Relations among Perceptions of Neighborhood Cohesion and Control and Parental Monitoring across Adolescence

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Abstract

Social disorganization theory argues that disadvantaged neighborhoods will have less cohesion and control, and therefore will be less conducive to effective parental monitoring. This study aims to test these relationships using four waves of the Pitt Mother and Child Project (ages 11, 12, 15, and 17). The sample consists of 185 low-income males and their parents, 56.44% of whom identify as White, and 34.67% of whom identify African American. Crossed-lagged path models were estimated and the indirect effect of neighborhood disadvantage on parental monitoring through neighborhood cohesion and control was estimated. Separate models were estimated for parental and adolescent perceptions of parental monitoring. The results demonstrate a positive relationship between parental perception of neighborhood social cohesion and parental monitoring, and a negative relationship found between parental perceptions of neighborhood social control and parental monitoring in both models. The findings of this study suggests that neighborhoods may be an important target for interventions that are aiming to improve parental monitoring and ultimately adolescent outcomes.

Introduction

Parental monitoring, defined as "a set of correlated parenting behaviors involving the attention to and the tracking of the adolescent's whereabouts, activities, and adaptations" (Dishion & McMahon, 1998, p.61), has emerged as one of the more crucial parenting behaviors in theories of adolescent development. This behavior is due to the increasingly physical and psychological autonomy from parents and the adolescent's inflated sense of invulnerability for engaging in potentially harmful activities, according to Stattin & Kerr (2000). In contrast, the lack of adequate parental monitoring has been consistently and positively associated with adolescent participation in antisocial activities, sexual risk-taking, and substance-use behaviors that are more critical to positive outcomes when the adolescent lives in a high-risk environment (Mustanski et al., 2017; Blustein et al., 2015; Lopez-Tamayo et al., 2016). According to Kerr, Statin, & Burk (2010), parental monitoring functions by 1) restricting the adolescent's exposure to environments and peer interactions that may be risky, and 2) by conveying to the adolescent that he or she is being held accountable for his or her actions even when a parent is not present. While it is generally accepted that parental monitoring can protect the adolescent from risky behavior, little is known about the environmental factors that may support or undermine effective parental monitoring. To more fully contextualize these factors, the current study uses four waves of data from a longitudinal study of urban, low-income male adolescents to advance our understanding of the relationship between neighborhood disadvantage, neighborhood cohesion and control, and parental monitoring across time. Crossed-lagged path models were estimated and the indirect effect of neighborhood disadvantage on parental monitoring through neighborhood cohesion and control was estimated. Separate models were estimated for parental and adolescent perceptions of parental monitoring.

Social Disorganization Theory and Parental Monitoring

Social disorganization theory posits that parents will be more successful in monitoring their adolescents' behavior when they are living in a neighborhood they perceive as supportive (Sampson & Morenoff, 1997). Within the context of social disorganization theory, supportive neighborhoods are those that are high in cohesion, where others share the same prosocial values and social control, and where adults intervene if adolescents are engaging in antisocial behavior (Sampson & Morenoff, 1997). It has been argued that social cohesion and social control are two essential aspects of *collective efficacy*--a status that has been consistently linked to lower levels of adolescent antisocial behavior (Sampson, Raudenbush & Earles, 1997). There is, however, a theoretical argument and some degree of evidence that social control and social cohesion (the constructs that contribute to the measurement of collective efficacy) are distinct and should be investigated separately (Hipp, 2016; Rhineberger-Dunn & Carlson, 2009). For example, Hipp (2016) argues that conceptually collective efficacy is a process by which a group attempts to exert some control over their environment and then collectively assesses the degree to which they were successful. In discussing collective efficacy, Hipp (2016) also specifies that social control is a behavioral measure that is task-specific, while social cohesion is a more general assessment of social relationships.

Social disorganization theory also argues that neighborhoods with high rates of poverty, instability, and ethnic/racial heterogeneity will have less cohesion and control, and therefore will be less conducive to effective parental monitoring. According to Sampson (1997), the relationship at the individual level between social control and antisocial behavior may be mediated by parental monitoring, such that neighborhoods with high levels of parental monitoring would be characterized as having high levels of social control and social cohesion, suggesting that neighborhood factors, such as cohesion and control, might support or impede a parent's ability to monitor their adolescent. Despite the potential importance of parental monitoring within the relationship between neighborhood factors and adolescent problematic behaviors, few studies have investigated how neighborhood social cohesion and social control might be independently related to parental monitoring over time. Most studies that have examined the role of parental monitoring within the relationship between neighborhood factors and adolescent outcomes have investigated the extent to which parental monitoring protects adolescents living in high-risk neighborhoods from developing antisocial behaviors (Lopez-Tamayo, et al., 2016). Parenting behavior itself, however, may be directly impacted, both positively and negatively, by the quality of the neighborhood. For example, in a longitudinal study of low-income 5th and 7th graders, neighborhood danger and disadvantage was associated with less positive parenting (Tolan et al. (2003).

The hypothesized associations between neighborhood stressors and parenting have been primarily based on family stress theories, which argue that psychosocial stressors can put a strain on family functioning by increasing a parent's psychological distress (Conger, Rueter & Conger, 2000). This concept was demonstrated empirically in a longitudinal study of 141 African American single mothers, whereby Kotchick and colleagues (2005) found that perceptions of neighborhood stressors (including gangs and substandard housing) were negatively associated with positive parenting (a construct that included parental monitoring) indirectly by parental levels of psychological distress. Due to the focus on family stress theories, most studies investigating the association between neighborhood factors and parenting have focused on the relationship between neighborhood stressors and aspects of parenting factors linked to distress, such as warmth and/or conflict. Stress may also impact a parent's ability to monitor their adolescent's behavior by inhibiting parental/child communication and/or a parents' ability to perform the task necessary to effectively monitor (i.e., phone calls, checking in, being physically present). Neighborhood-level factors, such as neighborhood control and cohesion, may therefore support parental monitoring by reducing the amount of stress that parents are experiencing in providing instrumental or emotional support that will allow them to connect with and monitor their adolescent more effectively. It may also be the case that in neighborhoods with higher levels of social cohesion and control, neighbors may share or communicate the norms regarding the value of parental monitoring. The existence of social control may indicate that these norms are present and social cohesion may indicate that these norms are shared or could be easily shared as the relationships between neighbors are present. Despite the possibility that a supportive neighborhood environment might facilitate effective parental monitoring, very few studies have examined the role of neighborhood-level supports, such as social cohesion and control, or other aspects of parenting, such as monitoring.

