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Parental Knowledge and Substance Use among African American Adolescents: Influence of Gender and Grade Level

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Abstract

Parental knowledge is defined as parental awareness and information about a child's activities, whereabouts, and associations that is obtained through parental monitoring, parental solicitation, or self-disclosure. Increased parental knowledge is generally associated with lower adolescent substance use; however, the influence of various contextual factors, such as adolescent gender and grade level is not well understood, particularly for different racial or ethnic groups. In the present study, we used Hierarchical Generalized Linear Modeling (HGLM) analyses to examine the longitudinal relationship of parental knowledge to adolescent substance use in the context of adolescent gender and grade level among 207 urban African American adolescents in grades 6–11. Results indicated that increased parental knowledge is associated with a concurrent lower likelihood of substance use across all types of substances examined (alcohol, tobacco, marijuana, other drug use, and any drug use), but it did not predict changes in substance use one year later for the entire sample. However, analyses by gender and grade level showed that for boys and middle school youth, parental knowledge was a protective factor for increases in substance use across one

year. Findings are discussed in terms of their implications for prevention and health promotion interventions for adolescent substance use among African American youth.

Keywords

African American adolescents; parental knowledge; substance use; gender; developmental differences

Increased parental knowledge of adolescent behaviors has been associated with reduced adolescent problem behaviors and substance use (Bahr, Hoffman, & Yang, 2005; Barnes, Welte, Hoffman, & Dintcheff, 2005; Chen, Storr, & Anthony, 2005; Cleveland, Gibbons, Gerrard, Pomery, & Brody, 2005; Dick et al., 2007; DiClemente et al., 2001; Simons-Morton & Chen, 2005). Parental knowledge is defined as awareness and information a child's activities, whereabouts, and associations obtained through parental monitoring, such as active tracking and surveillance, as well as through parental solicitation, and adolescent self-disclosure (Kerr & Stattin, 2000; Soenens, Vansteenkiste, & Goossens, 2006; Stattin & Kerr, 2000).

Much of what we know about the relationship between parental knowledge and adolescent substance use is based on studies of mostly European American families or on research that does not report racial or ethnic differences (Wallace & Muroff, 2002). However, numerous investigators have noted the importance of examining health behaviors, such as substance use, and related risk and protective factors, such as parental knowledge, by race and ethnicity (Cohen, 2010; Harachi, Catalano, Kim, & Choi, 2001; Sue, 1999; Wallace & Muroff, 2002; Whitbeck, 2006). Such research provides the basis for developing culturally-specific theories and interventions for a given population (Sue, 1999; Tebes, 2000).

Previous research has shown that African American parents are more likely than parents from other racial/ethnic groups to monitor closely their adolescent's activities and whereabouts (Ceballo & Mcloyd, 2002; Jarrett, 1995), and this knowledge is associated with decreased substance use among African American adolescents (Bean, Barber, & Crane, 2006; Brody, 2003; DiClemente et al., 2001; Rai et al., 2003; Stanton et al., 2002; Wallace & Muroff, 2002). However, the mechanisms underlying the longitudinal relationship between parental knowledge and substance use among African American adolescents remain unclear (Cleveland et al., 2005), including the interaction of this relationship with adolescent gender and grade level.

Gender and Grade Level Differences

Some research has suggested that parental knowledge may be more of a protective factor for boys (Borawski, Ievers-Landis, Lovegreen, & Trapl, 2003), and that a *lack* of parental knowledge may be more of a risk factor for girls (Bean et al., 2006; Gorman-Smith & Loeber, 2005; Huebner & Betts, 2002; Li et al., 2000). However, studies of parental knowledge and its relationship to adolescent substance use have not reported gender differences in African American samples or have made gender comparisons when race is a control variable.

A major emphasis within the parental knowledge literature has focused on developmental or grade level differences in the effect of parental knowledge on substance use, especially knowledge gained through parental monitoring (Stattin & Kerr, 2000). Studies generally have found that parental knowledge has a greater impact on substance use among early adolescents (i.e., 6–8th graders) than middle adolescents (i.e., 9th–10th graders), but that this effect is significant for both age groups (Li et al., 2000; Pilgrim et al., 2006). No research

has explicitly reported on such developmental or grade level differences among African American adolescents, but previous research has shown that as African American adolescents age, parents have trouble gaining knowledge of their child's daily life (Forehand & Jones, 2002).

