# Concentrated Disadvantage and Adolescent Dating Violence Victimization

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**ABSTRACT**

Although adolescent dating violence is a prevalent problem associated with many negative health outcomes, most research has focused on individual-level risk factors. Guided by social disorganization theory, we analyzed data from the National Longitudinal Study of Adolescent Health to explore how school features relate to physical dating violence victimization. In weighted multilevel random effects models, the variability in dating violence victimization risk attributable to differences between school contexts was very small - 7% for males and 5% for females. In bivariate analyses, school social disorder was positively related to dating violence victimization among females; among males, victimization was positively associated with school concentrated disadvantage and negatively associated with parent social bonds. However, after adjusting for individual-level socioeconomic status, school-level factors were unassociated with dating violence victimization for both genders. Differences between students in the same school appear more important than differences between school settings in explaining risk for dating violence victimization.

**INTRODUCTION**

Violence between adolescent romantic and sexual partners is a prevalent problem in the United States. In a nationally representative sample of adolescents interviewed in the 1995-96 school year, twelve percent of respondents in opposite-sex romantic relationships reported physical victimization in one or more relationships in the preceding 18 months (Halpern et al. 2001). In addition to being associated with many short-term negative health consequences (i.e., suicide attempts, illicit drug use, sexually transmitted infections and adolescent pregnancy,) victimization during adolescence also places individuals at higher risk for partner violence in later life (Decker, Silverman and Raj 2005; Lehrer et al. 2006; Olshen et al. 2007; Roberts, Auinger and Klein 2005; Roberts, Klein and Fisher 2003; Silverman, Raj and Clements 2004). Dating violence during adolescence may affect sociodemographic outcomes, as adolescent violence victimization has been negatively associated with educational and socioeconomic attainment in young adulthood (Macmillan and Hagan 2004). Given the prevalence of adolescent partner violence, as well as its effects on health and demographic outcomes, understanding its etiology should be of concern to researchers and policymakers.

Most research on adolescent dating violence has focused on proximal individual and familial determinants of victimization. These studies have found salient proximal risk factors to include low self esteem, depressive symptoms, problematic alcohol use (especially binge drinking), history of family violence, early sexual debut, having friends who are involved in dating violence, and an attitude of tolerance toward violence in dating relationships (Arriaga and Foshee 2004; Buzy et al. 2004; Foshee et al. 2004; Foshee et al. 2005; Gagne, Lavoie and Hebert 2005; Lehrer et al. 2006; Moretti et al. 2006; Wolfe et al. 2004). Despite some attention in the adult partner violence literature to higher-level systemic determinants, surprisingly little is

known about contextual contributors to adolescent dating violence. The purpose of this paper

will be to explore three potentially important contextual determinants of adolescent dating

violence: concentrated disadvantage, social disorganization, and parental social bonds.

**Past Research**

*Contexts and Adolescent Risk Behaviors*

Past research has found characteristics of neighborhoods (usually operationalized as

Census tracts) and schools are significantly related to adolescent behaviors, above and beyond

individual and family-level characteristics. Adolescents who reside in neighborhoods

characterized by high poverty, unemployment, and residential turnover (i.e., concentrated

disadvantage) are more likely to engage in a number of health compromising behaviors,

including early sexual activity, alcohol use, and smoking (Browning, Leventhal and Brooks-

Gunn 2004; Cubbin et al. 2005; Oetting, Donnermeyer and Deffenbacher 1998; Wilcox 2003;

Wilson et al. 2005). Further, adolescents who attend schools characterized by greater economic

disadvantage are more likely to engage in early sexual activity, use substances, and have higher

body mass indices (Harris, Duncan and Boisjoly 2002; O'Malley et al. 2006; O'Malley et al.

2007). Such health risk behaviors, especially early sexual activity and alcohol use, in turn have

been found to be associated with increased risk for adolescent partner violence victimization

(Buzy et al. 2004; Ramisetty-Mikler et al. 2006). Additionally, adolescent depressive symptoms,

another risk factor for dating violence victimization, have been found to be positively related to

both neighborhood and school concentrated disadvantage (Wight et al. 2005; Wight, Botticello

and Aneshensel 2006). Neighborhood and school concentrated disadvantage, as well as

neighborhood social disorder (i.e., abandoned cars and buildings, defaced property, garbage,

drug dealing, etc.) have been linked with youth violence and delinquency (Harris et al. 2002;

Haynie, Silver and Teasdale 2006; Hoffmann 2006; Khoury-Kassabri et al. 2004), which are also positively associated with adolescent dating violence (Ozer et al. 2004). Given these findings, it is plausible that contextual characteristics could affect risk of adolescent partner violence victimization either directly through the same social disorganization mechanisms affecting other health risk behaviors, or indirectly though their influence on risk behaviors that place adolescents at a higher risk for victimization.

*Neighborhood Contexts and Adult Partner Violence*

As noted above, some work has been conducted examining neighborhood contexts and partner violence in adulthood. Using data from the Project on Human Development in Chicago Neighborhoods (PHDCN), Browning (2002) found neighborhood characteristics were related to some partner violence outcomes but not others (Browning 2002). Specifically, while neighborhood concentrated disadvantage was positively related to intimate partner homicide ecologically, it was not related to either individual level severe partner violence victimization or disclosure of victimization, after individual sociodemographic, social support, and relational characteristics were controlled. Other structural aspects of neighborhoods that were investigated (residential stability and immigrant concentration) were not related to any partner violence outcomes. However, neighborhood collective efficacy was significantly negatively related to both neighborhood homicide rates and individually-reported partner violence victimization, and was a significant mediator of the concentrated disadvantage - intimate partner homicide rate relationship.

In another study using data from a nationally-representative sample of adult couples in the U.S., Cunradi, Caetano, Clark and Schafer (2000) examined the association between neighborhood poverty and both male-to-female (MFPV) and female-to-male (FMPV) partner

violence (Cunradi et al. 2000). Results indicated that neighborhood poverty was positively related to partner violence, but differentially by race/ethnicity. For both black and white couples, neighborhood poverty was positively associated with FMPV; however, neighborhood poverty was positively associated with MFPV among black couples only. In a subsequent study using data from the National Household Survey on Drug Abuse, Cunradi (2006) examined the relationship between self-reported neighborhood disorder and mutual partner violence. She found that self-reported neighborhood disorder was directly positively related to mutual partner violence reported by adult males, but among females, it was only related to mutual partner violence in combination with past thirty day alcohol use (Cunradi 2006).

Although such studies suggest adult intimate partner violence is inconsistently related to certain indicators of neighborhood social disorganization, there are reasons to believe adolescent partner violence may be more susceptible to such contextual influences. First, research has documented a link between neighborhood and school deprivation and other adolescent risk behaviors which are known risk factors for adolescent partner violence. Second, it is possible that although neighbors may be reluctant to intervene in adult intimate relationships, they or other interested gatekeepers (e.g., friends, friends' parents, teachers, etc.) may be more willing to intervene in adolescent dating relationships.

