.725).

Nevertheless, other studies regarding the effects of parenting and self-control on antisocial behavior among adolescents have conflicting findings. For example, a study found that parental support (i.e., whether the parents are loving, responsive, and involved) failed to reduce antisocial behavior among adolescents who are low in consideration of others (Jones, Cauffman, & Piquero, 2007). This finding is not consistent with previous research (Hay, 2001) that suggests authoritative parenting styles are perhaps more effective in reducing involvement in delinquent acts. Future research should endeavor to incorporate better measures of parenting styles.

Disadvantaged Neighborhoods and Parenting

Elliott Currie (1998) argues that neighborhood structural factors (e.g., poverty, inequality, and social exclusion) influence youth violence indirectly through their impact on the close-in institutions of the family and community by weakening the ability of these institutions to exert informal social controls and provide appropriate levels of social support (see also Colvin & Pauly, 1983; Shihadeh & Steffensmier, 1994). Informal social control, which is generally exercised by significant others, such as families, friends, neighbors, and community networks, involves any sanctions and constraints (i.e., beyond legal, formal, or bureaucratic) used in an effort to control another's behavior, so he or she may conform to social norms (Cullen, 1994).

Cullen (1994) emphasized the importance of family as a main source of social support. Social support refers to perceived or actual instrumental provisions supplied by the community, social networks, and confiding partners. Cullen (1994) argued that as the support a family provides increases, the less likely a youth will engage in crime. Thus, parental expressive support acts as a protective factor capable of reducing the risk of delinquent or criminal involvement (Cullen, 1994). However, family does not exist in a vacuum. Currie (1985) stresses that families are embedded in a larger social context; therefore, what occurs within the family unit cannot be fully separated from forces that are affecting it from the outside. Meta-analytic work also shows that a lack of parental support increases delinquent outcomes, which reveals that child-parent involvement (e.g., intimate communication, sharing activities, and seeking help) is very important (Loeber & Stouthamer-Loeber, 1986). Indeed, Cullen (1994) and Hagan (1994) state that parents are the best source of support; however, high-risk environments may

hinder parents, who strive to provide nurturance, safety, and guidance, from obtaining the opportunities to do so. Currie's (1998) review of the research highlights the following findings: "(1) extreme deprivation inhibits children's intellectual development; (2) extreme deprivation breeds violence by encouraging child abuse and neglect; (3) extreme poverty creates multiple stresses that undermine parents' ability to raise children caringly and effectively; (4) poverty breeds crime by undermining parents' ability to monitor and supervise their children" (p. 135-139).

Thus, when disadvantaged families are living in communities suffering from capital disinvestment processes, the lack of resources and experiences with emotional stress diminish those families' capacity to provide human and social capital (i.e., skills, capabilities, and knowledge acquired by individuals through training, education, and socially structured relationships with individuals and groups) to their children via family processes (Hagan, 1994; Jocson & McLoyd, 2015; Minor, 1993). Indeed, parents, especially mothers, responding to high levels of distress due to chronic economic disadvantage, exhibit harsh disciplinary behavior toward their children that is inconsistent and lacks care, control, and warmth (Arditti et al., 2010; Colvin & Pauly, 1983). Failed socialization efforts by the family reduce or weaken informal social controls and the capacity to provide social support networks for youth (Cullen, 1994; Currie, 1998). Sampson and Laub (1993) suggest "structural context mediated by informal family and school social controls explains delinquency in childhood and adolescence" (p. 7). The weakening of family's ability to instill informal social controls through discipline, supervision, and attachment create the conditions necessary for youth to become involved in delinquency (Sampson & Laub, 1993).

LIMITATIONS OF PREVIOUS RESEARCH AND THE PRESENT STUDY

Previous research on neighborhood effects on delinquency utilized social disorganization theory and tended to focus on neighborhood-level informal social control or collective efficacy as an intervening variable. Relatively few studies have examined the importance of family-level parenting practices as a potential

mediating variable between neighborhood structural characteristics and adolescent delinquency (Cuellar, Jones, & Sterrett, 2015). Only a handful studies investigated mediating effect of parenting between neighborhood disadvantage and delinquency outcomes (e.g., Chung & Steinberg, 2006; Mrug & Windle, 2009; Rankin & Quane, 2002; Tolan et al., 2003). Rankin and Quane (2002) found that increases in community collective efficacy were associated with improved parental supervision, fewer deviant peer affiliations, and lower levels of youthful problem behaviors. Thus, parenting influences mediated the link between collective efficacy and deviance. Similarly, Tolan and colleagues (2003) used longitudinal data to determine if parenting practices mediated the relationship between neighborhood effects on gang affiliation and violent offending. They found that ineffective parenting mediated the relationship between neighborhood structural characteristics and gang membership (Tolan et al., 2003). Chung and Steinberg (2006) also found that neighborhood disorganization was indirectly related to higher levels of juvenile offending by way of ineffective parenting practices and exposure to deviant peer affiliations. Additionally, Mrug and Windle (2009) reported that the effect of neighborhood disadvantage on children's externalizing behavior is fully mediated by neighborhood social process and parenting qualities. Those studies have provided very important insights, however, their findings may suffer from a certain degree of generalizability issue mainly due to the use of a limited sample, such as African-American youths (e.g., Mrug & Windle, 2009; Rankin & Quane, 2002), urban males (e.g., Tolan et al. 2003), or serious juvenile offenders from urban cities (e.g., Chung & Steinburg, 2006). Thus, the findings need to be cautiously interpreted.