Study Purpose and Hypotheses

Our purpose in this study is to expand the existing literature to establish gender- and grade-specific influences of parental knowledge on substance use among African American adolescents, thus facilitating the development of more culturally-specific theories and preventive interventions. We do this by: 1) examining the relationship between parental knowledge and substance use among a sample of urban African American adolescents that were followed for one year, and (2) examining gender and grade level differences in this relationship. Consistent with previous theory and research, we hypothesize that higher parental knowledge will be associated with decreased substance use concurrently and one year later. Furthermore, parental knowledge will have a stronger impact on decreasing substance use rates for girls than boys, and for middle school youth than high school youth.

Method

Participants

Two hundred and seven African American adolescents participated in the study. At study entry, the mean age of adolescents was 14.5 years (S.D. =1.6), just over one-half (54%) were male, and about three-fifths (61.8%) were enrolled in high school. Over half of adolescents (58%) reported that they lived in single-parent homes, with their mother as the primary parent. Participants were recruited from a study of after-school programs in two cities in the Northeastern United States that were comparable in racial and ethnic composition and per capita household income. In that study, 304 adolescents were enrolled in two types of after school programs, one that emphasized adolescent decision-making skills and another that emphasized recreational activities; neither program targeted parental knowledge (Tebes et al., 2007). Analyses indicated that there was no significant interaction between parental knowledge and program condition for any substance use outcome examined. Thus, we used the combined sample of 207 students who identified as African American in this study.

Procedures

We invited adolescents to participate in this study through informational and consent letters sent home to parents that were supplemented with follow-up phone calls. Once consent for participation was obtained from parents, we sought and obtained assent individually from adolescents before study enrollment. We conducted individual interviews at study sites, community settings, or participants' homes shortly after adolescents entered their after-school program (Time 1, baseline), at the end of the program (Time 2, 8 months later), and one year after the initial interview (Time 3, 1 year later). Each interview required about 30–45 minutes to complete for which adolescents received a \$40 gift card to a local mall. Attrition rates at Time 2 and Time 3 were 27.6 percent and 38.4 percent, respectively. We found no differences in baseline parental knowledge or adolescent substance use scores between adolescents who completed measures at subsequent time points and those who did not.

Measures

Interviews assessed three domains: adolescent and family demographic characteristics, parental knowledge, and adolescent substance use. All measures were drawn from the

Student Survey developed by the Center for Substance Abuse Prevention (Center for Substance Abuse Prevention, 2001).

Demographic characteristics assessed adolescent gender, grade level, race, and ethnicity.

Parental knowledge of adolescent activities, whereabouts, and associations was assessed through adolescent responses to nine items on a 4-point scale (ranging from *strongly disagree* to *strongly agree*) in which adolescents reported whether at least one parent was aware of their whereabouts after school, their activities and associations, and their involvement in various types of problem behavior, including substance use. Items included “parents know if I come home late” and “parents know if my homework is done.” Parents could have obtained this knowledge by tracking and surveillance (i.e., monitoring; Stattin & Kerr, 2000) or through parent solicitation and adolescent disclosure. Parental knowledge was assessed at all three time points, and a total score was created for each time point by summing the nine items; higher scores indicated more parental knowledge. On average, youth reported that their parents had high knowledge of their lives across all three time points: $M = 30.07$, $SD = 4.51$ (time 1); $M = 30.24$, $SD = 4.55$ (time 2); $M = 29.56$, $SD = 5.18$ (time 3). Internal consistency for this scale was .74 at time 1, .78 at time 2, and .79 at time 3.

Substance use was assessed by having adolescents report their use of several drugs within the past 30 days (0 = *no*, 1 = *yes*), including: alcohol, marijuana, tobacco (cigarettes, chewing tobacco, snuff, and pipe), other drugs (cocaine/crack, heroin/other opiates, non-prescription methadone, hallucinogens, amphetamines, tranquilizers, inhalants, and other drugs). We collapsed responses to drugs other than alcohol, marijuana, and tobacco into an “other drugs” category, and created a new variable for ‘any drug use.’

Analytic Strategy

We used a hierarchical *generalized* linear model (HGLM) framework to address potential dependencies within these data. HGLM permits use of all data and properly models the correlated observations within each person, unlike ordinary least squares regression. Time points (level-1) were nested within individuals (level-2), which accounted for the association across the three time periods. We used HGLM with a binomial link, as opposed to HLM, because the dependent variable consisted of dichotomous data, which violated assumptions of normality (Raudenbush & Bryk, 2002). Specifically, the level-1 model is a Bernoulli function that models the probability of using a specific substance. The full information maximum likelihood estimation procedure (FIML) was used to address missing values at level-1 of the HGLM because FIML produces less biased estimates than does listwise case deletion or mean substitution (Acock, 2005).

