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Influence of Parent–Youth Relationship, Parental Monitoring, and Parent Substance Use on Adolescent Substance Use Onset

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The quality of parent–child relationships likely influences many decisions and behaviors made by early adolescents, including their alcohol and marijuana use. We examined how parent–youth relationship quality, parental monitoring, and parent substance use were associated with initiation of alcohol use, binge drinking, and marijuana use by 400 adolescents by the spring of 8th grade (ages 13–14), and changes in initiation through 9th grade (assessed 3 times; fall, winter, and spring). We measured both parent and adolescent report of parent–youth relationship quality and parental monitoring, expecting that both perspectives would uniquely contribute. Discrete Time Survival models showed that youth report of both a poorer parent–youth relationship and lower parental monitoring were associated with alcohol use, binge drinking, and marijuana use onset. Parent binge drinking also predicted youth alcohol onset and parent report of poor quality relationship predicted marijuana onset. Youth report of a poor relationship with parents was a stronger predictor for girls than boys on their alcohol use onset, and youth report of parental monitoring was more protective for girls than boys for both alcohol and marijuana use onset. Implications for preventing use of these substances during early and mid-adolescence are discussed.

Keywords: parent–youth relationship, parental monitoring, adolescence, substance use onset

Alcohol and marijuana use during early adolescence (defined as ages 12–14, when U.S. youth are typically in middle school) are associated with a diverse range of problematic physical, mental health, and social issues in later adolescence and adulthood (e.g., Bechtold, Simpson, White, & Pardini, 2015; Colder, Campbell, Ruel, Richardson, & Flay, 2002; Englund, Egeland, Oliva, & Collins, 2008). The prevalence rates of alcohol and marijuana use during early adolescence are of concern; on a nationwide survey, about 10% of 8th grade youth reported alcohol use, 5% reported binge drinking (defined as 5 or more drinks in a row), and 7% reported marijuana use in the past 30 days (Miech, Johnston, O'Malley, Bachman, & Schulenberg, 2016). Eighth grade youth who use alcohol or marijuana are highly likely to use other substances, and are more likely to use hard drugs (Boles, Biglan, & Smolkowski, 2006). Moreover, substance use (tobacco, alcohol, and marijuana) during early adolescence has predicted continued use in later adolescence and substance dependence in young adulthood (Van Ryzin & Dishion, 2014). Understanding predictors of early initiation of these substances will help inform efforts to prevent substance use and associated problems. Given the escalating problems found with early substance use, the present study focuses on key parenting factors during early adolescence and the

concurrent and predictive associations of those factors with the initiation of alcohol use, binge drinking, and marijuana use during the transition to middle adolescence. We expect that different pathways may predict each of these substance use variables and that there will likely be gender differences in the strength of the predictors. This study also uniquely investigated how differing youth and parent perspectives on the parent–youth relationship and parental monitoring are associated with youth substance use onset.

Parent–Youth Relationships

The quality of parent–youth relationships involves the extent of parent–youth conflict, open communication, and closeness, which are indicative of the patterns of interactions that typically occur between the parent and adolescent. Early adolescence is a time of identity development and increased independence from parents. This period can be challenging for families, because as adolescents negotiate their greater autonomy, conflict between parents and adolescents becomes somewhat normative (Adams & Laursen, 2007; Steinberg, 2001). Nevertheless, positive parent–youth relationships that include open communication and closeness have been found to predict less substance use in high school youth (Kafka & London, 1991; Lac et al., 2011; Tharp & Noonan, 2012), but there is little research about these associations from early to mid-adolescence. One study with a mixed aged group (10–16 year olds) found highly conflictual family relationships were associated with substance use disorders in late adolescence and early adulthood (Skeer et al., 2011), but did not consider positive aspects of the relationships, such as communication and closeness. The present study investigated how the parent–youth relationship during early adolescence predicts the initiation of youth substance use during the transition from early to middle adolescence. We also

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investigated gender differences in these predictions, expecting that relationship quality may be a stronger predictor of substance use onset for girls than boys during this transition. The aforementioned results in the study by Skeer et al. (2011) with a mixed-age sample were significant for girls, but not for boys, which provide some support for this hypothesis.