The current study aims to improve on previous research by examining a mediating effect of parenting practices between neighborhood characteristics and juvenile delinquency with a nationally representative sample of adolescents and their neighborhoods from the National Longitudinal Study of Adolescent Health (Add-Health study). More specifically, this investigation examines whether or not parenting practices (1) are affected by neighborhood structural characteristics, (2) more importantly, mediate the effects of neighborhood disadvantage on delinquency, and (3) have independent effects on delinquency even after controlling for low self-control and other developmental outcomes.

METHOD

Data

The present study utilized information from ‘in-home interviews’ during Wave-1 (1994-1995) of the National Longitudinal Study of Adolescents (Add-Health). Add-Health is one of the most comprehensive longitudinal study of adolescents which consists of information gathered from various sources, such as ‘In-school questionnaire’, ‘In-home interviews’, ‘Parent questionnaire’, ‘School administrator questionnaire’, and ‘Contextual data’ (Harris, Halpern, Whitsetl, Hussey, Tabor, Entzel, & Udry, 2009). The ADD-Health consists of over 90,000 students from a stratified sample of 80 high schools and their 52 feeder schools (Junior high or middle school). From among those students, a core sample was produced by selecting students based on stratification (by grade and sex) in each school. The ‘in-home interviews’ dataset includes a core sample of 12,604 students in grades 7-12 (mostly between 12 and 18 years old). However, this study employed the ‘public-use dataset’, which consists of a sub-sample of 6,504 students. Use of the public-use data would not undermine the validity of the findings, since it consists of a randomly selected one-half of the original sample, which is classified as a ‘restricted-use data’ to which researchers have a limited access only by contractual agreement. Although the ADD Health data is somewhat old, it best serves the purposes of the present study since it is one of few data sets with a nationally representative sample that contain information for both adolescents’ individual characteristics and their neighborhood-related characteristics. This study utilized a cross-sectional analysis approach with delinquency of only Wave_1 as the dependent variable because the analysis with the delinquency of Wave_2 substantially reduced the number of case that contains information on delinquency (from 6,415 cases for Wave_1 to 4,786 cases for Wave_II).

Delinquency

Adolescents’ self-reported delinquency was measured with a 10-item index including 4-violent delinquency questions and 6-property delinquency questions. The types of delinquent behaviors covered in this study include serious physical fight, hurting someone, use or threat to use a weapon, group fights, damaging

property, and different types of stealing. Each delinquency item was measured with a four-point scale (0:never ~ 3:5 or more times), and the sum of all 10-responses was used as an overall count of delinquent behavior. The reliability coefficient of Cronbach's Alpha is $\alpha=.797$.

Parenting Practices

Previous studies on parenting employed different dimensions of parenting practices/behaviors. For example, Chung and Steinberg (2006) measured three dimension of parenting behaviors: warmth, knowledge, and monitoring; Mrug and Windle (2009) measured parental nurturance and harsh/inconsistent punishment to reflect parenting; Rankin and Quane (2002) used parental monitoring; and Tolan et al. (2003) included four dimensions for parenting practices: positive parenting, discipline effectiveness, avoidance of discipline, and extent of involvement.

Based on the commonly appeared dimensions of parenting from previous studies, the present study measured four parenting dimensions using adolescents' perceptions on their parents' behaviors. The first dimension was parents' availability/ability to control/supervise (will be called 'Control/Supervision' hereafter) their children at home, which closely emulates the monitoring dimension used in previous studies. This dimension was measured with six questions (3 for mom and 3 for dad) regarding whether their parents are at home when respondents leave for school, return from school, and go to bed. Each item was measured with five-point scale (1:never ~5:always). Responses were summed to indicate parents' overall availability/ability to control/supervise their children. The overall score ranges from 6 to 30, indicating that higher values reflect higher 'control/supervision' capabilities.

The second dimension is the level of 'shared activities' between parents and adolescents, which reflects the extent of involvement dimension. Shared activities include gone shopping, played a sport, gone to a religious service, gone to a movie/play/museum/concert/sport events, and worked on a project for school. Originally, each item was measured with a dichotomous response (0:no ~1:yes), and all 10-responses (5 for mom and 5 for dad) were summed to create an overall level of shared-activities, ranging from 0 to 10. 'Conversation/Communication' level is the third dimension and it reflects parents' knowledge about their children. It was measured with 8 questions (4 for mom and 4 for dad) with a

dichotomized response (0:no ~ 1:yes) regarding whether the respondents talked with parents about their friends, personal problems, and school-related issues. The possible maximum score is 8 if two parents raised an adolescent and it is 4 if a single parent (mom or dad) raised an adolescent. Higher scores reflect parents' higher level of communication/conversation with children meaning better knowledge about their children. The fourth and last dimension is the 'attachment' between parents and respondents. This dimension reflects the dimensions of warmth or nurturance from previous studies. The questions include whether the respondents feel close to their parents, are satisfied with their relationship with parents, and think their parents care about them (1:Strongly disagree ~ 5:strongly agree). All 10 responses (5 for mom and 5 for dad) were added and higher values indicate strong attachment between parents and children.