There are, however, a few exceptions. Simons et al. (2005) found in a longitudinal study (two waves) of African American families that collective efficacy was positively related to authoritative parenting, a construct which includes parental monitoring. Similarly, Zuberi (2016), in a cross-sectional study of adolescents, found that collective efficacy was associated with greater parental knowledge and control. Maimon and Browning (2010), however, found that neighborhood collective efficacy was related to more unstructured socializing among adolescents; consequently, becoming a predictor of violence. Investigating neighborhood cohesion and control, independently, may be especially important when attempting to understand the relationship to parenting behavior. Chung and Steinberg (2006), in a cross-sectional sample of 488 boys from primarily low-income backgrounds, found that neighborhood social cohesion was uniquely associated with more protective parenting behaviors (monitoring and closeness), which, in turn, was related to decreases in deviant peer affiliation and antisocial behavior. Understanding the independent effect of social cohesion and social control on parental monitoring may be important when designing interventions to enhance the contextual factors that support parental monitoring. Despite the hypothesized association between neighborhood stressors (neighborhood disadvantage), support (neighborhood cohesion and control), and parental monitoring, to the authors knowledge, no longitudinal studies to date have tested these relationships.

Parental Monitoring

Parental monitoring, including knowledge, has been prominent in the research literature on parenting and it is consistently negatively related to risky, externalizing behaviors, including adolescents' substance use and antisocial behavior (Hoeve et al., 2009; Fosco et al., 2012). Parental monitoring initially became a key focus of studies on antisocial behavior when researchers found that the parents of antisocial adolescents frequently did not know where their adolescents were. In one of the earliest studies of parental monitoring, Glueck and Glueck (1950) identified large discrepancies in parental and adolescent reports regarding adolescent antisocial behavior, such as parents being unaware of the more covert adolescent activities. Additionally, in 1984, Patterson and Stouthamer-Loeber found that of four parenting practices studied, including effective discipline, problem-solving skills, and reinforcement, low levels of monitoring accounted for the most variance in the relation of adolescent contact with police and selfreported antisocial behavior. In subsequent studies, the relationship between parental monitoring and delinquent behavior has been consistent and robust (Kerr & Stattin, 2000; Lehey et al, 2008).

Defining parental monitoring, according to Dishion & McMahon (1998), and placing it within the larger construct of parenting is essential to understanding its role in adolescent outcomes. The unifying definition of parental monitoring acknowledges that monitoring is a set of behaviors that work together to pay attention to and ultimately track a child's movements. Some researchers have also argued that knowledge, the central construct in parental monitoring, is obtained through a variety of strategies, many of which require that adolescents be willing to disclose information to their parents (Dishion, Nelson & Bullock, 2004; Laird, Pettit, Bates & Dodge, 2003). Within this concept of parental monitoring, Stattin & Kerr (2000) posit that adolescents are not only being acted upon, they are also active participants in the monitoring dynamic. Stattin and Kerr (2000) make the argument

that because effective parental monitoring requires effective communication between parents and child, the association between parental monitoring and adolescent outcomes is really a reflection of parent-child communication and the quality of the relationship, rather than monitoring by and of itself. The understanding that parental monitoring is an ongoing conversation between a parent and an adolescent has led researchers to consider both the parent and the adolescent's perception of monitoring, and in some cases, a focus on the discrepancy (De Los Reyes et al., 2010). Other theoretical models of parenting have placed the relationship quality at the center of the parenting triad with parental monitoring being one of the affiliated practices in conjunction with motivation and behavior management (Dishion & McMahon, 1998). In fact, studies have demonstrated these are not orthogonal constructs; rather they are interdependent with parental monitoring and correlate highly with other aspects of parenting, such as relationship quality (Dishion & McMahon, 1998). Despite their arguments that parental monitoring is a complex construct, parental knowledge remains a central driver in monitoring adolescents.

There are also important developmental and contextual aspects of parental monitoring to be considered. During adolescence, as parents allow their adolescent more freedom to spend unsupervised time with peers, direct monitoring decreases as the monitoring is more focused on the parents' knowledge and control of their adolescent's peer interactions (Agnew, 2003). In a longitudinal study of changes in parenting, Keijsers and Poulin (2013) found a steady decline in parental control that was curvilinear, with the most dramatic decline occurring between the ages of 14 and 17. The authors also found a steady decline in parental knowledge that was more consistent for males than for females; there was only a slight decline of parental knowledge of female adolescents between the ages of 14 and 17, versus the substantial decline for males.

In spite of the steady decline in monitoring during adolescence, the importance that monitoring has on adolescent outcomes has increased with time (Jacobson & Crockett 2000; Laird et al. 2003). Some evidence suggests that the relationship between parental monitoring and both substance use and antisocial behavior is, in fact, curvilinear, with monitoring having the strongest relationship to substance use/antisocial behavior during the first couple of high-school years (ages 14-16), rather than when adolescents are older (17-18) or younger (12-13) (Small, 1995). Based on the declining rates of monitoring from mid- to late adolescence and the differential impact on adolescent outcomes, it may be important to consider parental monitoring behavior throughout adolescence.

Given that parental monitoring is used to regulate an adolescent's interaction with risky spaces and deviant peers, the relative safety or danger of the neighborhood where an adolescent lives has also been identified as an important factor in determining how much monitoring is needed (Richters & Martinez, 1993). Pettit et al. (1999) suggests that although parental monitoring is important for all adolescents, it is most consequential for adolescents living in high-risk neighborhoods. Beyers and colleagues (2003) found a similar pattern, with parental monitoring having the most dramatic effect on antisocial behavior at age 11 in neighborhoods with high rates of residential instability and low rates of affluence. In this study of low- and middle-income urban males, the authors found that associations between unsupervised time in the neighborhood and antisocial behaviors increased with age, with no

difference in the antisocial behaviors by level of supervision at age 11; however, there was a significant difference at age 13 (Beyers et al., 2003). Age- and location-related differences in the significance of parental monitoring to the problematic behaviors of adolescents suggest it would be important to examine the course of parental monitoring throughout adolescence and to ascertain whether contextual factors influence changes.