Different associations between parent–youth relationship quality and youth substance use may exist depending on the perspective of the reporter. A meta-analysis on parent–youth conflict and associated youth maladjustment found that youth reports of parent–youth conflict had stronger associations with their social adjustment difficulties than did parent reports (Weymouth, Buehler, Zhou, & Henson, 2016). Because parent–youth relationships develop within the same context, these reporter differences cannot be explained by context alone. Such differences could be explained by how reporter perspective impacts memory recall (De Los Reyes & Kazdin, 2005). For example, youth may perceive parent–youth conflict as a threat to their independence (De Los Reyes et al., 2012), especially if parents have tended to respond to such conflict with authoritarian tactics. Such circumstances may serve to increase the salience of parental conflict for youth, making it more memorable, and thus more likely to influence problem behaviors, such as substance use. Parents are not similarly threatened, suggesting that conflict with their adolescent may be less memorable (and hence, less reported). The meta-analysis included academic, externalizing, and internalizing problems as measures of youth maladjustment, and substance abuse was included in the externalizing construct. We expect to find similar results when examining youth substance use by itself; that youth report of the quality of their relationship with their parent will be more strongly associated with their substance use than the parent reports of parent–youth relationship quality.

Parental Monitoring

In addition to changes in parent–youth relationships during early adolescence, it also is a period when youth spend more time with peers, and parental monitoring (parent knowledge of what their adolescent is doing and youth disclosure) tends to decrease (Lam, McHale, & Crouter, 2014). The concurrence of increased time with peers and decreased parental monitoring places young adolescents at increased risk for using alcohol and other substances (Lam et al., 2014; Mair, Lipperman-Kreda, Gruenewald, Bersamin, & Grube, 2015; Westling, Andrews, Hampson, & Peterson, 2008). Although adolescents increasingly affect each other's behavior during early adolescence, parental influences remain important; for instance, peer effects on alcohol use are moderated by youth-reported parental monitoring (Light, Greenan, Rusby, Nies, & Snijders, 2013) and low parental monitoring is associated with affiliating with substance-using peers (e.g., Wills & Yaeger, 2003). Parents can protect their adolescents from early initiation of substance use by being aware of where their children are, who they are with, and what they are doing during their free time.

One important component of parental monitoring is parent–child relationship quality; for example, communicating frequently and honestly (Kerr & Stattin, 2000). Conversely, coercive parent–youth communication patterns involving sequences of conflict and withdrawal likely inhibit parental monitoring. A few studies have examined models that include both the quality of parent–youth

communication and parental monitoring of their adolescents' activities. Wang and colleagues (2013) classified parental monitoring into conceptually different categories (parental knowledge, youth disclosure, and parental rules) and found that only open parent–youth communication and rules about curfew were associated with lower increases in substance use during early adolescence. Similarly, decreasing parental communication and monitoring during early adolescence were both associated with higher alcohol and marijuana use in 8th grade (Tobler & Komro, 2010). These studies suggest that parental monitoring involves an active process of parent–youth communication; presumably, parental rules arise from parental knowledge, based on both observation and youth disclosure, leading to discussions of appropriate behaviors, parental expectations, and so on. This communication process is a critical aspect of good quality parent–youth relationships, and is necessary for parental monitoring to be effective; thus, parental monitoring and good quality parent–youth relationships are inextricably linked. Further, these studies indicate that both independently contribute to the variance in youth substance use. This study is unique in its inclusion of both youth and parent reports of parental monitoring to test whether these different perspectives vary in their predictions of youth substance use. We expect that youth report on monitoring will be a more salient predictor of their substance use onset compared with parent report of monitoring.