Proximal Indicator of Low Self-control and Other Developmental Outcomes

Parenting is known to be an important source of adolescents' various developmental outcomes. Therefore, the present study incorporated developmental outcomes of parenting to investigate if (or how) they play roles within the links among neighborhood disadvantage, parenting practices, and delinquency.

According to Gottfredson and Hirschi (1990), parenting is the main source of low self-control. In this study, 'impulsivity' was measured as a proximal indicator of low self-control with an index of 5 items that reflects respondents' decision-making style and behavioral pattern. Examples of the items include "When making decisions, you usually go with your "gut feeling" without thinking too much about consequences of each alternative", "When you have a problem to solve, one of the first things you do is get as many facts about the problem as possible", and so on. Each item was measured with a five-point scale (1:strongly disagree ~ 5:strongly agree) and each response was recoded so that higher score can reflect higher impulsivity.

Previous research also found that parenting produces other developmental outcomes such as adolescents' academic performance (Anunola, Stattin, & Nurmi, 2000; Juang & Silbereisen, 2002; Park & Bauer, 2002) and self esteem (Bulanda & Majumdar, 2008). The present study measured 'academic performance' with a composite measure of GPA (with grades of English, Science, Mathematics, and Social studies). Each grade was measured with a four-point scale (1:D or lower ~

4:A). Lastly, 'self esteem' was measured with a seven-item index regarding respondents' self-evaluations on various aspects about themselves (score ranges from 7 to 35). Examples of questions are "You have a lot of good qualities (1:strongly disagree ~ 5:strongly agree)", "You have a lot to be proud of", and so on. Demographic variables such as sex (0:female, 1:male), race (White, Black, other) and age are also included.

Neighborhood Disadvantage

The 'neighborhood disadvantage' of each neighborhood where the respondents lived was measured by combining 6 structural characteristics such as racial heterogeneity, residential mobility, median household income, proportion living under poverty, unemployment rate, and modal education level. Indicators were recoded, standardized, and summed in a way that a higher value indicates a higher cumulative neighborhood disadvantage. The reliability coefficient of Cronbach's Alpha for the cumulative neighborhood disadvantage is $\alpha=.693$. Descriptive summary of the variables is presented in Table_1.

Table 1. Descriptive Statistics

		N	%	Mean	Sd
Gender	Female (0)	3356	51.6		
	Male (1)	3147	48.4		
Race	Whites (0)	4291	66		
	Blacks (1)	1601	24.6		
	Others (2)	612	9.4		
Age				15.04	1.773
Delinquency		6415		2.16	3.41
School Performance				11.37	2.994
Impulsivity				11.75	2.837
Self-Esteem				28.66	4.07
Parenting Practices	Control/Supervision			18.25	6.242
	Shared Activities			2.81	1.729
	Conversation/ Communication			3.37	1.811
	Attachment			36.43	11.425
Neighborhood Disadvantage				0.022	2.523

Analytical Strategy

Several analytical techniques were employed. First, bivariate correlation analyses were used to find whether neighborhood disadvantage, parenting practices, adolescents’ developmental outcomes (impulsivity, school performance and self esteem), and delinquency are significantly related with each other. Second, OLS multiple regression analyses with parenting practices as dependent variables were performed to examine whether parenting practices are affected by neighborhood disadvantage and adolescents’ developmental outcomes. Third, a series of Negative Binomial (NB) regression analyses were conducted to examine whether parental practices mediate the effect of neighborhood disadvantage on adolescent delinquency. A negative binomial (NB) regression model was utilized because delinquency was measured with four discrete categories of count and the

delinquency count has an issue of ‘overdispersion’ in which the mean is not equal to the variance, showing a high frequency of zero delinquency followed by a rapid decrease in frequencies of subsequent delinquency counts. Despite the high frequency of zero delinquency, the zero-inflated negative binomial (ZINB) regression model was not utilized both because the difference between ‘observed’ and ‘expected’ count of zero delinquency was not substantially large (2,908 and 2,797, respectively) and because the use of ZINB regression would make the interpretation of the findings unnecessarily more complicated although the preliminary analyses with ZINB showed very similar findings to those of NB (Hilbe, 2007; Land, McCall, & Nagin, 1996; Long, 1997).

The negative binomial regression model with a log link function was expressed with the following equations with which the log of the outcome is predicted with the variables included (Cameron & Trivedi, 1998). Model_1 includes only respondents’ demographic control variables and neighborhood disadvantage as the basic model.

Model_1.

$$\log(Y/\text{Delinquency}) = \alpha + \beta_1(\text{Age}) + \beta_2(\text{Male}) + \beta_3(\text{Blacks}) + \beta_4(\text{Others}) + \beta_5(\text{Neighborhood Disadvantage})$$

Model_2 adds four parenting practices to Model_1 to examine whether parenting practices mediate the effect of neighborhood disadvantage on delinquency. If the effect of neighborhood disadvantage on delinquency is significantly reduced after the parenting variables are included, then it suggests that parenting practices have a mediation effect between neighborhood disadvantage and delinquency.