Current Study

Based on social disorganization theory, which posits that neighborhood factors may impact a parent's ability and motivation to monitor their adolescent, the importance of parental monitoring in adolescent outcomes, particularly in low-resource neighborhoods, and the known change in monitoring behavior across adolescence, this study aims to examine the relations among relevant facets of neighborhood quality and parental monitoring from ages 11 to 17. More specifically, it is hypothesized that neighborhood disadvantage at each time point will be negatively related to parental monitoring, and social control and cohesion at subsequent time points (Hypothesis 1) and that changes in neighborhood cohesion and control at each time point will be positively related to parental monitoring at subsequent time points, respectively (Hypothesis 2).

Methods

This study uses data collected as part of the Pitt Mother & Child Project, a longitudinal study of risk and vulnerability of low-income boys that began in 1991 when they were between 12 and 18 months of age. Families were initially recruited from Women, Infants, and Children Nutritional Supplement Programs (WIC) at clinics surrounding the Pittsburgh metropolitan area. We use data from four waves, collected when the adolescents were 11, 12, 15, and 17 years of age (N= 185). Participates (adolescents and parents) who completed all four waves of data collection were included in this study. Families that were included did not differ significantly from those that were not included due to a missing assessment on delinquent behavior, SES, Income, and/or reported parental monitoring. Adolescents in the sample lived in 130 different census tracts, with between one and six respondents in each tract. Census tracts are the administrative boundaries used by the US government when measuring geographical areas. On average, they include 4,000 residents and are typically used to measure "neighborhoods." In this study, less than 14 to 16% of the sample lived in census tracts with three or more participants and only 2 to 8% lived in the same tracts as four respondents, depending on the year of assessment. At age 11, 14% of the sample lived in census tracts with three or more participants and only 2% lived in the same tracts as four respondents. Thirty-one percent of the sample moved from one census tract to another at least once during the study period.

Description of the Sample

All participants in this study were male and the reporting adults were mothers at every time point. At age 11, 93.5% of the samples were mothers, 3.3% were fathers and 3.3% were another relationship. This was consistent over the years with 92.5% at age 12, 93.4% at age 15 and 89.6% at age 17 reporting they were the adolescent's mother. At age 11, 35.9% of mothers reported having a high-school diploma, 45.7% reported they had completed at least

one year of college, and 9.8% reported graduating from a 4-years collage. The average annual family income was $28,789 at age 11, $32,268 at age 12, $34,251 at age 15, and $37,437 at age 17. At age 11, 46.91% reported being married, and this remained consistent across all ages (age 12, 46.48%, age 15, 45.53%, age 17, 44.58%). Most of the adolescents, 56.44%, reported being White; 34.67% reported being African American; and 8.89% were of mixed race. Similarly, 64.89% of the caregivers reported being White, 34.22% reported being African American, and less than 1% reported being of mixed race. On average, 2.02 delinquent behaviors were reported at age 10.

Measures

Neighborhood disadvantage.—The adolescent's home address was assessed at every time point and addresses were geo-coded into census tracts. Neighborhood disadvantage was assessed with four items: 1) the percent of individuals living below the poverty line, 2) the percent of unemployed, 3) the percent on public assistance, and 4) the percent of single-parent households. This scale had good internal consistency at every time point, age 11 α = .77, age 12 α = .75, age 15 α = .74. All items were standardized and a mean of standardized scores was created. All scores are in relation to the mean level of neighborhood poverty, unemployment, public assistance, and single parent households within the sample.

Neighborhood cohesion.—Neighborhood cohesion was assessed using a parent survey of adolescents, ages 11, 12, 15, and 17, and measured using a set of five items. Respondents were asked to indicate their level of agreement with the following items: 1) people around here are willing to help their neighbors, 2) this is a close-knit neighborhood, 3) people in this neighborhood can be trusted, 4) people in this neighborhood generally don't get along with each other, and 5) people in this neighborhood do not share the same values. This 5-item Likert scale included possible responses ranging from strongly agree (5) to strongly disagree (1) (Sampson, Morenoff & Earls, 1999). The neighborhood cohesion factor had strong internal consistency at all time points: age 11 α = .84, age 12 α = .87, age 15 α = .87, and age 17 α = .88.

Neighborhood social control.—Neighborhood social control was assessed by the primary caregivers of the adolescents, ages 11, 12, 15, and 17, and was measured using a set of five items. For example, respondents were asked to indicate how likely it is that your neighbors could be counted on to intervene if the following occurred: 1) adolescents were skipping school and hanging out on a street corner, 2) adolescents were spray-painting graffiti on a local building, 3) adolescents were showing disrespect to an adult, 4) a fight broke out in front of their house, and 5) the fire station closest to their home was threatened with budget cuts. Possible responses ranged from very unlikely (1) to very likely (5) (Sampson, Morenoff & Earls, 1999). Neighborhood social control had strong internal consistency at all time points: age 11 α = .84, age 12 α = .82, age 15 α = .88, and age 17 α = .88.

Parents' perception of parental monitoring.—Parents' perceptions of parental monitoring was assessed based on both adolescent and parental reports when the adolescents were ages 11, 12, 15, and 17. Parental perception of monitoring was assessed using a

measure originally developed by Dishion et al. (1991) and adapted by Moilanen et al. (2009). The scale included four questions: 1) How often do you think your adolescent goes to places that you ask him not to go? 2) When your adolescent is going to a friend's house, how often do you check to see if a parent or another adult will be present? 3) When your adolescent goes out of the house for more than a few minutes, how often are you aware of what he is doing? 4) How often are there rules when your adolescent is home without an adult? Response options ranged from (1) never to (5) always or almost always. The first item in the scale was reverse coded. The internal consistencies of the scale were: $\alpha = .63$ at age 11 (average interim correlation = .30); $\alpha = .59$ (average interim correlation = .26) at age 12; $\alpha = .52$ (average interim correlation = .21) at age 15; and $\alpha = .52$ (average interim correlation = .21) at age 17. While these reliability scores fall below the recommended .70 (Nunnally, 1978), all scales had an average inter-item correlation ranging from $r = .21 - .30$; correlations that would correspond to alphas of .73 - .81 in a 10-item scale.