Parental Substance Use

Parents involved in substance use communicate an acceptance regarding the use of that substance to their young adolescent. If youth are aware of or witness their parent's use, then a modeling effect can occur. Parental substance use also may increase the availability of that substance to their adolescent. Parent alcohol use is associated with early adolescent alcohol use that continues into later adolescence (e.g., Brook et al., 2010). Moreover, parent alcohol use has been found to predict use by both the parent's early adolescent and the adolescent's friends (Wills, Sandy, Yaeger, & Shinar, 2001). Parent marijuana use is associated with adolescent onset of marijuana and this relationship is mediated by parent attitudes about marijuana (Miller, Siegel, Hohman, & Crano, 2013) and by low parental monitoring and greater exposure to marijuana (Kerr, Tiberio, & Capaldi, 2015). Because parental substance use could be related to poor monitoring and parent–youth relationships, including all three in the same analysis seems necessary to properly study the role each may play in discouraging or potentiating substance use among early adolescents.

Moreover, we found only one study that examined how parents' use of one substance may affect adolescents' use of a different one. Capaldi, Tiberio, Kerr, and Pears (2016) found that independent of parents' alcohol use, mothers' tobacco use and fathers' marijuana use predicted earlier onset of youth alcohol use. Recognizing the importance of these findings for prevention, the present study investigated how parent alcohol use, binge drinking, and marijuana use each contributes to youth's initiation of alcohol use, binge drinking, and marijuana use. Findings depended on parent gender, yet how parent use of substances differentially impacts boys' and girls' substance use has rarely been studied. We found one such longitudinal study on older adolescents (aged 15 through 17) that showed fathers' problem drinking predicted alcohol and drug use in boys and not girls, whereas mothers' problem drinking predicted

alcohol and drug use in girls but not boys (Ohannessian, 2012). How parents' use of different substances impacts boys' and girls' substance use onset during early adolescence through the first year of high school has yet to be investigated.

Gender Differences in Predictors of Substance Use Onset

Although the differential prevalence in adolescent substance use by gender has diminished in recent decades, distinctive differences remain in patterns of use. From the 1970s until the 1990s, boys typically exceeded adolescent girls in substance use, but since then, the gap has been decreasing; recent evidence shows that girls have slightly higher alcohol use rates in 8th and 10th grade than boys (Johnston et al., 2014) and similar rates of marijuana use as boys (Buu et al., 2014; Chen & Jacobson, 2012). In addition, girls appear to transition to regular marijuana use after initiation faster than boys (Schepis et al., 2011). Boys, on the other hand, tended to accelerate their marijuana use during middle adolescence at higher rates than girls (Chen & Jacobson, 2012).

The salient predictors of alcohol and marijuana use appear to differ for adolescent girls and boys, yet results across studies are inconsistent. A study modeling timing of pubertal maturation and the role of parental monitoring and deviant peer affiliation on alcohol use in youth from 4th to 8th grade found that girls were almost twice as likely as boys to have initiated alcohol use by 8th grade, and gender differences in the prediction models were present. Parental monitoring moderated the relation between maturational timing and affiliation with deviant peers, which then predicted alcohol use for girls, but directly moderated the relation between maturation timing and alcohol use for boys (Westling et al., 2008). Earlier studies found that the lack of adult monitoring was particularly a risk factor for girls—girls who were unsupervised during nonschool hours spent more time with deviant peers and engaged in more deviant behavior than boys (Galambos & Maggs, 1991; Svensson, 2003).

Parent use of marijuana was a strong predictor of adolescent marijuana use (Miller, Siegel, Hohman, & Crano, 2013), and this relation appeared to be even stronger for girls with a good relationship with their parents. Another study found that gender moderated the influence of parent–child relationship on marijuana use differently in Latino adolescents; Latino boys with higher quality of parent–child communication in the 9th grade reported lower marijuana use in the 11th grade, whereas for Latino girls, marijuana use was not affected by the quality of parent–child communication (Lac et al., 2011). Yet another study found that parental monitoring was a stronger protective factor for boys' marijuana use than for girls' use (Tebes et al., 2011). These inconsistent findings illustrate the need for additional but more granular research on gender differences; for example, examining a broader set of disaggregated risk factors, the approach we have taken in this study. Prevention efforts may be tailored for girls and boys according to the findings.