Model_2.

$$\log(Y/\text{Delinquency}) = \alpha + \beta_1(\text{Age}) + \beta_2(\text{Male}) + \beta_3(\text{Blacks}) + \beta_4(\text{Others}) + \beta_5(\text{Neighborhood Disadvantage}) + \beta_6(\text{Control/Supervision}) + \beta_7(\text{Shared activities}) + \beta_8(\text{Conversation/Communication}) + \beta_9(\text{Attachment})$$

Model_3 is used to investigate the nature of the effects of the parenting practices. A comparison between Model_2 and _3 would suggest if parenting practices have direct effects on delinquency or their effects on delinquency are mediated through low self-control and/or other developmental outcomes.

Model_3.

$$\log(Y/\text{Delinquency}) = \alpha + \beta 1(\text{Age}) + \beta 2(\text{Male}) + \beta 3(\text{Blacks}) + \beta 4(\text{Others}) + \beta 5(\text{Neighborhood Disadvantage}) + \beta 6(\text{Control/Supervision}) + \beta 7(\text{Shared activities}) + \beta 8(\text{Conversation/Communication}) + \beta 9(\text{Attachment}) + \beta 10(\text{Impulsivity}) + \beta 11(\text{Academic performance}) + \beta 12(\text{Self-Esteem})$$

RESULTS

Correlations among Variables

The results of correlation analyses are presented in Tables_2. Delinquency was significantly related to all independent variables. As social disorganization theory suggests, neighborhood disadvantage had a significant positive correlation with adolescent delinquency ($r=.05$, $p<.001$), meaning that adolescents from more structurally disadvantaged neighborhoods reported higher delinquency involvement.

All four parenting practices had significant, negative correlations with adolescents' delinquency: control/supervision ($r=-.12$, $p<.001$), shared activities ($r=-.11$, $p<.001$), Conversation/Communication ($r=-.08$, $p<.001$), and Attachment ($r=-.17$, $p<.001$). This means that the more parents have effective parenting practices - being more available/able to control/supervise through being at home at certain time of a day, sharing more activities together, communicating more, or developing attachment - the less adolescents would get involved in delinquency. In addition, each of the four parenting practices had significant, positive relationships with each other, suggesting that parents with one dimension of effective parenting are more likely to have other effective dimensions, too. More importantly, all four parenting practices had significant, negative correlations with neighborhood disadvantage: control/supervision ($r=-.09$, $p<.001$), shared activities ($r=-.11$, $p<.001$), conversation/communication ($r=-.11$, $p<.001$), and

attachment ($r=-.18$, $p<.001$). Parents who lived in structurally more disadvantaged neighborhoods showed lower levels of being available to control/supervise, of sharing activities, of conversation/communication, and of attachment.

Delinquency was positively associated with impulsivity ($r=.17$, $p<.001$) as the self-control theory suggests (Goffredson & Hirschi, 1990), but it was negatively related to academic performance ($r=-.25$, $p<.001$) and self-esteem ($r=-.13$, $p<.001$). Further, parenting practices and individual developmental outcomes showed significant relationships with expected directions: Impulsivity had significant, negative relationships with all four parenting practices meaning that higher parenting practices are associated with low impulsivity; and school performance and self-esteem had significant, positive relationships with parenting practices. Also, impulsivity, school performance, and self-esteem were significantly correlated with each other with expected directions.

Table 2. Correlations among Variables

	1	2	3	4	5	6	7	8
1. Delinquency	1.00							
2. Neighborhood Disadvantage	.05							
3. Control/Supervision	-.12	-.09						
4. Shared activities	-.11	-.11	.25					
5. Conversation/Communication	-.08	-.11	.25	.31				
6. Attachment	-.17	-.18	.66	.41	.40			
7. Impulsivity	.17	-.03 *	-.03 *	-.09	-.11	-.08		
8. School Performance	-.25	-.13	.10	.23	.18	.21	-.16	
9. Self Esteem	-.13	.00 ns	.08	.17	.12	.25	-.27	.14

Note: All correlations were significant at $p<.001$, except for *: $p<.05$, ns: $p>.05$

In order to further investigate if and how a certain specific neighborhood structural characteristic is related to parenting practices, additional correlation analyses were performed between each of neighborhood characteristics and parental practices. The findings are presented in Table_3. Racial heterogeneity, proportion living under poverty, and unemployment rate had significant, negative correlations with each of the parenting practices, whereas median household income and modal education level had significant, positive correlations. However, residential mobility was not significantly correlated with parenting practices.

Table 3. Correlations between Neighborhoods Characteristics and Parenting Practices

	Control/ Supervision	Shared Activity	Conversation/ Communication	Attachment
Racial Heterogeneity	-0.065 *	-0.073 ***	-0.087 ***	-0.124 ***
Residential Mobility	-0.012 <i>ns</i>	0.003 <i>ns</i>	-0.005 <i>ns</i>	-0.009 <i>ns</i>
Median household Income	0.059 ***	0.109 ***	0.100 ***	0.154 ***
% under Poverty	-0.064 ***	-0.095 ***	-0.092 ***	-0.170 ***
Unemployment rate	-0.080 ***	-0.091 ***	-0.081 ***	-0.153 ***
Modal Education Level	0.024 ***	0.068 ***	0.063 ***	0.101 ***
Neighborhood Disadvantage	-0.089 ***	-0.105 ***	-0.110 ***	-0.183 ***