Adolescents' perceptions of parental monitoring.—Adolescents' perceptions of parental monitoring were measured using five questions: 1) How often does at least one of your parents know what you are doing when you are away from home? 2) How often does at least one of your parents know where you are after school? 3) How often does at least one of your parents have a pretty good idea about your plans for the coming day? 4) How often does at least one of your parents have a pretty good idea about your interests, activities, and whereabouts? 5) During the past two days, how often did your parents know where you were and what you were doing? Response options ranged from (1) never to (5) always or almost always. This measure was also originally developed by Dishion et al. (1991) and adapted by Moilanen et al. (2009) to assess adolescent perceptions of monitoring. The adapted five-item scale had the following internal consistencies: age 11 $\alpha = .60$, age 12 $\alpha = .71$, age 15 $\alpha = .74$, and age 17 $\alpha = .86$. This scale only falls below the .70 alpha threshold recommended by Nunnally (1978) when measured at age 11.

Controls.—Socioeconomic status (SES) at age 11 was measured using the Hollingshead (1975) index, which incorporates the parents' education, occupation, sex, and marital status; a separate standardized measure was used for the family's annual income. The adolescent's level of delinquency was measured using a delinquent behavior subscale in the Child Behavior Checklist at age 10 ($\alpha = .68$) (Achenbach, 1991). This checklist was a parent's report of the adolescent's delinquency. SES was included as a control variable because it could plausibly account for the relationship between neighborhood factors and parental monitoring. Delinquency at age 10 was also included as a control to account for monitoring behavior that may be in response to a high level of problematic behavior, acknowledging the bidirectional relationship that has been found between delinquency and parental monitoring in previous studies (Jang & Smith, 1997).

Data Analysis Strategy

Before the cross-lagged models were estimated, multilevel (i.e. mixed effects) linear growth models, with time coded as a wave of the study (0-3), were estimated to test if there were significant changes in both the dependent and independent variables over time. After the growthcurve models were estimated, a fully cross-lagged path model was then estimated in

MPlus 7 (Muthén & Muthén, 1998-2012) to examine the associations among neighborhood disadvantage, neighborhood control, neighborhood cohesion, and parental monitoring across ages 11, 12, 15, and 17. In this study, the use of cross-lagged models allows us to understand the relationship between neighborhood factors and changes in parental monitoring over time (Burkholder & Harlow, 2003). See Figure 1 for a pictorial representation of the fully cross-lagged models that are being estimated. SEM model fit was assessed using several fixed indices: chi squared (χ^2); comparative fix index (CFI); Tucker-Lewis index (TLI); and the root mean square error of approximation (RMSEA). Models were considered good fitting when they had chi-square to degrees of freedom ratio of less than 2.00 (Kline, 1998), CFI and TLI greater than .95 (Julian, McKenry, Gavazzi, & Law, 1999) and a RMSEA, <.05 (Wang & Wang, 2012). While some have argued that 10 to 20 observations per estimated parameter is necessary to achieve adequate power (Kline, 1998), others have conducted simulations and found little empirical support for this claim (Jackson, 2001; Jackson 2003; Wolf, et al, 2013). Jackson (2003) concludes that an overall minimum sample size between 100 and 200 is more useful than using the ratio of observations to parameter estimates. In order to include both the parent and adolescent perspective, without over saturating the models, separate models were estimated to predict parental perceptions of parent monitoring and adolescent perceptions of parental monitoring. Structural equation models were not estimated in a multi-level framework due the low rate of clusters in the data (participants were not sampled to assess neighborhood effects). Additionally, standard errors were not adjusted for clustering because 31% of the sample moved from one census tract to another at least once during the study period, making it impossible to accurately place one respondent in one census tract over the entirety of the study period. All variables measured within one time point were allowed to co-vary and all measures of a single construct were allowed to co-vary when they were not directly and temporally related. All stability paths and crossed-lagged paths were included in the model. Only statistically significant hypothesized paths (those in bold in Figure 1) are included in Table 2, and all significant paths including stability paths are pictured and reported (see Figure 2 and 3). To provide ease of interpretation, standardized betas are reported. All models controlled for the parent's SES (measured using the Hollingshead index), family income, and adolescent delinquency at age 10. Although all exogenous variables were not controlled for in the experimental design, the temporal ordering of the data and accounting for auto-regressive effects allows us to model potentially causal relationships. To assess the sensitivity of the model, additional models were estimated that included both parents' and adolescents' perception of monitoring in one model, calculated a difference score and included the difference between the parent and adolescent perceptions as an outcome and estimated the models with only mothers included. The results of the sensitivity analysis are discussed briefly at the end of the results section.

Results

Depending on the point in time observed (age 11, 12, 15, and 17), participants, on average, lived in neighborhoods where 21.00% of the residents lived below the poverty line, 9.59% of the residents were unemployed, 11.45% of households were single family, and 11.80% of households were receiving public assistance. When multilevel (i.e., mixed effects) linear growth curves were estimated, the results indicated that, on average (i.e., fixed effect of

time), respondents lived in less disadvantaged neighborhoods over time ($B(SE) = -.06$ (.08), $p < .01$). Similarly, linear growth curves indicated that on average (i.e. fixed effect of time), parents perceived less neighborhood cohesion ($B(SE) = -.20$ (.09), $p < .05$) and less neighborhood control ($B(SE) = -.36$ (.10), $p < .01$) as the adolescent aged. Lastly, multilevel (i.e., mixed effects) linear growth curves, indicated that on average both parents' perception of parental monitoring ($B(SE) = -.24$ (.01), $p < .01$) and the adolescent's perception of their parental monitoring decreased over time ($B(SE) = -.07$(.02), $p < .001$) (see Table 1 for averages at each wave). The correlations between the parents and the adolescent's perception of monitoring at each time point was low to moderate, with a .24 correlation at age 11, a .28 correlation at age 12, a .20 correlation at age 15, and a .30 correlation at age 17.

Two models were estimated: one predicting parent perceptions of parental monitoring and one predicting adolescent perceptions of parental monitoring. The model predicting parent perceptions of parental monitoring: X^2(DF) = 68.75(44), $p = .01$; RMSEA =.04; CFI= .99; TLI=.96; SRMR = .04, and the model predicting adolescent perceptions of parental monitoring: X^2(DF) = 65.72(48), $p = .05$; RMSEA =.04; CFI=99; TLI=97; SRMR =.04 demonstrated excellent model fit. Within both multivariate models accounting for parent education and SES, auto-regressive effects for parental monitoring and multiple domains of neighborhood disadvantage were found across all age points (see Figures 2 and 3).