Aims of the Present Study

In summary, the present study examined how parent–youth relationship quality, parental monitoring, and parent substance use are independently associated with the onset of youth alcohol use,

binge drinking, and marijuana use. We focused on the parent factors and substance use during early adolescence (8th grade) and the growth of onset during the transition from early to middle adolescence (8th grade through 9th grade). We hypothesized that the combination of low quality parent–youth relationships, low monitoring, and parent substance use would be associated with youth onset during this important transition period. We expected that parent use of a particular substance would be associated with onset of that same substance (e.g., parent alcohol use would predict youth alcohol onset, parent marijuana use would predict youth marijuana onset). Because adult alcohol use is common and normative, we expected that problematic drinking behaviors, specifically parent binge drinking, would be a more salient predictor of youth alcohol onset. We also investigated the effects of relationship quality and parental monitoring from the perspectives of youth and parents separately, recognizing that these views may be quite different and may differentially affect youth substance use. We expected that youth report and parent report of parent–child relationship quality and parental monitoring would be moderately associated and that both would uniquely contribute to youth substance use onset. We hypothesized that youth report of poorer parent–youth relationship quality and parental monitoring would be more strongly associated with growth in adolescent substance use onset compared with parent report. Gender differences in these predictors of onset were also examined using this broader and more disaggregated set of measures. We hypothesized that poorer quality parent–youth relationships would put girls more at risk for substance use onset than boys, and that parental monitoring would be more protective for girls than boys.

Method

Data are from a longitudinal study examining the social influences on risky behaviors during early to midadolescence, including alcohol use, binge drinking, and marijuana use. For this study, parents were mailed a description of the study and a form for providing consent for their 8th grade student to participate in the study assessments, and consent for their own participation in the parent survey. Adolescents also received a description of the study and a form to provide their assent to participate. The mailings were followed up by a phone call to describe the study and answer questions. After parent consent and youth assent were received, data were first collected from youth and their parents during the spring of the student's 8th grade year (the end of middle school) via Internet surveys. Students were surveyed about their substance use again three times during their 9th grade year (during the fall, winter, and spring of their first year in high school). The students were administered the online surveys in school computer labs under the supervision of project staff. Parents were sent a link to the online survey via email and had the option of receiving a paper survey if they preferred. All study procedures were reviewed and approved by the Institute Review Board of Oregon Research Institute.

Participants

All 8th grade students and their parents from 11 rural and suburban middle schools in the northwestern United States who could read English or Spanish were eligible to participate. Of the

1,188 eligible students, parent informed consent and student assent were obtained for 473 (40%) of students. For this study, the data of the primary parent (typically, the parent who spends the most time with the adolescent) were analyzed, given the low sample size for a second parent; 400 (85%) primary parents agreed to participate in the annual parent questionnaire. To adequately investigate both youth and parent perspectives of their relationship quality, this study included only the 400 students whose parents consented to participate in the survey. This sample of students did not differ from the full 8th-grade student population in participating schools on gender, ethnicity, or substance use. In this sample, 51% of youth were female, 35% of youth were Hispanic or Latino, 51% were White, 4% Native American, 2% Black, 2% Asian or Pacific Islander, and 13% reported being of more than one race. In this sample of primary parents, 73% were female, 13% were male, and 14% did not report on their gender. Of parents who reported on their relationship to the participating student, 91% were a biological parent. Of the 86% of parents reporting ethnicity, 27% were Hispanic/Latino. Of the 81% of parents reporting race, 62% were White and non-Hispanic, 1% Black, 1% Asian, and 9% reported being of more than one race or of another race.

Measures

During the spring when adolescents were in 8th grade, both adolescents and parents reported on the measures of parent–youth relationship quality and parental monitoring. At this time, parents and youth also reported on their own alcohol use, binge drinking, and marijuana use. Youth provided additional reports on their alcohol use, binge drinking, and marijuana use in the fall, winter, and spring of 9th grade.