*: p<.05, ***: p<.001, ns: p>.05

Effects of Neighborhood Disadvantage on Parenting Practices

One important purpose of the present study is to examine whether parenting practices are affected by neighborhood structural characteristics. Given the facts that neighborhood disadvantage, parenting practices, and adolescents’ developmental outcomes are significantly inter-correlated in Table_2, parents’ ability to utilize different parenting practices may be a function of both neighborhood disadvantage and adolescents’ individual characteristics. Therefore, it is necessary to examine if neighborhood disadvantage has an independent effect above and beyond the effects of adolescents’ individual characteristics on parenting practices. Multiple regression analyses with each of the parenting practices as a dependent variable were performed to examine if the effects of neighborhood disadvantage on parenting practices are significant even after controlling for three developmental outcomes and demographic control variables. Results are presented in Table_4. Age had a positive association with parent’s availability for control/supervision (b=.123, p<.05) and conversation/communication (b=.131, p<.001) controlling for other variables, but a negative association with shared activities (b=-.151, p<.001) and attachment (b=-.329, p<.001). No significant gender differences in parenting practices were found, except for conversation/communication. Males reported a have lower level of conversation/communication with parents (b=-.327, p<.001) controlling for other variables. Black adolescents showed lower levels than white adolescents of control/supervision (b=-2.271, p<.001), shared activities (b=-.263,

$p<.001$), conversation/communication ($b=-.443$, $p<.001$), and attachment ($b=-5.189$, $p<.001$), and adolescents in other racial groups showed significantly lower levels of parenting practices as well, except for control/supervision ($b=-.0283$, $p>.05$). In addition, school performance and self-esteem had positive associations with each of the parenting practices, while impulsivity had no significant relationships with parenting practices.

It is important to note that neighborhood disadvantage had significant associations with three of four parenting practices after controlling for adolescents' impulsivity, school performance and self-esteem: shared activities ($b=-.028$, $p<.001$), communication ($b=-.029$, $p<.001$), and attachment ($b=-.364$, $p<.001$). Although neighborhood disadvantage was not significantly associated with parents' availability for control/supervision ($b=-.119$, $p<.001$), the general findings may suggest that different parenting practices are indeed a function of neighborhood disadvantage.

Table 4. Regression Analyses for the Effects of Neighborhood Disadvantage on Parenting Practices

	Control/ Supervision		Shared Activities		Conversation/ Communication		Attachment	
	B	SE	B	SE	B	SE	B	SE
Intercept	12.153	1.356 ***	2.645	0.395 ***	-0.275	0.405 ns	18.29	2.292 ***
Age	0.123	0.055 *	-0.151	0.016 ***	0.131	0.016 ***	-0.329	0.093 ***
Sex								
Female								
Male	0.134	0.190 ns	-0.053	0.055 ns	-0.327	0.057 ***	0.508	0.323 ns
Race								
Whites								
Blacks	-2.271	0.230 ***	-0.263	0.066 ***	-0.443	0.068 ***	-5.189	0.388 ***
Others	-0.283	0.331 ns	-0.186	0.095 *	-0.212	0.099 *	-1.099	0.559 *
Impulsivity	-0.008	0.034 ns	-0.028	0.010 **	-0.035	0.010 ***	-0.059	0.058 ns
School performance	0.138	0.033 ***	0.109	0.009 ***	0.072	0.010 ***	0.508	0.055 ***
Self-Esteem	0.122	0.025 ***	0.055	0.007 ***	0.056	0.007 ***	0.676	0.042 ***
Neighborhood Disadvantage	-0.055	0.029 ns	-0.028	0.008 ***	-0.029	0.009 ***	-0.364	0.050 ***
R-Square		0.041 ***		0.101 ***		0.080 ***		0.156 ***
		df=4,431		df=4,040		df=4,005		df=4,552

.p<.01;*.p<.001;ns:p>.05

() : close to p<.01; **(*) : close to p<.001

Mediating Effect of Parenting Practices

The principal purpose of this study is to examine whether parenting practices mediate (or intervene) the effect of neighborhood structural characteristics on delinquency. Three Negative Binomial (NB) regression analyses were performed. First model included only respondents' demographic variables and neighborhood disadvantage to serve as a basic model. Model_1 in table_5 shows that males had a high delinquency involvement than females ($b=.651$, $p<.001$). There was no significant difference in delinquency between white and black adolescents ($b=.042$, $p>.05$), whereas youths in other racial groups reported a significantly higher delinquency involvement than white adolescents ($b=.195$, $p<.001$), after controlling for other variables. As expected, neighborhood disadvantage had a significantly positive association with delinquency ($b=.013$, $p<.001$). The NB regression coefficient of $b=.013$ is equivalent to an odds ratio of 1.013 which means that one-unit increase in neighborhood disadvantage increases the odds of delinquent behavior by 1.013 times. Similar interpretation can be applied to all other NB coefficients.