In the present study, we examined both intra-individual growth, modeled at level-1 as a function of parental knowledge as a time-varying covariate, and inter-individual growth of the level-1 intercept (Π_{0i}) and linear slope (Π_{12i}) modeled as a function of parental knowledge averaged across all three time points, gender, and grade at level-2. Modeling parental knowledge as both a time-varying covariate and as a mean of the three time points allows: (a) examination of within individual changes in substance use as a function of changes in parental knowledge, and (b) examination of differences between individuals in substance use rates as a function of mean levels of parental knowledge, which is a proxy for a more stable estimate of parenting. Previous researchers have demonstrated that examining development from multiple standpoints is important as these results may vary depending on if the focus is on change or stability in parenting (Forehand & Jones, 2002; Way & Greene, 2006).

We estimated separate sets of analyses for each substance use outcome, and to assure sufficient power, we examined parental knowledge as a time-varying covariate and as a level-2 indicator in separate sets of analyses. The first set of analyses examined intra-individual growth in substance use as a function of parental monitoring as a time-varying covariate at level-1. η_{it} is the natural log of the ratio of the probability (ϕ) of using a substance to the probability of not using for adolescent i during time point t .

Analysis 1: $\eta_{ij} = \log [\phi/(1-\phi)] = \Pi_{0i} + \Pi_{1i}a_{ti} + \Pi_{2i}(\text{Knowledge})$ —In the second set of analyses, we estimated HGLM models that described the effect of average parental knowledge on the probability that a specific adolescent would use or not use a given substance at time 1 (γ_{101}) and the probability that on average adolescents' substance use changed over the three time points (linear rate, γ_{111}).

In the next set of analyses, we estimated growth models to examine the effect of parental knowledge, gender, and the gender by knowledge interaction on the intercept (γ_{101} , γ_{102} , γ_{103}) and slope (γ_{111} , γ_{112} , γ_{113}) for a given substance use outcome. The final set of analyses examined the effect of parental knowledge, grade, and the grade by knowledge interaction on the intercept (γ_{101} , γ_{102} , γ_{103}) and slope (γ_{111} , γ_{112} , γ_{113}) for a given substance use outcome. All adolescent characteristics were dummy coded so the group coded zero had a relationship between parental knowledge and substance use represented by γ_{102} and γ_{112} , while the relationship for the group coded one was represented by $\gamma_{102} + \gamma_{103}$ and $\gamma_{112} + \gamma_{113}$.

$$\begin{aligned} \text{Level-1: } \eta_{ij} &= \log [\phi/(1-\phi)] = \Pi_{0i} + \Pi_{1i}a_{ti} \\ \Pi_{0i} &= \gamma_{100} + \gamma_{101}(\text{Knowledge}_i) + \gamma_{102}(\text{YouthCharacteristics}_i) + \gamma_{103}(\text{Know X YouthCharacteristics}_i) + u_{10i} \\ \Pi_{1i}a_{ti} &= \gamma_{110} + \gamma_{111}(\text{Knowledge}_i) + \gamma_{112}(\text{YouthCharacteristics}_i) + \gamma_{113}(\text{Know X YouthCharacteristics}_i) \end{aligned}$$

All models controlled for program condition (i.e., intervention vs. comparison group). Residuals from the HGLM analysis indicated biased estimates, which may cause over or under estimation of the amount of variability in substance use outcomes. Thus, we used robust standard errors for hypotheses testing (Raudenbush & Bryk, 2002).

Results

Descriptive Statistics

At baseline, about one-half (51.2%) of adolescents had tried alcohol and about one-quarter had tried cigarettes (26.6%), marijuana (24.6%) or other drugs (24.6%). Fewer youth reported past month substance use at baseline – alcohol (5.8%), cigarettes (7.8%), marijuana (9.7%), and other drugs (9.7%). Past month use rates increased over the one-year period for alcohol (8.7%), cigarettes, (11.0%), marijuana (15.0%), and other drugs (15.0%). Boys were significantly more likely to report use of marijuana, other drugs, and any drugs than were girls; girls and boys did not differ significantly in their use of alcohol and tobacco. In regards to grade, high school students were more likely to report higher rates of use for all substances; these differences were pronounced at time 1 and had diminished by time 3.

We estimated unconditional linear growth models for each substance to assess the trajectory of substance use over the three time points. Results indicated a linear, although non-significant, increase in alcohol, tobacco, marijuana, other drugs, and use of any drugs over the three time points. Variance components were not significant in any of the unconditional models but follow-up chi-square analyses indicated significant differences on substance use

in the intervention and comparison group at baseline and thus a variance component was included at the intercept to account for this variability.