Parent–youth relationship quality. The 20-item version of the Conflict Behavior Questionnaire (CBQ) was used to measure the parent and adolescent perspectives on the quality of their relationship. Family members are asked to think back on the last 2 weeks at home, and answer whether they believe each of the 20 statements is true or false. Examples of items include “We almost never seem to agree,” “My parent listens when I need someone to talk to,” “For the most part, my child likes to talk to me,” “My child/parent often seems angry at me,” “I enjoy spending time with my parent,” and “My child is easy to get along with.” Items are coded and summed so that higher scores indicate a poorer parent–youth relationship. The 20-item version of the CBQ highly correlates with the original 73-item long version ($r = .94$), has high internal consistency, and is correlated with observational measures and other indicators of poor quality family interactions and relationships, and differentiates between nondistressed families and clinically involved families (Prinz, Foster, Kent, & O’Leary, 1979; Robin & Foster, 1989). In the present study the reliability alphas for parent and youth reports were .88 and .90, respectively.

Parental monitoring. The measure of parental monitoring was drawn from a study using quarterly parent assessments on 221 middle school youth (Metzler, Biglan, Ary, & Li, 1998). The parental monitoring scale showed good internal consistency (α s ranged from .84 to .90) and the scale was correlated with youth substance use, $r = -.42$, $p < .001$ and antisocial behavior, $r = -.43$, $p < .001$. Examples of the seven items are “How often do you or your partner know: who your child hangs out with during free time,” “. . . where your child goes when he/she is out

with friends at night,” and “. . . what your child is doing when he/she is away from home.” These questions are answered on a 5-point scale with a higher score indicating better monitoring (0 = *never or almost never*, 1 = *sometimes*, 2 = *about half the time*, 3 = *often*, 4 = *always or almost always*). In this study the reliability α s for parent and youth reports were .91 and .89, respectively. Parent report of their monitoring was highly positively skewed and kurtotic ($M = 3.74$, $SD = 0.46$, kurtosis = 21.21, skew = 34.76) and, therefore, was normalized using exponential transformation, resulting in 1.05 kurtosis and 1.34 skew.

Parent substance use. Measures of parent use of alcohol and marijuana were slightly modified versions of those used in the National Household Survey (Office of Applied Studies, 2002). Parents were asked whether they currently drink alcohol and whether they currently smoke marijuana, and if so, how often. The 6-point scales for alcohol and marijuana use are 0 = not currently using, 1 = less than once a year, 2 = some each year, 3 = some each month, 4 = some each week, and 5 = some each day. To measure binge drinking, parents were asked “During the past year, on how many days did you drink five or more drinks in a single sitting?” The 7-point scale for binge drinking is 0 = zero days, 1 = 1 to 2 days, 2 = 3 to 9 days, 3 = 10 to 19 days, 4 = 20 to 39 days, 5 = 40 to 59 days, and 6 = 60 or more days. Because parent-reported binge drinking was highly kurtotic and somewhat skewed ($M = 0.32$, $SD = 0.56$, kurtosis = 12.69, skew = 3.36), the variable was normalized using square root transformation, resulting in 3.22 kurtosis and 2.07 skew. Because parent-reported marijuana use had high skew and kurtosis, and a bimodal distribution ($M = 0.17$, $SD = 0.83$, kurtosis = 23.48, skew = 4.95), the variable was dichotomized (0 = *no use*) and (1 = *some marijuana use*) in the past year.

Youth substance use. To measure whether youth had initiated alcohol and marijuana use and participated in binge drinking, youth were asked to report on the number of occasions they drank alcohol, drank more than five drinks in a row, and used marijuana in their lifetime. Answers are provided on a 7-point scale with 0 = *never*, 1 = *1 time*, 2 = *2 times*, 3 = *3 times*, 4 = *4 to 5 times*, 5 = *6 to 7 times*, and 6 = *more than 7 times*.

Analytic Procedures

Before model development, we examined missing data patterns, descriptive statistics, and bivariate correlations among the constructs. We were particularly interested in the extent of agreement between parent and youth report of parent–youth relationship quality and of parental monitoring. Spearman correlations computed the concurrent associations between adolescent alcohol, binge drinking, and marijuana onset by the spring of 8th grade with parent–youth relationship, parental monitoring, and parent substance use.

A set of discrete-time survival analyses (DTSA; Singer & Willett, 2003) was used to examine the probability of substance use initiation across the four time points, from the spring of 8th grade to the spring of 9th grade (capturing the time between the summer before and the first year in high school), and how the probability of initiation varied as a function of parental monitoring, parent–child relationship, and parental substance use when youth were in 8th grade. The set of models were performed for each of the youth

substance initiation behaviors of interest: alcohol use, binge drinking, and marijuana use.