Model_2 shows that three parenting practices had significant effects on delinquency. Shared activities ($b=-.075$, $p<.001$) and attachment ($b=-.022$, $p<.001$) produced significant negative associations with delinquency. An interesting result is that the level of conversation/communication between parents and adolescents had a positive association with delinquency ($b=.039$, $p<.01$) after controlling for other variables, despite the negative bivariate correlation between the two ($r=-.08$, $p<.001$). This finding is not surprising or unusual, however. The variable measures level of conversation between parents and respondents about friends and school-related aspects. Therefore, parents are more likely to have conversation with their children who exhibited signs of problems, resulted in a positive association after controlling for other parenting variables. Although control/supervision and delinquency showed a significant 'bivariate' correlation ($r=-.12$, $p<.001$) in table_2, its effect on delinquency became insignificant ($b=-.0004$, $p>.05$) when other parenting variables are included in the model. This finding suggests that when parents perform other positive parenting practices, their being at home at certain time of a day may not be an important factor for their children's delinquency. More importantly, Model_2 is used to investigate whether parenting practices

mediate the effect of neighborhood disadvantage on delinquency and the results support that there may be a mediating effect of parenting practices. The significant effect of neighborhood disadvantage on delinquency ($b=.013$, $p<.001$) in Model_1 became 'insignificant' after four parenting practices were added ($b=-.003$, $p>.05$). A comparison of chi-square values indicates that the addition of parenting practice variables (Model_2) significantly improved the model fit.

Adolescents might develop low self-control and other developmental outcomes as the consequence of parenting practices and it is possible that those variables might mediate the effects of parenting practices on delinquency. Therefore, based on the significant correlations between parenting practices and individual developmental outcomes (Table_2), Model_3 was used to investigate whether parenting practices have direct independent effects on delinquency or whether their effects are mediated through adolescent's developmental outcomes, such as impulsivity, academic performance, or self-esteem. The results show that, while controlling for other variables, impulsivity ($b=.074$, $p<.001$) had a significant positive relationship with delinquency as the self-control theory suggests (Gottfredson and Hirschi, 1990). Also, school performance ($b=-.1$, $p<.001$) and self-esteem ($b=-.017$, $p<.01$) showed significant positive effects on delinquency as expected. Importantly, even after controlling for adolescents' impulsivity, school performance and self-esteem, the significant effects of three parenting practices on delinquency remained significant: control/supervision ($b=-.004$, $p>.05$), shared activities ($b=-.034$, $p<.05$), communication ($b=.060$, $p<.001$), and attachment ($b=-.016$, $p<.001$). It suggests that parenting practices, while mediating the effect of neighborhood disadvantage on delinquency, exert direct effects on delinquency above and beyond their indirect effects through individual developmental outcomes.

And, the addition of individual developmental outcomes (Model_3) significantly improved the model fit.

Table 5. Negative Binomial Regression Analyses with Delinquency as a Dependent Variable

	Model1			Model2			Model3		
	B	SE	Odds Ratio	B	SE	Odds Ratio	B	SE	Odds Ratio
Intercept	0.960	0.1418	2.612 ***	2.509	0.1909	12.287 ***	2.669	0.3194	14.424 ***
Age	-0.039	0.0094	0.962 ***	-0.087	0.0117	0.916 ***	-0.080	0.0140	0.923 ***
Sex									
Female									
Male	0.651	0.0316	1.917 ***	0.757	0.0380	2.132 ***	0.692	0.0459	1.997 ***
Race									
Whites									
Blacks	0.042	0.0383	1.043 ns	0.005	0.0467	1.005 ns	0.073	0.0551	1.076 ns
Others	0.195	0.0537	1.215 ***	0.190	0.0643	1.209 **	0.202	0.0771	1.224 **
Neighborhood Disadvantage	0.013	0.0049	1.013 ***	-0.003	0.0059	0.997 ns	-0.013	0.0070	0.987 ns
Parenting practices									
Control/Supervision				-0.004	0.0040	0.996 ns	-0.004	0.0047	0.996 ns
Shared activities				-0.075	0.0123	0.928 ***	-0.034	0.0141	0.966 *
Conversation/Communication				0.039	0.0115	1.039 **	0.060	0.0134	1.062 ***
Attachment				-0.022	0.0025	0.978 ***	-0.016	0.0030	0.984 ***
Impulsivity							0.074	0.0077	1.077 ***
School Performance							-0.096	0.0079	0.908 ***
Self-Esteem							-0.017	0.0060	0.983 **
Chi-Square	df=5	448.5 ***		df=9	645.0 ***		df=12	797.0 ***	
Log Likelihood		-11821.4			-8291.9			-6160.4	
AIC		23654.8			16603.8			12346.8	
BIC		23695.1			16667.9			12426.7	

** $p < .01$; *** $p < .001$; ns $p > .05$

SUMMARY AND DISCUSSION

According to recent research on the contextual effects of neighborhood, structural characteristics of neighborhoods have indirect effects on delinquency through the intervening concept of social disorganization or collective efficacy (Bernburg & Thorlindsson, 2007; Elliott et al., 1996; Fagan & Wright, 2012; Morenoff et al., 2001; Sampson, 2006; Sampson et al., 2005; Zimmerman, 2010). However, the relatively weak explanatory power of the neighborhood-level social disorganization or collective efficacy on individual-level delinquency may suggest that a more proximal unit or process needs to be incorporated for better explanations of neighborhood effects on adolescent delinquency. The present study focused on 'parenting practices' to examine whether or not (1) neighborhood structural characteristics affect parenting practices, (2) parenting practices mediate the effect of neighborhood disadvantage on adolescents' delinquency involvement, and (3) parenting practices have significant direct effects on delinquency even after controlling for adolescents' low self-control and other developmental outcomes.