Parental Monitoring and Adolescent Substance Use

Intra-individual growth—We estimated time-varying covariates at level-1 of the HGLM model to examine the unique association between changes in parental knowledge and changes in adolescent substance use over a one-year period (i.e., three time points). Parental knowledge was group-mean centered. Results indicated that within-person decreases in adolescents' tobacco, marijuana, other, and any drug use were significantly associated with increases in parental knowledge across the three time points. Odds ratios ranged from .82 to .86 suggesting that within a given individual, every unit increase in parental knowledge resulted in a 14 to 18 percent decrease in substance use. Increases in parental knowledge did not predict a decrease in adolescents' alcohol use.

Inter-individual growth—A separate set of analyses examined the effect of average parental knowledge on the intercept and slope of adolescents' substance use. Parental knowledge was significantly associated with a decreased likelihood of adolescent substance use at the intercept (with odds ratios ranging from .78 to .84). Across all substances, every one-unit increase in parental knowledge was associated with a substance use decrease ranging from 16 to 22 percent. However, average parental knowledge was not significantly related to a decrease in any of the substances over time (i.e., the slope).

We also conducted analyses to examine whether adolescent gender and grade level influenced the relationship of parental knowledge to adolescent substance use. Hypotheses were partially supported, such that analyses indicated that gender moderated the relationship between mean levels of parental knowledge and the slope of marijuana use ($p = .03$), other drug use ($p = .02$), and any drug use ($p < .01$) over the one year period (Table 1). Contrary to expectations, however, baseline parental knowledge was a significant protective factor for increases in substance use across one year for boys, not girls. Thus, when boys and girls with equivalent levels of parental knowledge are compared, there is a 16 percent decrease in the slope of marijuana use as well as other drug use and 14 percent decrease in the slope of any drug use for boys when compared to girls. No such moderator effects of mean parental knowledge were found for baseline substance use (i.e., the intercept).

We also examined whether grade level was a moderator of substance use for middle school and high school adolescents (Table 2). As is shown, grade level moderates the effect of parental knowledge on other drug use ($p < .05$) and any drug use ($p < .01$), at the slope. Specifically, baseline parental knowledge is more likely to have an impact on decreases in substance use among middle school adolescents. At comparable levels of parental knowledge, there is a 26 percent increase in the slope of other drug use and 22 percent increase in the slope of any drug use for high school students when compared to middle school students. Average parental knowledge did not differentially predict substance use for middle and high school students at baseline (i.e., the intercept).

Discussion

Results indicated that parental knowledge is related to substance use among African American adolescents and that grade and gender modify the strength of this association. First, parental knowledge was associated with lower substance use rates among adolescents. This finding is consistent with previous research that has found associations between parental knowledge and adolescent substance use in African American samples (Bean et al., 2006; DiClemente et al., 2001; Rai et al., 2003; Stanton et al., 2002). Findings varied as a function of type of substance examined (e.g., alcohol use) and whether or not parental

knowledge was examined as a time-varying covariate or a mean score at level-2. As a time-varying covariate, increases in parental knowledge were significantly associated with decreases in tobacco, marijuana, other, and any drug use but not with past month alcohol use. In contrast, average parental knowledge at level-2 was associated with lower rates of past month use for all substances at baseline, including alcohol use. Taken together, these findings suggest that higher levels of parental knowledge may reduce initiation of alcohol use (Simons-Morton & Chen, 2005), but that parental knowledge may not influence rates of monthly use once adolescents have already begun experimenting.

Contrary to expectations, we found that, for the entire sample, mean parental knowledge was not associated with decreases in adolescent substance use rates over the one-year period (i.e., the slope), but increased parental knowledge was a significant concurrent predictor of decreases in substance use. Considered in combination, these findings suggest that changes in parental knowledge as a likely response to adolescents' changing developmental needs or behaviors may be especially critical to influencing rates of adolescent substance use.

We also found that gender differences emerged in the relationship between parental knowledge and adolescent substance use. However, these results were contrary to expectations drawn from the literature in that over the one-year period parental knowledge was related to reductions in substance use among boys rather than girls. Parental knowledge may operate differently among African American girls, or perhaps the marked increase from time 1 to time 3 in girls' use of marijuana, other drug use, and any drug use relative to boys diminished the influence of parental knowledge. Another factor to account for this unexpected finding is how parental knowledge was assessed in this study. We did not distinguish between parental knowledge obtained through parental monitoring, parental solicitation, or adolescent self-disclosure; some of these may not have been adequately captured in this study but be more common among adolescent girls (Kerr, Stattin, & Burk, 2010).