**Theoretical Model**

This analysis will draw upon social disorganization theory in exploring how school contexts may be related to adolescent dating violence victimization. According to this theory, communities that are characterized by less material and structural resources are not as effective as those with more resources in regulating residents' behavior (Sampson 1997; Sampson, Raudenbush and Earls 1997). That is, because residents in these neighborhoods have less time

and resources to invest in their relationships with one another and in local social institutions, concentrated disadvantage is thought to affect neighbors' ability to build mutual good will and trust (Sampson, Morenoff and Gannon-Rowley 2002). This lack of social capital in turn affects the willingness and ability of residents to intervene when they observe unacceptable behavior; it also impedes neighbors' abilities to collectively lobby social institutions and the larger society for needed resources. Socioeconomically disadvantaged neighborhoods also may influence adolescents indirectly by increasing opportunity for exposure to deviant peers (Haynie et al. 2006). As neighbors withdraw from social life and the regulation of public behavior, physical indicators of social disorder in the neighborhood (e.g., trash on streets, graffiti, open drug dealing, etc.) further signal potential perpetrators of violence and crime that these actions will likely go unchecked by neighborhood residents.

These social disorganization theory constructs, usually applied to neighborhood social settings, reasonably can be applied to school settings as well. At the individual level, parents' ability to be involved in their children's schooling can be affected by their socioeconomic status. For example, parents in low-wage jobs may have less flexibility to take time off for parent-teacher conferences or to volunteer at school functions. When a substantial number of parents experience similar constraints, the development of bonds and informal networks between parents within that school can be negatively affected. As in neighborhood social settings, without this "network closure" (Coleman 1988), the collective monitoring and social control of adolescent behavior likely will be weaker. In the case of adolescent dating violence, the social bonds between parents within schools should be influential, given the importance of school settings in the formation of adolescent intimate relationships (Ford, Sohn and Lepkowski 2001; Ford, Sohn and Lepkowski 2003). Empirical evidence supports the applicability of social disorganization

theory to school settings. School socioeconomic status has been associated with school-level

social problems, including dropout rates (Zvoch 2006), delinquency (Payne, Gottfredson and

Gottfredson 2003), and substance use (O'Malley et al. 2006). Research studies have also found

a positive association between school socioeconomic status and parent involvement

(Hooverdempsey, Bassler and Brissie 1987), as well as a negative association between parent

school involvement and school disciplinary problems (Sheldon and Epstein 2002).

Following from this framework, the three main study hypotheses are:

Hypothesis 1: Levels of school concentrated disadvantage will be positively related to

adolescents' likelihood of dating violence victimization.

Hypothesis 2: School social disorder will be positively related to adolescent dating

violence victimization, and will partially mediate the association between school

concentrated disadvantage and likelihood of dating violence victimization.

Hypothesis 3: School-level parent bonds will be negatively related to adolescent dating

violence victimization, and will partially mediate the association between school

concentrated disadvantage and likelihood of dating violence victimization.

## METHODS

**Data**

This analysis utilized data from the National Longitudinal Study of Adolescent Health's

(Add Health) contractual data set (Udry 2003). Add Health is a prospective cohort study of a

nationally-representative sample of young persons enrolled in grades 7-12 in the 1994-95 school

year (Wave I) (Harris et al. 2003). Respondents were followed up one year after baseline (1996,

Wave II). Add Health utilized a multistage probability clustered sampling design to obtain its

original Wave I sample. The first stage of sampling was a stratified, random sample of all public and private high schools in the U.S. A feeder school was also recruited from each participating community. In-school surveys were attempted with all students attending participating schools. In the second Wave I sampling stage, a sample of adolescents was drawn for in-depth in-home interviews, consisting of a core sample plus selected special oversamples. Additionally, the parents of adolescents who participated in Wave I in-home interviews were also recruited for an in-home interview. Most persons who completed Wave I in-home interviews were eligible to participate at Wave II, with a few exceptions (e.g., respondents who were high school seniors at Wave I and were not part of a genetic pair or the disabled sample).

**Analytic Sample**

Data from the in-home adolescent interviews conducted at Waves I and II and the in-home parent interview conducted at Wave I were utilized. The number of persons who participated in both Waves I and II and who have valid sampling weights available is 13,568. Respondents who did not report exclusively heterosexual relationships at Wave II were excluded (n=146) because past research has found risk factors for partner violence to vary across opposite-sex and same-sex couples (Halpern et al. 2001; Halpern et al. 2004). Also, respondents who were missing data on any of the individual-level covariates were also excluded (n=754). The resulting analytic sample size was 12,545. Respondents who reported no romantic or sexual relationships at Wave II (n=4,277) were included, as one strategy adolescents may use to avoid partner violence is to abstain from such relationships. Parent-reported data were used only in the construction of school contextual measures (detailed below); as such no respondent was excluded based on their parent's non-participation.

**Measures**

The primary <u>outcome variable</u>, adolescent minor physical dating violence victimization, was based on three items from the Conflict Tactics Scale (CTS) (Straus et al. 1996) that were included in the Wave II in-home questionnaire; in some cases, item wording was slightly modified.  For each of up to six romantic and/or sexual relationships reported, respondents were asked whether during the relationship their partner had ever:  (1) threatened them with violence, (2) thrown something at them that could hurt them, and/or (3) pushed or shoved them.  For each behavior, respondents indicated no or yes.  Consistent with past studies using Add Health data (Halpern et al. 2001; Halpern et al. 2004), a dichotomous summary variable (Any Physical Violence Victimization) was constructed indicating whether *any* of these experiences occurred in *any* of the relationships reported by the respondent.

The main <u>predictor variable</u> under investigation, school concentrated disadvantage, was constructed by aggregating a number of variables derived from adolescent and parent report to the school level, then conducting a principal components factor analysis of these aggregated variables.  In order to make such aggregate scores representative of the school, only those respondents selected as part of the Add Health core sample were included to generate aggregate variables.  Consistent with past studies of social disorganization, these variables included proportion of students living in households below the poverty line, proportion of students not living with both biologic parents, proportion of students in families receiving public assistance, proportion of students with parents who did not graduate from high school, and proportion of students with unemployed parents (Browning 2002; Cunradi et al. 2000; De Coster, Heimer and Wittrock 2006; Wight et al. 2006). Principal components factor analysis was conducted at the school level to generate this score.