The analyses produced several important findings that need to be addressed. First, neighborhood disadvantage, which is a composite measure of several indicators of neighborhood structural characteristics, has a significant association with adolescent delinquency, as social disorganization theory suggests (Shaw & McKay, 1942 & 1969). Adolescents from neighborhoods that have higher poverty, racial heterogeneity, residential mobility, unemployment rate, or lower median income or education level, reported higher delinquency involvement. Second, adolescents whose parents exhibited lower levels of availability to control/supervise, lower levels of shared activities together, of conversation, and lower levels of attachment, showed higher levels of delinquency. These findings are consistent with previous research on the effects of parenting on various outcomes of adolescents (Anunola et. al., 2000; Aquilino & Supple, 2001; Bulanda & Majumdar, 2008; Juang & Silbereisen, 2002; Park & Bauer, 2002; Mowen & Schroeder, 2015; Schroeder & Mowen, 2014; Shakya et. al., 2012). Also, parents' parenting practices are significantly associated with adolescents' impulsivity (an indicator of low self-control) and other developmental outcomes,

such as school performance and self-esteem.

The important goal of the present study was to examine whether parenting practices mediate the effect of neighborhood disadvantage on delinquency. In order to address this, this study first examined whether or not neighborhood disadvantage is significantly associated with parenting practices. The analyses revealed that neighborhood disadvantage has significant correlations with all four parenting practices. Adolescents who live in more disadvantaged neighborhoods are more likely to report lower levels of availability for control/supervision, of shared activities, of conversation/communication, and of attachment. This finding, in general, is consistent with previous studies on parenting, which reveal that parents from disadvantaged neighborhoods utilized more punitive discipline, perform looser supervision, and so on (Arditti et al., 2010; Kerstenburg et al., 1994; Furstenburg, 1993; Kohen et al., 2008; Zuberi, 2016).

The more significant findings came from the model comparisons to predict delinquency involvement. Neighborhood disadvantage had a significant association with delinquency in a basic model but lost its significance when four parenting practices were introduced. This indicates that parenting may work as a mediating factor between neighborhood disadvantage and delinquency. Furthermore, the significant associations of parenting practices with delinquency remained significant even after controlling for an indicator of low self-control (impulsivity) and other developmental outcomes (school performance and self-esteem), indicating that parenting practices have significant independent direct effects on delinquency above and beyond their effects through other developmental outcomes.

Such findings described above may provide some important implications to the criminological theories. Social disorganization theory suggests that disadvantageous neighborhood structures affect adolescent delinquency through social disorganization or weakened collective efficacy. While previous research on the theory succeeded to persuade that neighborhood-level social disorganization/collective efficacy is an essential variable that intervenes the relationship between neighborhood structures and delinquency (Morenoff et al., 2001; Sampson, 2006; Sampson et al., 2005), empirical research findings on parenting suggest that family-level parental practices would be another important candidate as a mediator (Chung & Steinburg, 2006; Mrug & Windle, 2009; Rankin & Quane, 2002; Tolan et al., 2003). Thus, findings of the present study suggest (1) that parents may take certain parenting

practices as a reaction to or a consequence of certain neighborhood structures, and (2) that there may be a causal chain-process among neighborhood disadvantage, parenting practices, and delinquency: neighborhood disadvantage affects ineffective parenting practices, and ineffective parenting practices lead to adolescent delinquency. Or, at least, neighborhood disadvantage and ineffective parenting practices are associated maybe due to ineffective neighborhood-level collective efficacy (based on an assumption, not measured directly in this study). In other words, ineffective parenting in disadvantaged neighborhoods could be a function of weak neighborhood-level collective efficacy rather than direct effects of neighborhood structures. Such findings (and the assumed relationships) of the present study might imply that the research on social disorganization or collective efficacy can be expanded by incorporating parenting as a closer or a more proximal source of influence in the link between neighborhood structures/collective efficacy and adolescent delinquency, such that neighborhood disadvantage affects low collective efficacy which influences ineffective parenting, which in turn leads to delinquency.

The results may provide some significant implications to the General Theory of Crime, too. Gottfredson and Hirschi (1990) argue that inadequate parenting - such as a lack of proper attachment, supervision, and punishment - results in youth having low levels of self-control that will result in increased delinquency. However, the theory utilizes parenting primarily as an exogenous variable for low self-control without explaining internal or external factors that affect parenting itself (Cullen, Agnew, & Wilcox, 2014; Muftic & Updegrave, 2018), and most previous research on the self-control theory have focused only on identifying the elements of low self-control and/or on the causal relationship between low self-control and delinquency (see, Evans, Cullen, Burton, Dunaway, & Benson, 1997; Pratt & Cullen, 2000; Zimmerman, et al., 2015) without examining the effects of parenting itself on self-control and delinquency or without identifying the factors that affect parenting itself. Such factors may include either parents' or children's individual characteristics such as temperaments or personality (e.g., Kochanska, Friesonborg, Lange, & Martel, 2004), or external influences such as neighborhood structures (e.g., Pinderhughes, Nix, Foster, Jones, & the conduct problems prevention research groups, 2001; Zuberi, 2016). The significant associations between neighborhood disadvantage and parenting practices indicate that one crucial source of parenting that produces children's low self-control and

delinquency would be neighborhood structures. Therefore, the present study implies that incorporating ‘parenting’ and/or ‘neighborhood context’ as the exogenous explanatory variables in the link between low self-control and delinquency can expand research on self-control theory. The implications of the present study for both social disorganization theory and self-control theory would suggest further that both theories can be integrated by utilizing a common concept: parenting.