At each of the four assessments, a dichotomous event indicator was created to identify the occurrence of a single nonrepeatable event; in this case, initiation of alcohol use, binge drinking, or marijuana use. At each time point, the event indicator with a value of 1 means that the event occurred, and value of 0 indicates that the event has not occurred; a missing value means that the event has occurred in a preceding time period or that the individual dropped out of the study (Muthén & Masyn, 2005). Participants who reported lifetime use at baseline have a "1" for their first assessment and missing values for the remaining assessments (left-censoring). Participants who did not report substance use initiation by their last completed assessment have "0" scores for all completed assessments, and, if applicable, any subsequent assessment waves are coded as missing (right-censoring). The inclusion of right-censored data is standard in DTSA; without them, the hazard functions would be inflated as they would assume everyone experiences the event before the end of the assessment window. The assumption of noninformative censoring, where censored time (missing data) can be associated with observed predictors, but are independent of event times (the observed outcome), is analogous to the assumption of ignorable missingness in the general latent variable model. Under the assumption of missing at random (MAR; Little & Rubin, 2002), the maximum likelihood estimates for the event indicator probabilities, such as substance use initiation, are the same for censored and uncensored individuals.

For all DTSA models, a maximum likelihood estimator with robust *SEs* was used to accommodate violations of model assumptions including multivariate normality and independence of observations. To increase the confidence in the final maximum likelihood values, 100 random sets of starting values with 10 full optimizations were included. Predictors with missing values were handled using the Monte Carlo integration. This approach results in less bias than alternative procedures such as listwise deletion or mean substitution (Graham, Hofer, Donaldson, MacKinnon, & Schafer, 1997). All models were run in Mplus version 7.3 (Muthén & Muthén, 1998–2012).

First, unconditional DTSA models were evaluated using the binary time-specific event indicators. The unconditional models allowed the hazard rate to vary freely across time intervals. Second, conditional DTSA models were evaluated with covariates. A

DTSA model was assessed for each covariate with the proportional odds (proportionality) assumption, which constrained the relationships between the covariate and the time-specific event indicators to be equal across each time interval. Third, full multivariate models were evaluated that included all significant covariates from the univariate DTSA models. Fourth, follow-up analyses examined gender interactions. Recognizing the large number of potential interactions that might be tested, an a priori decision was made to focus only on the significant covariate effects from the full model. Also, in line with the procedures of Singer and Willett (2003), the analyses were restricted to examining the interactions among the risk factors shown to be significant from the full model. The interactions were tested as cross-products and in models that included the main effects of the covariates.

Results

Rates of Participation and Missing Data

The parent participation rate was quite high, as 86% of primary parents completed the questionnaire (343/400) while the student was in the spring of 8th grade. Parental participation was not related to youth gender, ethnicity, or substance use reported in spring of 8th grade. Youth participation rates were as follows: 91, 85, 79, and 77% across the four assessments. An exploration of missing data found that 61% of youth completed all four waves of data and an additional 24% missed only one assessment.

Descriptive Statistics of Predictors

Descriptive statistics for predictors are shown in Table 1. On average, youth reported poorer parent–youth relationship quality, $t = 2.69$, $p = .008$ and lower parental monitoring than did parents, $t = -9.94$, $p < .001$. It appears that alcohol use was more normative than binge drinking or marijuana use for parents. The full range was endorsed for binge drinking (from 0 to 60 or more days per year) and 19% of parents engaged in some binge drinking. Similarly, the full range for marijuana was endorsed by parents (from no use to daily use), yet only 5% of parents reported any marijuana use.