Consistent with hypotheses, parental knowledge had a stronger relationship to substance use for middle school students than high school students, particularly for other drugs and any drugs. This finding is consistent with research that suggests parental knowledge may be effective in influencing substance use during early adolescence but that as adolescent autonomy increases, other strategies for parents to obtain knowledge of adolescent activities, whereabouts, and associations may become more effective (Darling, Cumsille, Caldwell, & Dowdy, 2006; McElhaney et al., 2008). Some research has shown that among older adolescents, parent-child communication and adolescent self-disclosure may be more effective in obtaining such information (Borawski et al., 2003; Stattin & Kerr, 2000; Soenens et al., 2006).

This study has several implications for public health interventions. First, prevention and health promotion programs that target adolescents and emphasize parental knowledge are likely to have a positive impact on adolescent substance use, particularly among middle school-aged African American adolescents, although the impact of such interventions may not be equivalent for boys and girls. In previous research with similar populations, substance use prevention programs that have emphasized gains in parental knowledge have shown considerable promise (Stanton et al., 2004; Wu et al., 2003). Such interventions, whether delivered in schools or after school settings, are especially compatible with a positive youth development approach that engages adolescents from a strengths-oriented perspective and seeks to involve parents as partners to foster adolescent development (Shinn & Yoshikawa, 2008; Tebes et al., 2007). Another implication of this study is that it is essential to take developmental considerations into account when designing interventions for adolescents to increase parental knowledge. Although *how* parents obtain knowledge of their child's

activities, whereabouts, and associations is likely to change as a child ages (i.e., from less monitoring to more communication and adolescent self-disclosure), parental knowledge remains a potent influence on substance use, even as its potency may wane as adolescents age. Findings from previous research had also found that older adolescents who engage in problem behaviors tend to have parents who report less parental knowledge (Laird, Pettit, Bates, & Dodge, 2003); however, in this study, we showed that, among African American adolescents, this relationship diminishes naturally from early to middle adolescence, perhaps as part of a normal developmental course. Future research should examine whether this pattern holds for other racial-ethnic groups and whether parental knowledge decreases further during late adolescence. In addition, it remains unclear whether the mechanism by which parental knowledge decreases during adolescence is mostly because youth refrain from telling parents about their problem behaviors or because parents are less likely to solicit information about such behavior.

This study also has a few limitations. Although one limitation is that adolescent self-report was used to assess parental knowledge, previous research has established that such reports are more accurate and generally superior to parental reports, especially when assessing adolescent problem behaviors (Cottrell et al., 2003; Pittman et al., 2004). In fact, parental underestimates of adolescent substance use and problem behavior are themselves a risk factor for later adolescent involvement in substance use (Yang et al., 2006). Another limitation is that the measure of parental knowledge used in this study does not differentiate among the various components of parental knowledge, such as parental monitoring, parental solicitation, and adolescent self-disclosure. Past research has shown that parental knowledge obtained through parental monitoring may differ from knowledge obtained through other methods, such as disclosure and solicitation (Kerr et al., 2010; Stattin & Kerr, 2000). Future research should include distinct measures of parental knowledge comprised of monitoring, disclosure, and parental solicitation to examine the relative effects of each to substance use in African American and other samples.

Conclusion

This study contributes to the existing literature by using longitudinal analyses to examine the relationship between parental knowledge and substance use among urban, African American adolescents and examining how this relationship differs as a function of gender and grade level. The results support the hypothesis that increased parental knowledge is associated with a markedly lower likelihood of adolescent substance use across all types of substances examined (alcohol, tobacco, marijuana, other drug use, and any drug use). Additional analyses by gender indicate that, contrary to expectations, parental knowledge is more of a protective factor for substance use for boys than girls over time. Finally, analyses by grade level confirm the hypothesis that, over time, parental knowledge is a particularly important predictor of substance use for middle school, rather than high school, adolescents.

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References

- Bahr SJ, Hoffman JP, Yang X. Parental and peer influences on the risk of adolescent drug use. *Journal of Primary Prevention*. 2005; 26:529–551. [PubMed: 16228115]