The choice to focus on the context of schools rather than neighborhoods was driven partially by features of the Add Health data. Because the Add Health primary sampling units (PSUs) were schools rather than neighborhoods, many Census tracts (i.e., proxies for neighborhoods) in the sample include very few respondents. For example, nearly 50% of Census tracts in the Add Health sample contain only one respondent (Wight et al. 2005; Wight et al. 2006). Using the school as the level-2 unit of analysis avoids the problem of parameter instability in multilevel models due to singleton clusters (Moineddin, Matheson and Glazier 2007), and also makes possible the use of level-2 sampling weights, which are available for schools in Add Health. Additionally, school contexts have been found in prior research to be an important influence on adolescent health behaviors and health outcomes (Harris et al. 2002; O'Malley et al. 2006; O'Malley et al. 2007; Wight et al. 2005; Wight et al. 2006).

Control variables were included for individual-level dating violence victimization risk factors which may also be related to selection into schools characterized by concentrated disadvantage. These variables were derived from adolescent self-report at Wave II interview, and include age (group mean centered), race/ethnicity (Non-Hispanic White, Non-Hispanic Black, Hispanic, Other), parent education (higher of either mother or father: less than high school degree, high school diploma/GED, some postsecondary education, four year college degree or greater), and family structure (two biologic parents, stepfamily, single parent, other). Gender was treated as a potential effect modifier, in that all analyses were conducted stratified by gender. Indicators for other individual adolescent problem behaviors and mental health were not included, as they may either be mediators of the context-victimization relationship, or they may be effects of victimization itself.

Two potential <u>mediators</u> of the concentrated disadvantage – dating violence victimization relationship were also assessed. First, the mediation of concentrated disadvantage by *parent social bonds* was tested. In the Wave I parent interview, parents were asked if they were involved in the school parent-teacher organization (1=yes, 0=no), knew their child's friends (1=yes, 0=no), and knew their child's friends' parents (1=yes, 0=no). In past studies, these items have been used to assess formal and informal parental social ties within a school (Wright and Fitzpatrick 2006). The proportion of parents who responded yes to each of these questions was calculated for each school; a principal component factor analysis of these school-level proportions was then used to generate the school parent social bonds score.

The second mediator examined, *social disorder*, was constructed based on multiple items. A school-level delinquency variable was constructed based on the mean of Wave II core sample students' delinquency scale scores within each school. The 14 items on this scale inquire about frequency of delinquent acts in the past 12-months scored on a zero (=never) to three (=five or more times) scale, including: paint graffiti, damage property, shoplift, steal something worth less than $50, steal something worth $50 or more, burglarize, steal a car, sell drugs, engage in a serious physical fight, seriously injure another, use or threaten to use a weapon, participate in a group fight, pull a knife or gun on someone, and shoot or stab someone (Haynie and Osgood 2005). Also, two substance use variables were constructed: percentage of students who used any illegal drugs in the prior 12 months, and percentage of students who binge drank in the prior 12 months. Both items were based on student report at Wave II interview. All school-level variables were entered into a principal components factor analysis to derive an overall social disorder score for each school.

**Analyses**

All analyses were performed in Stata version 9 (StataCorp LP, College Station, Texas).

Individual-level analyses were run with corrections for complex survey design and weighted to

yield nationally-representative estimates. Multilevel logistic regression analyses were conducted

using GLLAMM commands, and included weights for both individuals and schools (Rabe-

Hesketh and Skrondal 2006; Rabe-Hesketh, Skrondal and Pickles 2004). The estimation

procedure used was numerical integration (10 integration points) with adaptive quadrature

(Rabe-Hesketh et al. 2004). All level-1 variables were dummy coded except for age, which was

group-mean centered. Level-2 variables (mean age in school, concentrated disadvantage, social

disorder, and parent social bonds) were grand mean-centered. Level-2 variables were left on

their original continuous scale because a visual examination of bivariate scatterplots (i.e., each

level-two variable against school prevalence of victimization) indicated no curvilinear or

threshold relationships.

Analyses began by examining univariate distributions and bivariate relationships.

Proportions and means of partner violence victimization, individual-level confounders, and

school-level concentrated disadvantage, social disorganization and parent social bonds scores

were calculated. The bivariate relationship between each covariate and the binary outcome

dating violence victimization was assessed with a series of bivariate multilevel logistic

regression models with random intercepts.

The general model form was:

Level 1 model: $\eta_{ij} = \beta_{0j} + \sum_{p=1}^{P} \beta_{pj} X_{pij}$

Level 2 model: $\beta_{0j} = \gamma_{00} + \gamma_{01}(\text{AGE}_j) + \gamma_{02}(\text{CD}_j) + \gamma_{03}(\text{SD}_j) + \gamma_{04}(\text{SB}_j) + u_{0j}$ ,     $u_{0j} \sim N(0, \tau_{00})$

$\beta_{pj} = \gamma_{p0}$   (for $p > 0$)

Where:     $i$ = index for individuals
$j$ = index for schools
$p$ = index for individual-level covariates
$\eta$ = log odds of dating violence victimization
$u_{0j}$ = random effect for PSU $j$
AGE = school mean age, grand mean centered
CD = school concentrated disadvantage score
SD = school social disorganization score
SB = school parent social bonds score

A number of models were fit separately for females and males. First, to assess the level of variability in gender-specific dating violence victimization across schools, an intercept-only model with random intercepts was run to calculate the intraclass correlation (ICC). Calculation of the ICC is complicated in models with binary outcomes, because level-1 variance is unknown; as such, the level-1 variance was assumed equal to that of a logistic distribution ($\pi^2/3$) (Raudenbush and Bryk 2002), and the ICC was calculated as ($\tau_{00}$)/($\tau_{00} + [\pi^2/3]$). A Wald chi-square test was used to test whether the level-2 variance was significantly different from zero. Although likelihood ratio tests based on mixtures of chi-square distributions are usually recommended to test the necessity of the level-2 random effects in models with binary outcomes, in cases in which data are weighted, the likelihood ratio test is invalid (Sribney 2005). Wald chi-square tests for variance parameters, however, can be overly conservative when testing against the parameter boundary value (zero) (Fitzmaurice, Laird and Ware 2004). To address that

concern, a more liberal alpha level was used for variance parameter hypothesis testing ($\alpha=0.10$), as discussed in Fitzmaurice et al. (2004).

In the second model, level-1 fixed effects for all individual-level confounders were entered to test if the between-school variation in dating violence victimization was explained by individual covariates. To assess proportionate change in level-2 variance across models, $\tau_{00}$ estimates had to be rescaled because the level-1 variance was approximated with the fixed value ($\pi^2/3$) (Bauer 2007).

The subsequent models assessed school-level variables, controlling for the individual-level variables. School-level variables assessed in multivariable models included only those found to have a significant bivariate relationship with gender-specific dating violence victimization. All individual-level variables were maintained in multivariable models because of the theoretical need to control for factors related to selection into schools.