Cross-lagged paths were modeled to test the proposed hypotheses (see Figures 1 & 2). Minimal support was found to support Hypothesis 1; there was no direct relation between neighborhood disadvantage at one time point and parental monitoring at the subsequent time point. In addition, minimal support was found for the relation between neighborhood disadvantage and the perceptions of neighborhood cohesion and control over time. Only neighborhood disadvantage at age 11 was significantly negatively related to the changes in parental reports of neighborhood cohesion at age 12 (B(SE) = $-.22$(.05), $p < .001$) and perception of neighborhood social control (B(SE) = $-.13$(.05), $p < .02$).

In examining Hypothesis 2, parental perception of neighborhood cohesion at earlier time points were positively related to higher rates of parental monitoring when the adolescents were 12 (in one model) and 15 (in both models). Specifically, a .17 increase in the parents' perception of parental monitoring at age 12 was evident for each one-standard deviation increase in the perceptions of neighborhood cohesion at age 11, B(SE) = .17(.08), $p < .05$. Similarly, we found a .21 increase in the parents' perception of parental monitoring at age 15 for each one-standard deviation increase in the perception of neighborhood cohesion at age 12 B(SE) = .21(.08), $p < .01$. No significant association was found between the perception of neighborhood cohesion at age 15 and the parents' perception of parental monitoring at age 17. There was, however, a significant relation between neighborhood control and parental monitoring between the ages of 12 and 15, such that a $-.14$ decrease in parental monitoring at age 15 was evident for each one-standard deviation increase in the perception of neighborhood control at age 12, B(SE)= $-.14$(.07), $p < .05$. This finding was partially mirrored in the model predicting the adolescents' perceptions of parental monitoring. A significant positive relation was found between neighborhood social cohesion at age 12 and parental monitoring at age 15, B(SE) = .33(.09), $p < .001$, and a significant negative relation

was found between the parental perceptions of neighborhood control at age 12 and the adolescent's perception of parental monitoring at age 15, B(SE) = −.33(.08), $p < .001$. Parental income and SES were not significantly related to the parents' or adolescents' perception of monitoring. Delinquency at age 10 was negatively related to the parents' perceptions of parental monitoring at age 11 (B(SE) = −.31(.06), $p < .001$) and age 15 (B(SE) = −.13(.07), $p < .05$), but not at age 12 and 17. Delinquency at age 10 was associated with adolescent's perceptions of parental monitoring at ages 12 (B(SE) = −.15(.06), $p < .01$) and 17 (B(SE) = −.20(.06), $p < .001$), but not ages11 and 15.

No significant relationships were found in the alternative pathways estimated, that is the relationships between monitoring and neighborhood cohesion and control and the relationships between neighborhood cohesion and control and neighborhood disadvantage. More specifically, parental perception of monitoring was not related to their perception of neighborhood and cohesion and control, and the perceptions of neighborhood control and cohesion was not related to the level of disadvantage in the neighborhood where the participant lived. Lastly, a significant indirect effect of neighborhood disadvantage at age 11 on parental monitoring at age 15 was evident through the parents' perception of neighborhood cohesion and neighborhood control at age 12, such that neighborhood disadvantage at age 11 predicted lower rates of neighborhood cohesion and control at age 12, which, in turn, predicted lower cohesion and higher control rates of parental monitoring at age 15 (see Table 2 and Figure 2).

To test the sensitivity of the model, several alternative models were estimated. When the parental and adolescent perceptions of parental monitoring were included in the same model, all pathways remained significant and in the same direction, with one exception: the pathway between perceptions of neighborhood control at age 12 and parental perception of monitoring at age 15 became marginally significant (p=.07); however, the magnitude and direction remained the same. When the difference in parental and adolescent perceptions of monitoring were calculated and entered into the model as an outcome, no significant relationships were found between the perceptions of neighborhood factors and the differences in parental and adolescent perceptions of parental monitoring. When mothers were singularly included in the models, all pathways remained significant and in the same direction with one exception: the indirect pathway from neighborhood disadvantage at age 11 and parental monitoring via control was no longer significant.

Discussion

Social disorganization theory posits that parental monitoring in high risk neighborhoods may protect adolescents from engaging in risky behavior and that neighborhood stressors may negatively impact a parent's ability to monitor their adolescent. While studies have consistently supported the assertion that parental monitoring can protect adolescents when living in disadvantaged neighborhoods, few studies have investigated how neighborhood factors may support or undermine effective parental monitoring across adolescence. This study addresses this gap by investigating the relationship between the changes in parental perceptions of neighborhood characteristics, such as neighborhood cohesion and control, and the changes in parental monitoring over time. In this study, increases in the perceptions

of social cohesion were somewhat consistently related to increases in the parents' perceptions of parental monitoring, a relationship that was replicated when examining adolescents' perceptions of parental monitoring at age 15. Neighborhood control, however, was either unrelated to parental monitoring or related in the opposite direction, with higher rates of the perception of neighborhood control at age 12 being related to lower rates of parental monitoring at age 15.

Evidence was found to support the claim made by social disorganization theorists that supportive neighborhoods help parents monitor their adolescent; however, there was a clear distinction between the effect of neighborhood control and neighborhood cohesion. In the past, neighborhood control and neighborhood cohesion have been lumped together into one construct--*collective efficacy*. While both aspects of neighborhood social control and neighborhood cohesion may be essential to the neighborhood's ability to prevent crime, as classically discussed, the results of this study suggest that when examining their association with other individual behaviors, such as parental monitoring, it may be important to consider them separately. In some ways, these findings reflect the logic that parents can monitor their adolescent successfully when they are in supportive neighborhoods. The findings also point to the existence of other processes. It is possible that when parents perceive that their neighborhood residents monitor the adolescents in public spaces, the parents may be less inclined to monitor their own adolescent. This idea is supported by Mariam and Browning's (2010) findings that neighborhood collective efficacy is related to adolescents having more unstructured time in their neighborhood. In the current study, neighborhood social cohesion and control, which have traditionally worked together to prevent crime in neighborhoods, appear to be working in opposite directions to promote and discourage parental monitoring, respectively. Because parental monitoring has been shown to be such a robust protective factor against problem behaviors in adolescents, these opposing neighborhood effects warrant further investigation.