- Barnes GM, Welte JW, Hoffman JH, Dintcheff BA. Shared predictors of youth gambling, substance use, and delinquency. *Psychology of Addictive Behaviors*. 2005; 19:165–174. [PubMed: 16011387]
- Bean RA, Barber BK, Crane DR. Parental support, behavioral control, and psychological control among African American youth: The relationships to academic grades, delinquency, and depression. *Journal of Family Issues*. 2006; 27:1135–1353.
- Borawski EA, Ievers-Landis CE, Lovegreen LD, Trapl ES. Parental monitoring, negotiated unsupervised time, and parental trust: The role of perceived parenting practices in adolescent health risk behaviors. *Journal of Adolescent Health*. 2003; 33:60–70. [PubMed: 12890596]
- Brody, GH. Parental monitoring: Action and reaction. In: Crouter, AC.; Booth, A., editors. *Children's influence on family dynamics*. Mahwah, NJ: Lawrence Erlbaum; 2003. p. 163-169.
- Center for Substance Abuse Prevention: Student survey. Substance Abuse and Mental Health Services Administration. Rockville, MD: U.S. Government Printing Office; 2001.
- Ceballo R, Mcloyd VC. Social support and parenting in poor, dangerous neighborhoods. *Child Development*. 2002; 73:1310–1321. [PubMed: 12146749]
- Center for Disease Control and Prevention. Youth Risk Behavior Surveillance – United States. Morbidity and Mortality Weekly Report. 2010; 59:1–148. [PubMed: 20075837]
- Center for Substance Abuse Prevention: Student Survey. Substance Abuse and Mental Health Services Administration. Rockville, MD: U.S. Government Printing Office; 2001.
- Chen C, Storr CL, Anthony JC. Influences of parenting practices on the risk of having a chance to try cannabis. *Pediatrics*. 2005; 115:1631–1639. [PubMed: 15930226]
- Cleveland MJ, Gibbons FX, Gerrard M, Pomery EA, Brody GH. The impact of parenting on risk cognitions and risk behavior: A study of mediation and moderation in a panel of African American adolescents. *Child Development*. 2005; 76:900–916. [PubMed: 16026504]
- Cottrell L, Li X, Harris CD, D'Alessandri D, Atkins M, Richardson B, Stanton B. Parent and adolescent perceptions of parental monitoring and adolescent risk involvement. *Parenting: Science and Practice*. 2003; 3:179–195.
- Darling N, Cumsille P, Caldwell LL, Dowdy B. Predictors of adolescents' disclosure to parents and perceived knowledge: Between- and within-person differences. *Journal of Youth and Adolescence*. 2006; 35:667–678.
- Dick DM, Viken R, Purcell S, Kaprio J, Pulkkinen L, Rose &, Richard J. Parental monitoring moderates the importance of genetic and environmental influence on adolescent smoking. *Journal of Abnormal Psychology*. 2007; 116:213–218. [PubMed: 17324032]
- DiClemente RJ, Wingood GM, Crosby R, Sionean C, Cobb BK, Harrington, Oh MK. Parental monitoring: Association with adolescents' risk behaviors. *Pediatrics*. 2001; 107:1363–1368. [PubMed: 11389258]
- Dishion TJ, McMahon RJ. Parental monitoring and the prevention of child and adolescent problem behavior: A conceptual and empirical formulation. *Clinical Child & Family Psychology Review*. 1998; 1:61–75. [PubMed: 11324078]
- Forehand R, Jones DJ. The stability of parenting: A longitudinal analysis of inner-city African-American Mothers. *Journal of Child and Family Studies*. 2002; 11:455–467.
- Gorman-Smith D, Loeber R. Are developmental pathways in disruptive behaviors the same for girls and boys. *Journal of Child and Family Studies*. 2005; 14:15–27.
- Harachi TW, Catalano RF, Kim S, Choi Y. Etiology and prevention of substance use among Asian American youth. *Prevention Science*. 2001; 2:57–65. [PubMed: 11519375]
- Huebner AJ, Betts SC. Exploring the utility of social control theory for youth development: Issues of attachment, involvement, and gender. *Youth and Society*. 2002; 34:123–145.
- Jarrett RL. Growing up poor: The family experiences of socially mobile youth in low-income African American neighborhoods. *Journal of Adolescent Research*. 1995; 10:111–135.
- Kerr M, Stattin H, Burk WJ. A reinterpretation of parental monitoring in longitudinal perspective. *Journal of Research on Adolescence*. 2010; 20:39–64.
- Kerr M, Stattin H. What parents know, how they know it, and several forms of adolescent adjustment: Further support for a reinterpretation of monitoring. *Developmental Psychology*. 2000; 36:366–380. [PubMed: 10830980]