## RESULTS

### Descriptive Results

Descriptive statistics for the sample students are presented in Table 1. The majority of respondents reported non-Hispanic white race/ethnicity (68.9% females, 68.8% males), living with both biologic parents (56.1% females, 57.1% males) and highest parent education as greater than high school diploma (55.0% females, 56.0% males). The mean age was 16.4 years for females and 16.5 years for males. Overall, 8.8% of females and 8.3% of males reported minor physical victimization by at least one romantic or sexual partner in the 18 months prior to Wave II interview. Information regarding schools' characteristics is presented in Table 2. The mean gender-specific school prevalence of dating violence victimization was slightly different from

the overall population-weighted prevalence (8.6% females, 7.8% males); distributions are

presented in Figures 1 and 2. Concentrated disadvantage scores across schools were distributed

approximately normally (mean=0, standard deviation [SD]=1), but evidenced some right-

skewness. Both social disorder and parent social bonds scores were also approximately normally

distributed (mean=0, SD=1), but evidenced some left-skewness.

**Bivariate Results**

Results from bivariate multilevel logistic regression models are presented in Table 3.

Patterns of associations between individual-level variables and victimization were similar across

gender. For females, the individual characteristics of relative age within school (OR=1.15, 95%

CI 1.02-1.30), living in an "other" family structure (OR=2.21, 95% CI 1.23-3.97), and highest

parental education of high school diploma (OR=1.69, 95% CI 1.19-2.41) were all positively

associated with odds of dating violence victimization relative to same-school peers. For males,

relative age within school (OR=1.22, 95% CI 1.11-1.33), living in an "other" family structure

(OR=3.07, 95% CI 1.69-5.58), and highest parental education of less than a high school diploma

(OR=1.63, 95% CI 1.02-2.60) were all positively associated with dating violence victimization

relative to same school peers. Additionally for males, race/ethnicity was associated with

victimization, such that males of non-white race/ethnicity (non-Hispanic Black OR=2.69; 95%

CI 1.86-3.87; Hispanic OR=2.39, 95% CI 1.61-3.54; non-Hispanic other OR=2.46, 95% CI 1.46-

4.14) were more likely than same-school non-Hispanic white counterparts to experience

victimization.

In contrast, gender differences were observed in the patterns of associations between

school-level variables and dating violence victimization in bivariate analyses. The mean age

within a school was positively related to dating violence victimization for both females

(OR=1.23, 95% CI 1.09-1.38) and males (OR=1.30, 1.11-1.53). However for females, the only

other school variable significantly associated with victimization was social disorder: a standard

deviation increase in school social disorder score was associated with 21% higher odds of female

victimization (OR=1.21, 95% CI 1.06-1.37). For males, concentrated disadvantage was

positively associated (OR=1.36, 1.22-1.52) and parent social bonds was negatively associated

(OR=0.80, 95% CI 0.71-0.90) with odds of dating violence victimization. These associations are

also presented in Figures 3-5.

**Multivariable Results**

Females. Because bivariate results did not support a relationship between concentrated

disadvantage and female dating violence victimization, multivariable analyses testing mediation

pathways became moot (Baron and Kenny 1986). Instead, analyses focused on testing whether

the bivariate relationship between social disorder and dating violence victimization held after

controlling for individual-level characteristics (Table 4).

The first model, an intercept-only random effects model, supports a small but significant

variation across schools in the prevalence of female dating violence victimization ($\hat{\tau}_{00}$ =0.16,

SE=0.06; ICC=0.05). The ICC indicates that about 5% of the variability in the odds of dating

violence victimization is located between schools. After addition of individual-level covariates

in the second model, about 17% of the between-school variation in the odds of female dating

violence victimization is explained; between-school variability is still borderline significant

($\hat{\tau}_{00}$ =0.13, SE=0.06). Individual-level variables found significantly related to female dating

violence victimization in bivariate analyses remained significant in the second model;

additionally, Hispanic race/ethnicity was found borderline significantly negatively related to

female dating violence victimization (adjusted odds ratio [AOR]=0.75, 95% CI 0.55-1.02). In

model three, the school mean age was added to the model, and found significantly positively related to female dating violence victimization risk, after controlling for individual-level characteristics (AOR=1.24, 95% CI 1.11-1.39); school mean age explained an additional 24% of the variation between schools. School social disorder score was entered in model four; the relationship between school social disorder and female dating violence victimization risk was only borderline significant and reduced compared to the crude estimate (AOR=1.13, 95% CI 0.99-1.29). Addition of social disorder explained an additional 10% of the remaining between-school variance.

Males. Because bivariate results did not support a relationship between social disorder and male dating violence victimization, multivariable analyses examined only the relationship between male victimization and school-level concentrated disadvantage and parent social bonds. Analyses proceeded similar to those for female victimization (Table 5).

The first model, an intercept-only random effects model, supports a small but significant variation between schools in the prevalence of male dating violence victimization ($\hat{\tau}_{00}$=0.24, SE=0.08; ICC=0.07). The ICC indicates that about 7% of the variability in the odds of male dating violence victimization was attributable to differences between school contexts. In the second model, controlling for individual-level variables, the between-school variation in males' odds of dating violence victimization decreased by nearly 50% but was still borderline significant ($\hat{\tau}_{00}$=0.12, SE=0.07). Individual-level variables found significantly related to male dating violence victimization in bivariate analyses remained significant in model two, except parent education less than high school. In model three, school mean age was entered as a predictor, and found significantly positively related to male dating violence victimization risk, after controlling for individual-level characteristics (AOR=1.25, 95% CI 1.12-1.41). School

mean age explained an additional 16% of the level-2 variance. In models four and five, the

adjusted relationship of the school variables concentrated disadvantage and parent social bonds

with male dating violence victimization was tested. In both cases, estimated beta coefficients

were smaller in magnitude compared to biavariate analyses and were statistically insignificant,

after controlling for individual-level sociodemographic characteristics and school mean age

(concentrated disadvantage AOR=1.10, 95% CI 0.95-1.28; parent social bonds AOR=1.01, 95%

CI 0.88-1.15). Each of these variables explained only an additional 2% of the level-2 variance.

## DISCUSSION

Although prior research has found contextual indicators of poverty, social disorder, and

collective efficacy are related to adult partner violence, no studies have assessed whether similar

contextual measures are related to adolescent dating violence victimization. In the present

analysis, the relationship between dating violence victimization and similar school context

characteristics was assessed, controlling for individual-level sociodemographic characteristics.