It should be noted, however, that perceptions of cohesion and controls were related in the models in ways that may be potentially important. While perceptions of neighborhood cohesion and control at each time point predicted perceptions of the same construct at the subsequent time points, there were three instances in which one predicted the other. For example, neighborhood control at age 11 predicted neighborhood cohesion at age 12, whereas neighborhood cohesion at age 12 and 15 predicted neighborhood control at the subsequent time points. These findings indicate that neighborhood control may be necessary to build cohesion; that is, uninvolved residents might develop a sense of trust when they perceive that others in the neighborhood are attempting to control the environment. It may also be the case that when residents feel that they have the same values as their neighborhood, are close to them and trust them they will be more willing to intervene in neighborhood problems. Due to the nature of the data and the lack of clustering within neighborhoods, it is beyond the scope of this study to draw conclusions about neighborhood-level dynamics; however, this may be an important direction for future research.

It is also interesting to note that no relationships were found between neighborhood cohesion and control at age 15 and parental monitoring at age 17. These findings could reflect a developmental shift in parenting, in which parents are providing their adolescent with more

autonomy and are therefore decreasing their overall level of monitoring (Feldman & Rosenthal, 1991). This is a conclusion that is supported by the overall decline in monitoring over time. At seventeen, an adolescent can drive, be employed, and making the transition into living outside of the family home. While some variation exists, Feldman and Quatman (1998) found that parents and adolescents felt that an adolescent should achieve behavioral autonomy across a variety of daily tasks between 15 and 17 years of age. This suggests that neighborhood factors might be unrelated to parenting, not because the relationship to parenting is no longer present, but because monitoring at age 17 is no longer relevant as a construct.

While no direct effect was found between neighborhood disadvantage and parental monitoring, the indirect effect suggests that neighborhood disadvantage may decrease parental monitoring by decreasing the perceptions of cohesion. The results of this study are consistent with previous research that found higher rates of neighborhood disadvantage are related to lower rates of neighborhood cohesion (Kohen et al., 2008). This indirect effect highlights a risk process, and also points to a potential target for intervention. Namely, if the perception of neighborhood cohesion could be increased, it might lead to higher rates of parental monitoring, and in the process, interrupt the negative association of neighborhood disadvantage to parental monitoring. The lack of a relationship between neighborhood disadvantage and the perception of neighborhood social control contradict the relationships that have been found in previous studies. However, it should be remembered that the vast majority of those studies were cross-sectional (Sampson, Morenoff, and Earls, 1999) and did not account for control or for change over time.

No evidence was found for the alternative hypothesis that parental monitoring leads to increases in the perceptions of neighborhood cohesion and control or that those perceptions of cohesion and control motivated parents to move to a more advantageous neighborhood. While Sampson and Morenoff (1997) hypothesized that neighborhoods would influence parenting practices, they also posited that strong parental controls would decrease adolescent delinquency and increase the perceptions of cohesion and control. While this study could not adequately measure neighborhood-level processes, and therefore could not directly test the second part of this issue, the lack of a relationship between parental monitoring and the parents' perceptions of neighborhood control and cohesion suggests that monitoring does not operate this way at the individual level. It is, however, possible that parental monitoring, which effectively reduces neighborhood rates of delinquency, may impact neighborhood-level perceptions of cohesion and control--a hypotheses that should be examined in future research.

While we believe this study contributes to the field's understanding of the relationship between neighborhood factors and parental monitoring, the findings should be interpreted in light of several limitations. This study was not designed to draw inferences about neighborhoods and subsequently, did not have an adequate sample size to estimate neighborhood effects in a multi-level framework. This study is only able to draw inferences about the parents' perceptions of the neighborhood, rather than the neighborhood itself. It is therefore possible that the relationship observed is attributable to characteristics of the reporter, rather than the neighborhood. The replication of the relationships observed using

adolescent reports of monitoring lends support to the argument that the relationship observed does reflect features of the environment. However, future studies should test these associations with larger samples within each neighborhood to competently infer neighborhood effects. Additionally, while monitoring is a crucial parenting behavior that has previously been found to moderate adolescent risk behaviors within high-risk environments, it is not the only parenting dimension that may protect adolescents against risky behavior. Additionally, the measures of the parents' perceptions of parental monitoring available in the current data set did not have good internal consistency. A more robust measure was used in this study at ages 15 and 17, but the low internal consistencies for the measure of parental monitoring used at ages 11 and 12 might have resulted in underestimating the magnitude of associations with other study variables. When measuring parental monitoring across adolescence, it may be necessary to consider normative changes as adolescents' age; what is appropriate monitoring at age 11 may not be appropriate at age 17. Lastly, this sample only includes males from low-income urban communities; therefore, the findings cannot be generalized to female adolescents, nor male and female adolescents from higher SES backgrounds, or adolescents living in rural or more suburban communities.

Conclusions

Despite the central importance of parental monitoring in adolescent outcomes when living in a disadvantaged neighborhood, few studies have investigated how neighborhood factors may support or undermine parental monitoring during adolescence. In this study, the relationship found between the perceptions of neighborhood cohesion and parental monitoring found over time and across reports suggests that parental perceptions of neighborhood cohesion may help support their ability to monitor their adolescent's behavior. This finding suggests that interventions designed to enhance parental monitoring in decreasing problematic adolescent behaviors may increase their efficacy by targeting the environment where the parents live. Conversely, prevention efforts may need to address the notion that parents do not need to monitor their adolescents when they think other adults in the neighborhood are doing the monitoring. It could be the case, however, that monitoring, regardless of the source, prevents problematic adolescent behavior, such that neighborhood monitoring may effectively take the place of parental monitoring. This issue needs to be tested before intervention recommendations can be made. Regardless of the impact that neighborhood social control has on adolescent outcomes, the results of this study provide evidence that changes in the perceptions of neighborhood factors are related to parenting practices (such as monitoring) and therefore should be considered when developing parenting interventions.

Acknowledgements

Biography

Jaime M. Booth is an Assistant Professor in the School of Social Work at the University of Pittsburgh. Dr. Booth's research examines the role of neighborhoods in adolescents' substance use and delinquency, the impact of differential stress experiences on health disparities in minority populations and ultimately strives to identify protective factors that can be enhanced to mitigate these outcomes.

Daniel S. Shaw is a Distinguished Professor of Psychology at the University of Pittsburgh. His research interests include the development and prevention of early child conduct and emotional problems, family-centered interventions for treating conduct problems in early childhood and adolescence, use of novel community platforms for implementing preventive interventions in early childhood, identification of gene x environment interactions in relation to brain function and child psychopathology.