- Laird RD, Pettit GS, Bates JE, Dodge KA. Parents' monitoring-relevant knowledge and adolescents' delinquent behavior: Evidence of correlated developmental changes and reciprocal influences. *Child Development*. 2003; 74:752–768. [PubMed: 12795388]
- Li X, Fiegelman S, Stanton B. Perceived parental monitoring and health risk behaviors among urban low-income African-American children and adolescents. *Journal of Adolescent Health*. 2000; 27:43–48. [PubMed: 10867351]
- Li X, Stanton B, Feigelman S. Impact of perceived parental monitoring on adolescent risk behavior over 4 years. *Journal of Adolescent Health*. 2000; 27:49–56. [PubMed: 10867352]
- Pilgrim CC, Schulenberg JE, O'Malley PM, Bachman JG, Johnston LD. Mediators and moderators of parental involvement on substance use: A national study of adolescents. *Prevention Science*. 2006; 7:75–89. [PubMed: 16572302]
- Rai AA, Stanton B, Wu Y, Li X, Galbraith J, Cottrell L, Burns J. Relative influences of perceived parental monitoring and peer involvement on adolescent risk behaviors: An analysis of six cross-sectional data sets. *Journal of Adolescent Health*. 2003; 33:108–118. [PubMed: 12890602]
- Raudenbush, SW.; Bryk, AS.; Cheong, YF.; Congdon, RT, Jr. HLM 6: Hierarchical liner and nonlinear modeling. Lincolnwood, IL: Scientific Software International; 2004.
- Shinn, MB.; Yoshikawa, H., editors. *Toward positive youth development: Transforming schools and community programs*. New York: Oxford Press; 2008.
- Simons-Morton B, Chen R. Latent growth curve analysis of parent influences on drinking progression among early adolescents. *Journal of Studies on Alcohol*. 2005; 66:5–13. [PubMed: 15830898]
- Soenens B, Vansteenkiste M, Luyckx K, Goossens L. Parenting and adolescent problem behavior: An integrated model with adolescent self-disclosure and perceived parental knowledge as intervening variables. *Developmental Psychology*. 2006; 42:305–318. [PubMed: 16569169]
- Stanton B, Cole M, Galbraith J, Li X, Pendleton S, Cottrell L, Kaljee L. Randomized trial of a parent intervention: Parents can make a difference in long-term adolescent risk behaviors, perceptions, and knowledge. *Archives of Pediatric & Adolescent Medicine*. 2004; 158:947–955.
- Stanton B, Li X, Pack R, Cottrell L, Harris C, Burns JM. Longitudinal influence of perceptions of peer and parental factors on African American adolescent risk involvement. *Journal of Urban Health*. 2002; 79:536–548. [PubMed: 12468673]
- Stattin H, Kerr M. Parental monitoring: A reinterpretation. *Child Development*. 2000; 71:1072–1085. [PubMed: 11016567]
- Sue S. Science, ethnicity, and bias: Where have we gone wrong. *American Psychologist*. 1999; 54:1070–1077. [PubMed: 15332528]
- Tebes J. External validity and scientific psychology. *American Psychologist*. 2000; 55:1508–1509.
- Tebes JK, Feinn R, Vanderploeg JJ, Chinman MJ, Shepard J, Brabham T, Connell CM. Impact of a positive youth development program in urban after-school settings on the prevention of adolescent substance use. *Journal of Adolescent Health*. 2007; 41:239–247. [PubMed: 17707293]
- Wallace JM, Muroff JR. Preventing substance abuse among African American children and youth: Race differences in risk factor exposure and vulnerability. *The Journal of Primary Prevention*. 2002; 22:235–261.
- Whitbeck LB. Some guiding assumptions and a theoretical model for developing culturally specific preventions with Native American people. *Journal of Community Psychology*. 2006; 34:183–192.
- Windle M. A longitudinal study of stress buffering for adolescent problem behaviors. *Developmental Psychology*. 1992; 28:522–530.
- Wu Y, Stanton BF, Galbraith J, Kaljee L, Cottrell L, Li X, Harris CV, Burns JM. Sustaining and broadening intervention impact: A longitudinal randomized trial of 3 adolescent risk reduction approaches. *Pediatrics*. 2003; 111:32–38.
- Yang H, Stanton B, Cottrell L, Kaljee L, Galbraith J, Li X, Wu Y. Parental awareness of adolescent risk involvement: Implications of overestimates and underestimates. *Journal of Adolescent Health*. 2006; 39:353–361. [PubMed: 16919796]

Table 1

Results from HGLM Analysis Comparing Boys and Girls on Past 30-Day Substance Use (N=207)