School-level concentrated disadvantage appeared unrelated to female victimization in

bivariate analyses, and unrelated to male victimization after individual sociodemographic

characteristics were controlled. This suggests contextual economic hardship (at the level of the

school) does not influence male dating violence victimization above and beyond individual

economic hardship. These findings contrast to those of Cunradi et al., who found neighborhood

poverty was positively associated with adult male victimization amongst Blacks and Whites, as

well as female victimization among Blacks (Cunradi et al. 2000). This discrepancy in findings

may be attributable to differential partner violence etiologies between adults and adolescents.

For example, while adult partner violence may be precipitated by a partner's unemployment or

other economic stresses in the family (for which adults have primary responsibility), adolescents'

dating violence may be more influenced by role modeling by parents or peers (Foshee et al.

2004).  Therefore because contextual disadvantage is more distally related to adolescent versus

adult victimization, one might expect no association after controlling for family demographic

characteristics that could act as mediators.

Social disorder was the only contextual variable suggested by social disorganization

theory that was related to female dating violence victimization in bivariate analyses.  However,

after controlling for individual sociodemographic characteristics, the magnitude of this

association was greatly reduced and only marginally significant.  This suggests that family

socioeconomic status explains female adolescents' differential exposure to school environments

which are socially disordered *and* their risk for dating violence victimization.  These findings are

somewhat at odds with those of Cunradi (Cunradi 2006); however, differences in the

operationalization of social disorder (i.e., perceived versus extra-individual) and partner violence

(i.e., mutual versus victimization only) may explain these differences. The use of contextual

measures of social disorder in the present study is a strength, because perceived social disorder is

likely endogenous to self-reported dating violence victimization.  Examination of mutual partner

violence was not possible, because Add Health Wave II dating violence questions inquired only

about victimization and not perpetration. Future studies should explore if school contextual

variables are differentially related to unidirectional versus bidirectional adolescent dating

violence victimization. In addition, the Cunradi study found that social disorder was only

associated with adult female-reported mutual partner violence in combination with past thirty

day heavy drinking.  Future research should also examine possible interactions between school

context dimensions and individual-level sociodemographic characteristics and risk behaviors.

For both females (crudely) and males (adjusted), parent social bonds was also found unrelated to dating violence victimization risk. Given the results of Browning's study - adult female victimization was significantly negatively related to neighborhood collective efficacy (Browning 2002) - it is possible that adolescent victimization is more sensitive to the quality and mutuality of parent bonds within the school, rather that just the presence of bonds between parents. Although questions exist in Add Health that assess parents' perceptions of such relationship qualities between neighbors, similar questions do not exist for the quality of relationships with other school parents or their child's friends' parents. Future studies should explore whether these interparental relationship quality constructs are related to adolescent dating violence victimization.

The most fundamental issue in the present analysis, however, is the relatively small proportion of variability in dating violence victimization attributable to differences between school contexts - 5% for females and 7% for males. This finding suggests that differences between students within the same school are much more important than differences between school contexts in the prediction of dating violence victimization. The weak associations found between school-level characteristics and dating violence victimization risk is probably partially attributable to this small between-school variability. There are a number of reasons why the observed school context effects may be so small.

First, although schools are important contexts for the socialization of adolescents, a sizeable proportion of adolescents draw their romantic and sexual partners from other social groups. According to Ford, nearly 40% of the dating relationships documented in Add Health involved partners who did not attend the same school as the respondent (Ford et al. 2001). If dating violence experiences are concentrated in these relationships, school contexts may be less

relevant to the monitoring and regulation of relationship dynamics. Future analyses should examine whether the influence of school characteristics on dating violence victimization risk varies by such relational characteristics.

Second, qualitative studies of adolescent dating violence, similar to studies of adult partner violence, suggest there is heterogeneity in the circumstances and context of adolescent dating violence experiences. For example, Foshee et al. conducted qualitative follow-up interviews with a subsample of adolescents who reported dating violence in a standardized questionnaire based on the Conflict Tactics Scale (Foshee et al. 2007). The authors found that some adolescents retracted their earlier reports of dating violence, some described the previously-reported dating violence as joking or playful acts, and others described the dating violence acts as part of a coercive or controlling relationship dynamic. It is possible school contexts have differential effects on these subtypes. Use of act-specific questionnaires, while being behaviorally-specific, do not capture the context and meaning of acts categorized as "violent." Future studies should examine whether different subtypes of adolescent dating violence vary significantly across school contexts, and whether specific school characteristics are differentially related to dating violence subtypes.

Third, the quantification of between-school variability in dating violence victimization risk in the present study is based on an assumed level-1 variance equal to that of a logistic distribution. Although this is standard practice in multilevel studies with binary outcomes – because level-1 variance is unknown – there is no way to test the appropriateness of this assumption. If actual within-school variability in risk for dating violence victimization is less than the variance in a standard logistic distribution, the ICC calculated in the present study will be underestimated.

In sum, the hypotheses suggested by social disorganization theory were largely unsupported in the present analysis. Because concentrated disadvantage was not directly related to either female victimization in bivariate analyses or male victimization after control for individual and family characteristics, it could not conceptually be mediated by other contextual characteristics (social disorder or parent social bonds). Indeed, the only variable even marginally related to victimization after controlling for individual-level characteristics was social disorder, which was only relevant for females. In combination with findings of very little variation across schools in risk of dating violence victimization, results suggest differences between individuals in the same school are more influential in dating violence victimization risk than are differences between school contexts. However, future studies should test the robustness of these findings to different subtypes of adolescent violence (i.e., mutual vs. unidirectional, coercive vs. "playful"), and examine whether the relationships between individual-level characteristics and dating violence victimization varies across school contexts.

**Conclusion**

In the present study, the association between school context characteristics and adolescent dating violence victimization was weak. Results indicated that only 5% of the variation in female victimization risk, and 7% of the male victimization risk, was attributable to differences between schools, suggesting the large majority of risk variation is due to individual-level factors. However, adolescent dating violence victimization was at least crudely related to certain school characteristics among males and females. Although these associations were attenuated and most became insignificant after control for individual-level characteristics, they suggest some targeting of preventive interventions (e.g., the "Safe Dates" program) to schools serving socially disorganized areas may be useful in addressing a population at somewhat higher

risk for adolescent dating violence.