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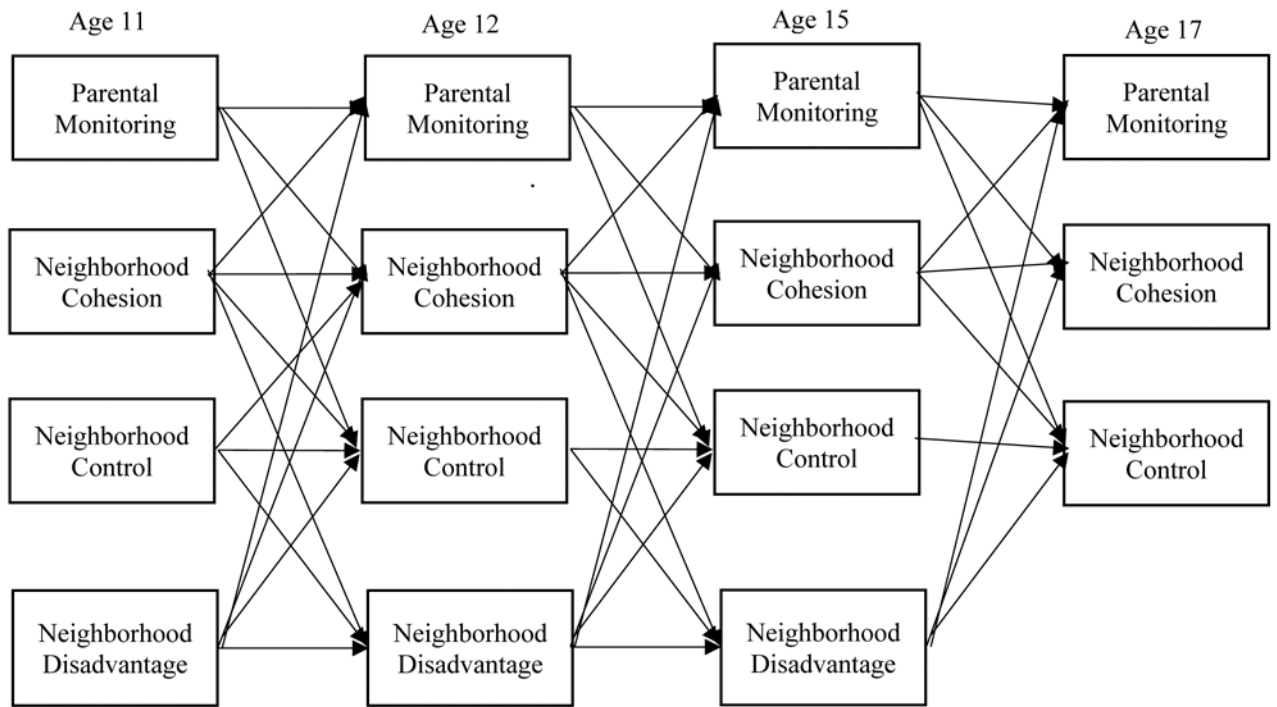
Figure 1.
Hypthisized cross lagged model with all modeled pathways

A. Parents' Perceptions of Monitoring
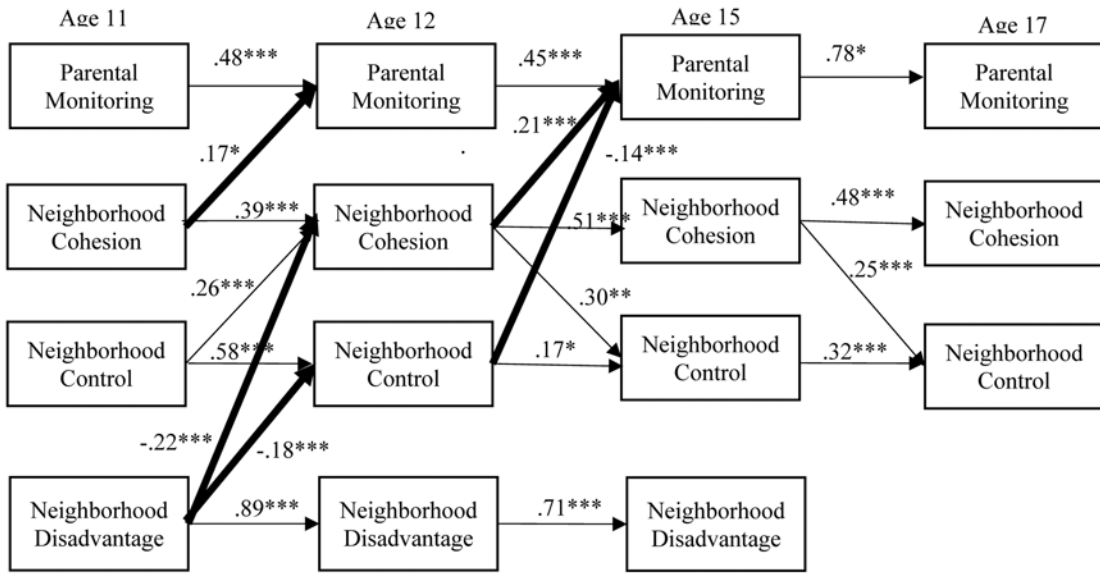
B. Childs' Perceptions of Monitoring
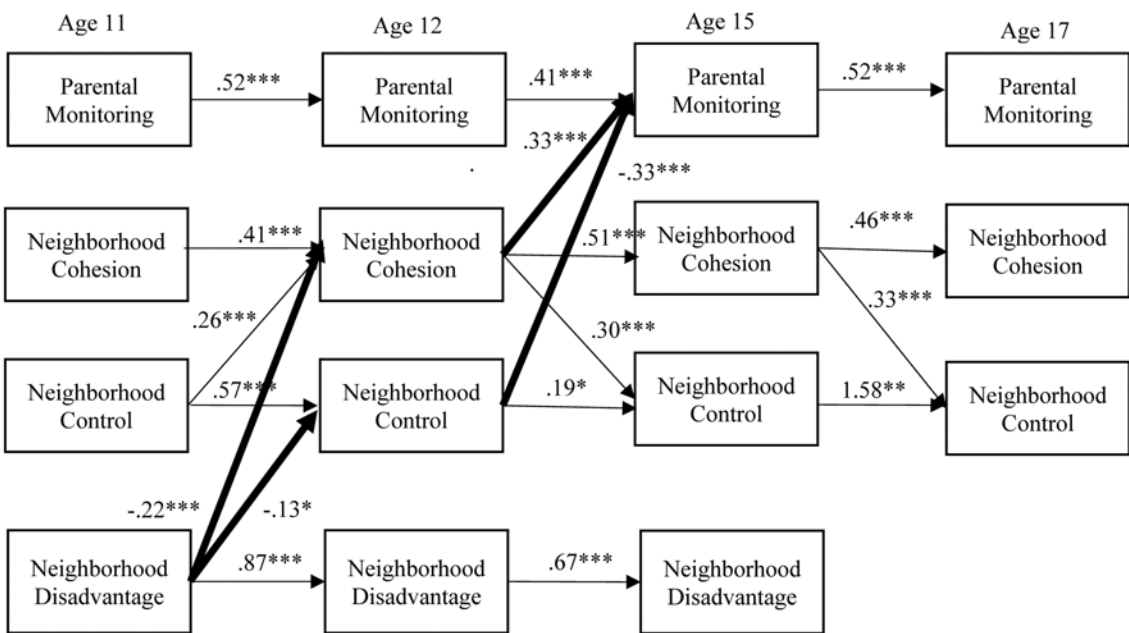
Figure 2.
Full Cross-Lagged Models with Significant Paths Shown
[a] ***p < .001, ** p < .01, *p < .05
[b] All models control for parent's SES (education, occupation, sex and marital status), family income and the child's delinquency at age 10