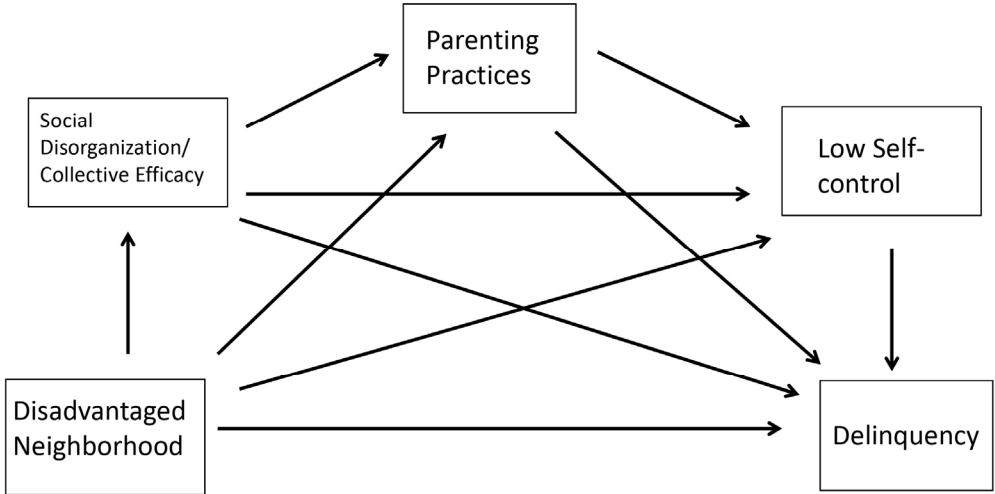


Figure 1. A Hypothetical Integration Model of Social-disorganization and Self-control

Limitations and Suggestions for Future Research

This study can be highlighted with some strengths and limitations. The biggest strength is that it adopted a broader scope to understand a more complete mechanism in which neighborhood structural characteristics, parenting practices, adolescents’ low self-control, and delinquency are interrelated. Although there have been an abundance of studies that addressed the issues regarding the relationships among those variables, most previous research employed a somewhat weak approach with respect to model specifications, target adolescent samples, neighborhood contexts, and so on.

The present study addresses such limitations of previous research by using a nationally representative sample of adolescents and their neighborhoods, and by incorporating neighborhood characteristics, parenting practices, low self-control/other developmental outcomes, and delinquency in a single study simultaneously to

provide more complete understandings about the relationships among those variables.

However, there are also some limitations that need to be addressed. The first limitation is related to the inference of the causal relationships among neighborhood structure, parenting practices, low self-control, and delinquency. Although there are significant associations among the variables and it is more natural to assume that neighborhood disadvantage affects parenting practices rather than assuming parenting practices affect neighborhood disadvantage, the cross-sectional nature of the present study has a limitation in making a definite conclusion about the causal inference.

The second limitation comes from the fact that the 'public-use' version of ADD-Health data was utilized. Although this dataset provides neighborhood structural characteristics for each respondent, it does not provide a geo-code of each neighborhood. This means that the present study could not utilize a multi-level approach to examine the contextual effects of neighborhood disadvantage on delinquency. This study took a perspective of mediating role of parenting practices between neighborhood disadvantage and delinquency. However, it is also possible that neighborhood disadvantage may moderate or contextualize the effects of parenting on delinquency, or vice versa. Examining the relationships with a different perspective would provide alternative ways to understand the nature of these associations. The third limitation is the lack of information on the parents' individual characteristics. Although neighborhoods exert significant influence on parenting practices, parents' ability to employ effective parenting could also be a function of their individual characteristics, such as socioeconomic status, temperament, personality, criminality, substance abuse, and so on. Therefore, additional research with those variables would provide more complete explanations about the relationships.

CONCLUSION

This study does not try to undermine the importance of neighborhood-level social organization or collective efficacy. Rather it might emphasize the importance of supplementary functions of parenting practices. It would not be easy to change social structure itself or to establish strong collective efficacy of the neighborhoods in a short period of time. Instead, it may take enormous time, efforts, and resources. Although findings suggest that neighborhood disadvantage affects ineffective parental practices and delinquency, it also implies that the effects of neighborhood disadvantage on delinquency can be minimized if parents can develop more effective and positive parenting skills. Therefore, it would be very important to develop and implement education programs for effective parenting as a relatively easier way to reduce delinquency in more disadvantaged neighborhoods. Improving the parenting skills of more and more families/parents in the neighborhoods, in the long run, could serve as a basis for the strong neighborhood-level collective efficacy. This means that in case some parents failed to provide effective parenting practices, their children may be discouraged to commit delinquency by other parents in the neighborhood who are equipped with effective parenting practices. Although the present study recommends parenting-based programs as a relatively easier and more immediate approach to reduce/prevent delinquency for adolescents who live in more disadvantaged neighborhoods, a more fundamental approach for delinquency prevention should be the development/implementation of policies that aim to improve general social structural conditions of neighborhoods (e.g., poverty and concentrated disadvantage) and larger social contexts (e.g., social inequalities produced by stratified economic, legal, political, and cultural systems).

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