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**Table 1. Descriptive statistics: Individual characteristics**

|  | Females<br>n=6,453<br>n (weighted %) | Males<br>n=6,092<br>n (weighted %) |
|---|---|---|
| Partner violence victimization | 568 (8.8%) | 524 (8.3%) |
| Race/ethnicity |  |  |
| Non-Hispanic White | 3,557 (68.9%) | 3,383 (68.8%) |
| Non-Hispanic Black | 1,404 (15.4%) | 1,183 (14.3%) |
| Hispanic | 1,036 (11.7%) | 1,026 (12.0%) |
| Non-Hispanic Other | 456 (4.0%) | 500 (4.9%) |
| Family structure |  |  |
| Two biologic parents | 3,495 (56.1%) | 3,392 (57.1%) |
| Stepfamily | 1,099 (16.7%) | 1,097 (17.0%) |
| Single parent | 1,632 (24.1%) | 1,409 (22.8%) |
| Other | 227 (3.1%) | 194 (3.1%) |
| Parent education |  |  |
| < High school diploma | 885 (13.1%) | 729 (12.0%) |
| High school diploma/GED | 1,921 (31.9%) | 1,811 (32.0%) |
| Some postsecondary | 1,370 (22.5%) | 1,204 (20.6%) |
| Bachelor's degree or more | 2,277 (32.5%) | 2,348 (35.4%) |
| Age, mean (SE) | 16.4 (0.12) | 16.5 (0.12) |

**Table 2. Descriptive statistics: School characteristics (n=132)**

|  | Mean (SD) | Minimum | Maximum |
|---|---|---|---|
| **Dating violence victimization prevalence** |  |  |  |
| Female victimization | 8.6 (5.2) | 0 | 21.1 |
| Male victimization | 7.8 (5.2) | 0 | 27.0 |
| **Concentrated disadvantage indicators** |  |  |  |
| Proportion students not living with two biologic parents | 46.6 (13.7) | 10.5 | 81.3 |
| Proportion students below poverty | 17.6 (15.7) | 0 | 65.8 |
| Proportion students in families receiving public assistance | 15.0 (13.8) | 0 | 55.8 |
| Proportion students with highest parental education <HS | 12.8 (12.0) | 0 | 65.8 |
| Proportion students with unemployed parents | 5.6 (4.4) | 0 | 23.6 |
| *School concentrated disadvantage score* | *0 (1)* | *-1.68* | *2.76* |
| **Social disorder indicators** |  |  |  |
| Percent students who binge drank in past year | 23.0 (11.3) | 0 | 48.8 |
| Percent students who used illegal drugs in past year | 26.1 (11.3) | 0 | 51.5 |
| School mean delinquency score | 1.68 (0.64) | 0.05 | 3.36 |
| *School social disorder factor score* | *0 (1)* | *-2.85* | *2.02* |
| **Parent social bonds indicators** |  |  |  |
| Percent parents involved in PTA | 34.6 (16.0) | 8.9 | 81.6 |
| Percent parents who met child's friends | 92.6 (7.9) | 45.8 | 100.0 |
| Percent parents who met child's friends' parents | 80.6 (11.6) | 25.0 | 100.0 |
| *School parent social bonds factor score* | *0 (1)* | *-5.14* | *1.82* |

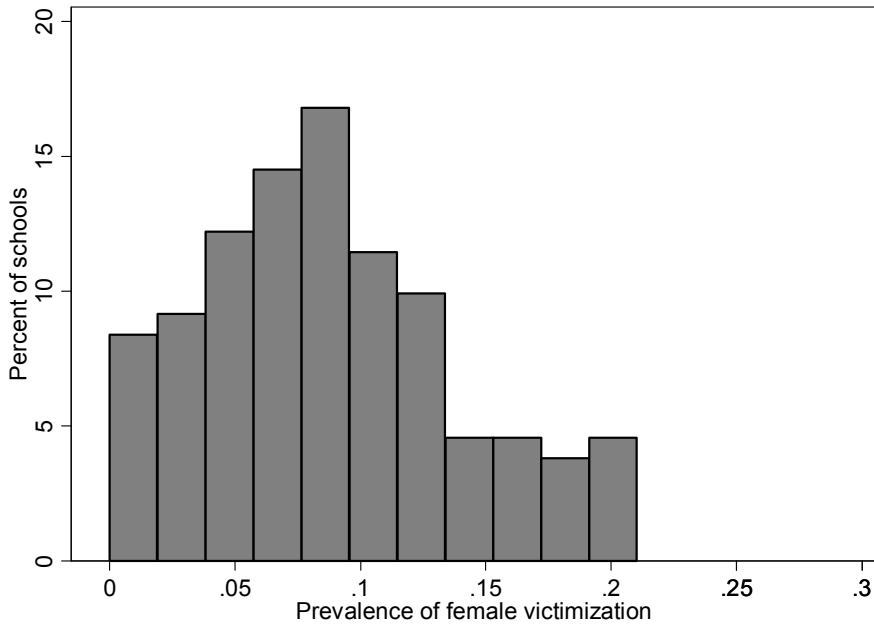**Figure 1. Prevalence of female victimization across schools (n=132)**



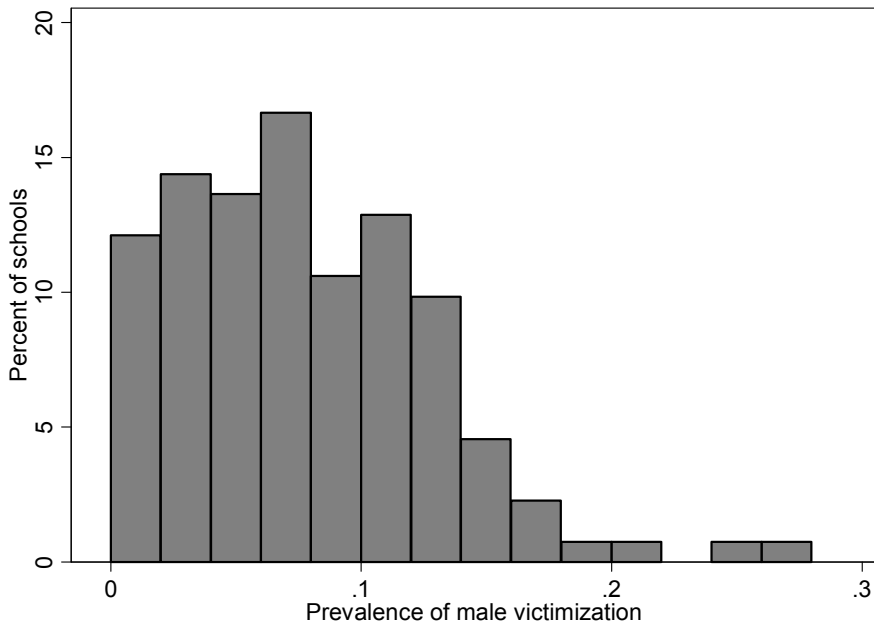**Figure 2. Prevalence of male victimization across schools (n=132)**