Table 1.

Correlations (Top child/bottom parent)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Parent M(SD)	Child M(SD)
Mon11 (1)	-	**.56**	**.30**	**.22**	.03	.08	.05	.07	-.06	.01	.05	.05	-**.17**	-**.16**	-.09	4.40(.62)	3.99(.70)
Mon12 (2)	**.49**	-	**.43**	**.36**	.10	**.28**	**.16**	**.16**	.04	**.19**	.20	**.25**	-**.17**	-**.22**	-.10	4.29(.67)	4.13(.74)
Mon15 (3)	**.49**	**.50**	-	**.52**	.04	**.20**	.12	.12	-.06	-.04	.05	.05	-.02	-.07	.00	4.02(.72)	4.03(.73)
Mon17 (4)	**.42**	**.40**	**.50**	-	-.01	**.15**	**.14**	.10	-.01	.01	.09	.07	.01	-.02	-.01	3.80(.95)	3.83(.94)
Coh11 (5)	.06	**.17**	.11	**.15**	-	**.63**	**.46**	**.47**	**.63**	**.48**	**.37**	**.44**	-**.24**	-**.19**	-**.15**	19.32(4.67)	
Coh12 (6)	.09	**.21**	**.20**	**.15**	**.63**	-	**.56**	**.48**	**.53**	**.69**	**.50**	**.48**	-**.36**	-**.40**	-**.28**	18.96(4.70)	
Coh15 (7)	.11	.08	.11	.10	**.46**	**.56**	-	**.62**	**.38**	**.41**	**.72**	**.56**	-**.19**	-**.22**	-**.33**	18.24(5.39)	
Coh17 (8)	.06	.10	**.18**	.09	**.47**	**.48**	**.62**	-	**.40**	**.39**	**.51**	**.71**	-**.19**	-**.20**	-**.26**	18.34(4.96)	
Cont11 (9)	.09	.07	.10	.08	**.63**	**.53**	**.38**	**.40**	-	**.61**	**.40**	**.46**	-.10	-.10	-.08	19.32(4.67)	
Cont12 (10)	.12	**.26**	.10	.08	**.48**	**.69**	**.41**	**.39**	**.61**	-	**.44**	**.53**	-**.21**	-**.24**	-**.20**	18.96(4.70)	
Cont15 (11)	**.16**	.07	.14	.06	**.37**	**.50**	**.72**	**.51**	**.40**	**.44**	-	**.59**	-**.20**	-**.24**	-**.26**	18.24(5.39)	
Cont17 (12)	.10	.06	.08	.08	**.44**	**.48**	**.56**	**.71**	**.46**	**.53**	**.59**	-	-**.20**	-**.20**	-**.27**	18.34(4.96)	
Disa11 (13)	-.06	-.11	-.12	-.12	-**.24**	-**.36**	-**.19**	-**.19**	-.10	-**.21**	-**.20**	-**.20**	-	**.91**	**.70**	0.12(.06)	
Disa12 (14)	-.07	-.08	-.07	-.11	-**.19**	-**.40**	-**.22**	-**.20**	-.10	-**.23**	-**.24**	-**.21**	**.91**	-	**.71**	0.14(.05)	
Disa15 (15)	.01	-.05	-.04	-.07	-**.14**	-**.28**	-**.33**	-**.26**	-.08	-**.20**	-**.26**	-**.27**	**.71**	**.71**	-	0.04(.05)	

[a] All pairwise correlations with p values less than .05 are bolded

[b] Mon## = parental monitoring at ages 11, 12, 15 and 17

Coh## = perception of neighborhood cohesion at ages 11, 12, 15 and 17

Cont## = perceptions of neighborhood control at ages 11, 12, 15 and 17

Disa## = neighborhood disadvantage at ages 11, 12 and 15.

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Table 2.

Significant Hypothesized Direct and Indirect Paths

	Standardized B (SE)
Social Control (Age 12) - > Parental Monitoring (Child Perception age 15)	−.33(.09) ***
Social Cohesion (Age 12) - > Parental Monitoring (Child Perception age 15)	.33(.10) ***
Neighborhood Disadvantage (Age 11) -> Social Cohesion (Age 12) (Both Models)	−.22(.05) **
Neighborhood Disadvantage (Age 11) -> Social Control (Age 12) (Both Models)	−.13(.05) **
Social Control (Age 12) - > Parental Monitoring (Parents Perception age 15)	−.14(.07) *
Social Cohesion (Age 12) - > Parental Monitoring (Parents Perception age 15)	.21(.08) **
Social Cohesion (Age 11) - > Parental Monitoring (Parents Perception age 12)	.17(.06) *
Disadvantage (Age 11) - > Social Cohesion (Age 12) - > Parental Monitoring (Child perception age 15)	−.06(.02) *
Disadvantage (Age 11) - > Social Control (Age 12) - > Parental Monitoring (Child perception age 15)	.04(.02) *
Disadvantage (Age 11) - > Social Cohesion (Age 12) - > Parental Monitoring (Parent perception age 15)	−.04(.02) *

[a]*** p < .001, ** p < .01, *p < .05

[b]All models control for parents SES (education, occupation, sex and marital status), family income and the child's delinquency at age 10