Outcome	Coefficient	Std. Error	t-value	Odds ratio	95% CI
Alcohol Use					
Intercept	-4.46	.83	-5.41 ^c		
Parental Knowledge	-.19	.06	-2.75 ^b	.83	.72 -.95
Boys	.03	.09	.32	1.03	.85 -.124
Slope	0.91	.54	1.66		
Parental Knowledge	.07	.05	1.18 ^a	1.07	0.96 -.120
Boys	-.05	.07	-0.69	.95	.82 -.109
Tobacco Use					
Intercept	-4.73	.74	-6.39 ^c		
Parental Knowledge	-.30	.09	-3.11 ^b	.75	.61 -.89
Boys	.12	.12	1.02	1.13	.88 -.144
Slope	.53	.54	.98		
Parental Knowledge	.09	.07	1.27	1.10	.95 -.127
Boys	-.05	.08	-0.58	.95	.80 -.113
Marijuana Use					
Intercept	-5.21	.87	-5.93 ^c		
Parental Knowledge	-.36	.11	-3.22 ^b	.69	.55 -.87
Boys	.17	.13	1.35	1.19	.92 -.154
Slope	1.13	.50	2.25 ^a		
Parental Knowledge	.15	.06	2.34 ^a	1.17	1.03 -.133
Boys	-.17	.07	-2.24 ^a	.84	.73 -.098
Other Drug Use					
Intercept	-5.22	.88	-5.95 ^c		
Parental Knowledge	-.37	.11	-3.23 ^c	.68	.55-. .87
Boys	.17	.13	1.29	1.22	.92 -.154

Outcome	Coefficient	Std. Error	t-value	Odds ratio	95% CI
Slope	1.11	.51	2.22 ^a		
Parental Knowledge	.16	.06	2.38 ^a	1.16	1.03 – 1.33
Boys	-.18	.07	-2.33 ^a	.84	.72 – 0.97
Any Drug use					
Intercept	-4.16	.65	-6.37 ^c		
Parental Knowledge	-.25	.08	-2.98 ^b	.78	.66 – .92
Boys	.05	.10	.43	1.05	.85 – 1.29
Slope	1.06	.41	2.58 ^b		
Parental Knowledge	.15	.05	2.98 ^b	1.16	1.05 – 1.28
Boys	-.15	.07	-2.01 ^a	.86	.78 – 1.05

Note. All analyses controlled for intervention status.

^a p < .05,

^b p < .01,

^c p < .001. Girls are the reference group.

Table 2

Results from HGLM Analysis Comparing Middle School vs. High School Adolescents on Past 30-Day Substance Use (N=207)

Outcome	Coefficient	Std. Error	t-value	Odds ratio	95% CI
Alcohol Use					
Intercept	-3.97	.70	-5.67 ^c		
Parental Knowledge	-.25	.08	-2.98 ^a	.77	.66 – .92
High School	.09	.10	.91	1.10	.89 – 1.35
Slope	.29	.47	.62		
Parental Knowledge	.09	.06	1.59	1.09	.98 – 1.23
High School	-.05	.07	-.70	.95	.83 – 1.09
Tobacco Use					
Intercept	-5.08	1.27	-3.98 ^c		
Parental Knowledge	-.29	.14	-1.98 ^a	.76	.56 – 1.01
High School	.07	.16	.43	1.07	.78 – 1.46
Slope	.27	.95	.29		
Parental Knowledge	.16	.11	1.34	1.17	.93 – 1.48
High School	-.09	.12	-0.73	.91	.72 – 1.17
Marijuana Use					
Intercept	-4.74	.98	-4.81 ^c		
Parental Knowledge	-.06	.22	-.026	.94	.60 – 1.47
High School	-.19	.23	-.80	.83	.52 – 1.31
Slope	1.21	.63	1.91 ^a		
Parental Knowledge	-.18	.15	-1.14	.84	.61 – 1.13
High School	.23	.16	1.48	1.27	0.93 – 1.74
Other Drug Use					
Intercept	-4.48	.84	-5.31 ^c		
Parental Knowledge	-.11	.19	-.57	.89	.62 – 1.30
High School	-.14	.20	-.70	.87	.59 – 1.28

Outcome	Coefficient	Std. Error	t-value	Odds ratio	95% CI
Slope	1.09	.55	1.99 ^a		
Parental Knowledge	-.18	.11	-1.55	.84	.67 – 1.04
High School	.24	.12	1.96 ^a	1.26	1.00– 1.61
Any Drug use					
Intercept	-3.64	.58	-6.25 ^c		
Parental Knowledge	-.17	.11	-1.51	.84	.68 – 1.05
High School	-.06	.12	-.51	.94	.74 – 1.19
Slope	.79	.40	1.99 ^a		
Parental Knowledge	-.14	.07	-2.21 ^a	.86	.75 – .98
High School	.20	.07	2.74 ^b	1.22	1.06 – 1.42

Note. All analyses controlled for intervention status.

^a p < .05,

^b p < .01,

^c p < .001. Middle school adolescents are the reference group.