## Table 3. Bivariate multilevel logistic regression results: Dating violence victimization [‡]

| | Female Victimization (n=6,453) | Male Victimization (n=6,092) |
|---|---|---|
| | OR (95% CI) | OR (95% CI) |
| *Individual-level characteristics* | | |
| Race/ethnicity | | |
| Non-Hispanic White | -- | -- |
| Non-Hispanic Black | 1.16 (0.88-1.54) | 2.69 (1.86-3.87)*** |
| Hispanic | 0.78 (0.62-1.03) | 2.39 (1.61-3.54)*** |
| Non-Hispanic Other | 0.78 (0.40-1.54) | 2.46 (1.46-4.14)** |
| Age (group centered) | 1.15 (1.02-1.30)* | 1.22 (1.11-1.33)*** |
| Family structure | | |
| Two biologic parents | -- | -- |
| Stepfamily | 1.16 (0.84-1.59) | 1.35 (0.94-1.96) |
| Single parent | 1.31 (0.97-1.76)[†] | 1.39 (0.97-1.99)[†] |
| Other | 2.21 (1.23-3.97)** | 3.07 (1.69-5.58)*** |
| Parent education | | |
| ≥Bachelor's degree | -- | -- |
| < HS diploma | 1.14 (0.61-2.15) | 1.63 (1.02-2.60)* |
| HS diploma/GED | 1.69 (1.19-2.41)** | 1.27 (0.94-1.72) |
| Some postsecondary | 1.18 (0.79-1.74) | 1.15 (0.78-1.70) |
| *School-level characteristics* | | |
| School mean age | 1.23 (1.09-1.38)** | 1.30 (1.11-1.53)** |
| Concentrated disadvantage | 1.06 (0.91-1.22) | 1.36 (1.22-1.52)*** |
| Social disorder | 1.21 (1.06-1.37)** | 1.02 (0.89-1.17) |
| Parent social bonds | 1.00 (0.86-1.16) | 0.80 (0.71-0.90)*** |

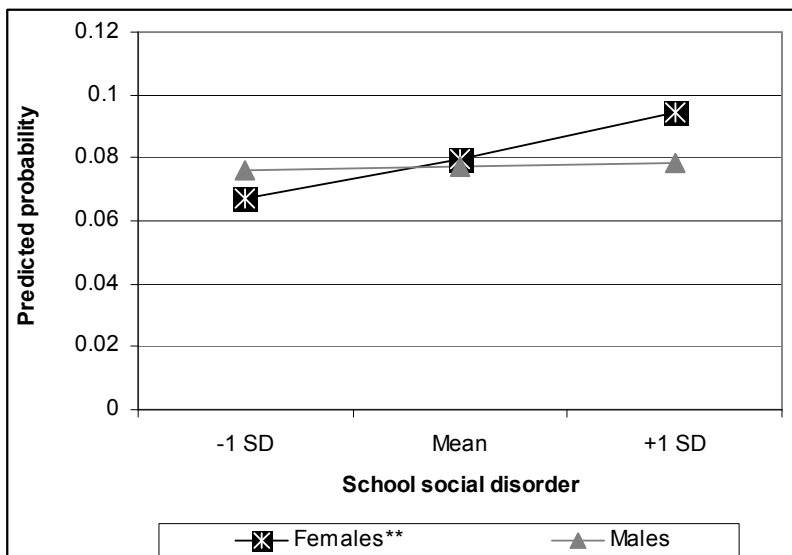[†] p<0.10  *p<0.05  **p<0.01  ***p<0.001
[‡]A separate random intercept model was run for each covariate

**Figure 3. Crude predicted probability of dating violence victimization at different levels of school concentrated disadvantage**
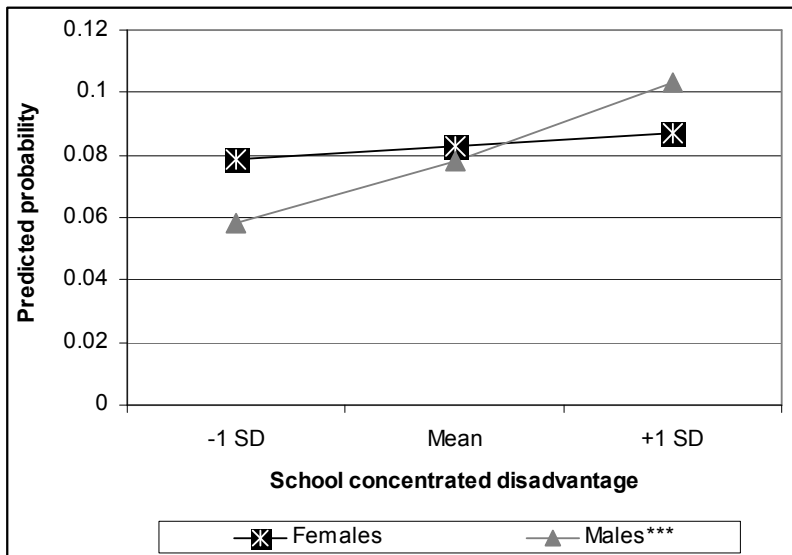


†SD=standard deviation; results from unadjusted multilevel logistic regression models
*p<0.05, **p<0.01, ***p<0.001

**Figure 4. Crude predicted probability of dating violence victimization at different levels of school social disorder**
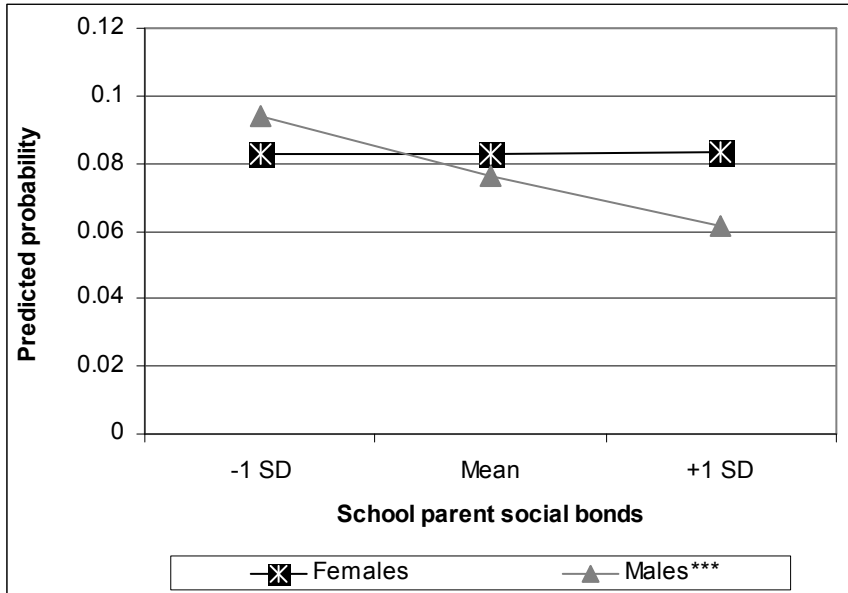


†SD=standard deviation; results from unadjusted multilevel logistic regression models
*p<0.05, **p<0.01, ***p<0.001

**Figure 5. Crude predicted probability of dating violence victimization at different levels of school parent social bonds[†]**



[†]SD=standard deviation; results from unadjusted multilevel logistic regression models
*p<0.05, **p<0.01, ***p<0.001

**Table 4. Adjusted multilevel logistic regression results: Dating violence victimization, Females (n=6,453)**

| | Model 1 | Model 2 | Model 3 | Model 4 |
|---|---|---|---|---|
| | AOR (95% CI) | AOR (95% CI) | AOR (95% CI) | AOR (95% CI) |
| *Individual-level characteristics* | | | | |
| Race/ethnicity | | | | |
| Non-Hispanic White | -- | Referent | Referent | Referent |
| Non-Hispanic Black | -- | 1.02 (0.76-1.35) | 1.02 (0.77-1.36) | 1.10 (0.83-1.44) |
| Hispanic | | 0.75 (0.55-1.02)† | 0.74 (0.55-0.98)* | 0.76 (0.56-1.02)† |
| Non-Hispanic Other | | 0.40 (0.34-1.52) | 0.80 (0.40-1.61) | 0.81 (0.40-1.63) |
| Age (group centered) | -- | 1.14 (1.02-1.28)* | 1.15 (1.02-1.28)* | 1.15 (1.02-1.28)*** |
| Parent education | | | | |
| ≥Bachelor's degree | -- | Referent | Referent | Referent |
| < HS diploma | | 1.12 (0.59-2.13) | 1.10 (0.57-2.12) | 1.14 (0.59-2.17) |
| HS diploma/GED | | 1.61 (1.13-2.31)** | 1.63 (1.14-2.33)** | 1.64 (1.15-2.36)* |
| Some postsecondary | | 1.16 (0.77-1.75) | 1.15 (0.77-1.72) | 1.15 (0.77-1.73) |
| Family structure | | | | |
| Two biologic parents | -- | Referent | Referent | Referent |
| Stepfamily | | 1.12 (0.82-1.53) | 1.11 (0.82-1.52) | 1.10 (0.81-1.51) |
| Single parent | | 1.22 (0.89-1.66) | 1.21 (0.89-1.66) | 1.21 (0.88-1.66) |
| Other | | 1.94 (1.07-3.51)* | 1.85 (1.02-3.37)* | 1.84 (1.01-3.33)* |
| *School-level characteristics* | | | | |
| School mean age (centered) | -- | -- | 1.24 (1.11-1.39)*** | 1.19 (1.06-1.34)** |
| Social disorder | -- | -- | -- | 1.13 (0.99-1.29)† |
| *Variance Component* | | | | |
| $\hat{\tau}_{00}$ (SE) | 0.16 (0.06)‡ | 0.13 (0.06) | 0.09 (0.05) | 0.08 (0.05) |
| $\hat{\tau}_{00}$ , rescaled | 0.54 | 0.45 | 0.32 | 0.27 |
| Proportionate reduction in level-2 variance (vs. Model 1)§ | -- | 16.7% | 40.7% | 50.0% |

† p<0.10  *p<0.05  **p<0.01  ***p<0.001
‡ Based on a level-1 logistic distribution with variance $\Pi^2/3$, the ICC = 0.05
§Based on rescaled $\hat{\tau}_{00}$

**Table 5. Adjusted multilevel logistic regression results: Dating violence victimization, Males (n=6,092)**

| | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 |
|---|---|---|---|---|---|
| | AOR (95% CI) | AOR (95% CI) | AOR (95% CI) | AOR (95% CI) | AOR (95% CI) |
| *Individual-level characteristics* | | | | | |
| Race/ethnicity | | | | | |
| Non-Hispanic White | -- | Referent | Referent | Referent | Referent |
| Non-Hispanic Black | | 2.30 (1.58-3.36)*** | 2.37 (1.64-3.43)*** | 2.20 (1.45-3.33)*** | 2.38 (1.59-3.58)*** |
| Hispanic | | 2.27 (1.43-3.60)*** | 2.24 (1.42-3.53)** | 2.10 (1.32-3.34)** | 2.25 (1.38-3.66)** |
| Non-Hispanic Other | | 2.46 (1.45-4.14)** | 2.53 (1.49-4.29)** | 2.45 (1.44-4.17)** | 2.53 (1.49-4.32)** |
| Age (group centered) | -- | 1.17 (1.07-1.28)** | 1.17 (1.07-1.28)** | 1.17 (1.07-1.28)** | 1.17 (1.07-1.28)** |
| Parent education | | | | | |
| ≥Bachelor's degree | -- | Referent | Referent | Referent | Referent |
| < HS diploma | | 1.18 (0.72-1.93) | 1.16 (0.70-1.91) | 1.10 (0.66-1.84) | 1.16 (0.70-1.92) |
| HS diploma/GED | | 1.04 (0.77-1.40) | 1.06 (0.79-1.44) | 1.04 (0.77-1.41) | 1.06 (0.79-1.43) |
| Some postsecondary | | 1.11 (0.76-1.61) | 1.11 (0.76-1.62) | 1.09 (0.75-1.59) | 1.11 (0.76-1.62) |
| Family structure | | | | | |
| Two biologic parents | -- | Referent | Referent | Referent | Referent |
| Stepfamily | | 1.33 (0.91-1.93) | 1.33 (0.91-1.94) | 1.32 (0.91-1.93) | 1.33 (0.91-1.94) |
| Single parent | | 1.22 (0.87-1.70) | 1.22 (0.87-1.06) | 1.21 (0.86-1.70) | 1.22 (0.87-1.71) |
| Other | | 2.54 (1.39-4.63)** | 2.42 (1.33-4.41)** | 2.36 (1.30-4.29)** | 2.42 (1.32-2.43)** |
| *School-level characteristics* | | | | | |
| School mean age (centered) | -- | -- | 1.25 (1.12-1.41)*** | 1.26 (1.12-1.41)*** | 1.25 (1.12-1.41)*** |
| Concentrated disadvantage | -- | -- | -- | 1.10 (0.95-1.28) | -- |
| Parent social bonds | -- | -- | -- | -- | 1.01 (0.88-1.15) |
| *Variance Component* | | | | | |
| $\hat{\tau}_{00}$ (SE) | 0.24 (0.08)‡ | 0.12 (0.07) | 0.08 (0.06) | 0.08 (0.06) | 0.08 (0.06) |
| $\hat{\tau}_{00}$ , rescaled | 0.84 | 0.44 | 0.31 | 0.29 | 0.29 |
| Proportionate reduction in level-2 variance (vs. Model 1)§ | -- | 47.6% | 63.1% | 65.5% | 65.5% |

† p<0.10  *p<0.05  **p<0.01  ***p<0.001
‡ Based on a level-1 logistic distribution with variance Π²/3, the ICC = 0.07
§Based on rescaled $\hat{\tau}_{00}$