Table 1

Descriptive Statistics of Predictors: Parent–Youth Relationship Quality, Parental Monitoring, and Parent Substance Use

Measure	Mean	<i>SD</i>	Kurtosis	Skew	Min.	Max.
Youth report: Parent–youth relationship quality ^a	4.34	4.58	.86	1.27	0	19
Youth report: Parent monitoring ^b	3.20	.94	1.90	-1.52	0	4
Parent report: Parent–youth relationship quality ^a	4.01	4.65	1.55	1.53	0	19
Parent report: Parent monitoring ^{bc}	3.74	.46	21.21	-3.76	0	4
Parent current alcohol use ^c	1.58	1.72	-1.40	.43	0	5
Parent current binge drinking ^{de}	.38	.97	12.69	3.36	0	6
Parent current marijuana use ^{ce}	.17	.83	23.48	4.95	0	5

^a Scale: 0 = false, 1 = true; 20 items are summed (maximum value = 20). ^b Scale: 0 = never or almost never, 1 = sometimes, 2 = about half the time, 3 = often, 4 = always or almost always; average across 7 items. ^c Scale: 0 = not currently using, 1 = less than once a year, 2 = some each year, 3 = some each month, 4 = some each week, and 5 = some each day. ^d Scale for number of days in the past year: 0 = zero days, 1 = 1–2 days, 2 = 3–9 days, 3 = 10–19 days, 4 = 20–39 days, 5 = 40–59 days, and 6 = 60 or more days. ^e Data transformation was performed on these variables because of high kurtosis and skew.

Prevalence of Youth Substance Use Onset

The prevalence of adolescent boys and girls who have engaged in alcohol use, binge drinking, and marijuana use across the four time points is shown in Figure 1. Starting in 8th grade, the percentage of youth who reported any use of the substances in their lifetime is shown, then at each of the following time points the additional percentage of youth who report initiation is added, showing the accumulation of onset for this sample of youth over 1 year. A little over 40% of youth reported having initiated alcohol use by the summer of 8th grade. By fall of 9th grade, an additional 5% had initiated alcohol use, and by the end of 9th grade, 57% had initiated alcohol use. More girls than boys had initiated alcohol use by the end of 8th grade ($\chi^2 = 8.62, p = .003$) and beginning of 9th grade ($\chi^2 = 4.54, p = .033$). Marijuana use onset almost doubled over the assessment year, from 18 to 33% and more girls than boys had initiated marijuana use by the end of 8th grade ($\chi^2 = 4.02, p = .045$). Binge drinking onset more than doubled, from a little above 12 to 27% during the time period. More girls than boys initiated binge drinking by the end of 8th grade ($\chi^2 = 6.22, p = .013$) and the beginning of 9th grade ($\chi^2 = 4.57, p = .033$).

Correlations Among Predictors and Substance Use Onset by Spring of 8th Grade

The associations among predictor variables and youth 8th grade substance use are reported by gender in Table 2. As expected, parent and youth reports of parent–youth relationship quality and of parental monitoring were moderately correlated for both girls and boys. Youth report of the quality of parent–youth relationships

was moderately negatively associated parental monitoring ($r = -.37$) and significantly associated with substance use for girls (alcohol: $r = .43$, binge drinking: $r = .37$, and marijuana use: $r = .27$), but not boys. On the other hand, parent report of parent–youth relationship quality was only moderately associated with marijuana onset for girls ($r = .22$). Youth report of parental monitoring was negatively associated with alcohol onset (girls: $r = -.30$, boys: $r = -.26$) and marijuana onset (girls: $r = -.29$, boys: $r = -.19$), and associated with binge drinking for girls only ($r = -.28$), whereas associations were found for parent report of monitoring with alcohol onset for both girls ($r = -.21$) and boys ($r = -.26$) and with binge drinking for girls only ($r = -.17$). Further, as expected, associations among youth substance use onset variables reported at baseline were significant for both boys and girls. Small associations were also found for parent binge drinking with girls' marijuana onset ($r = .19$) and for parent marijuana use with girls' binge drinking onset ($r = .16$), but not with boys' onset.

Predictors of Substance Use Onset From 8th Through 9th Grade

For youth who had not yet initiated substance use, we tested gender differences in rate of youth substance use and binge drinking onset between spring of 8th grade and spring of 9th grade. Differences in alcohol rate of onset were nearly significant ($p = .053$), with girls higher than boys. There were no significant gender differences in binge drinking or marijuana rate of onset. The DTSA models of parent predictors on youth alcohol, binge drinking, and marijuana onset are shown in Table 3.

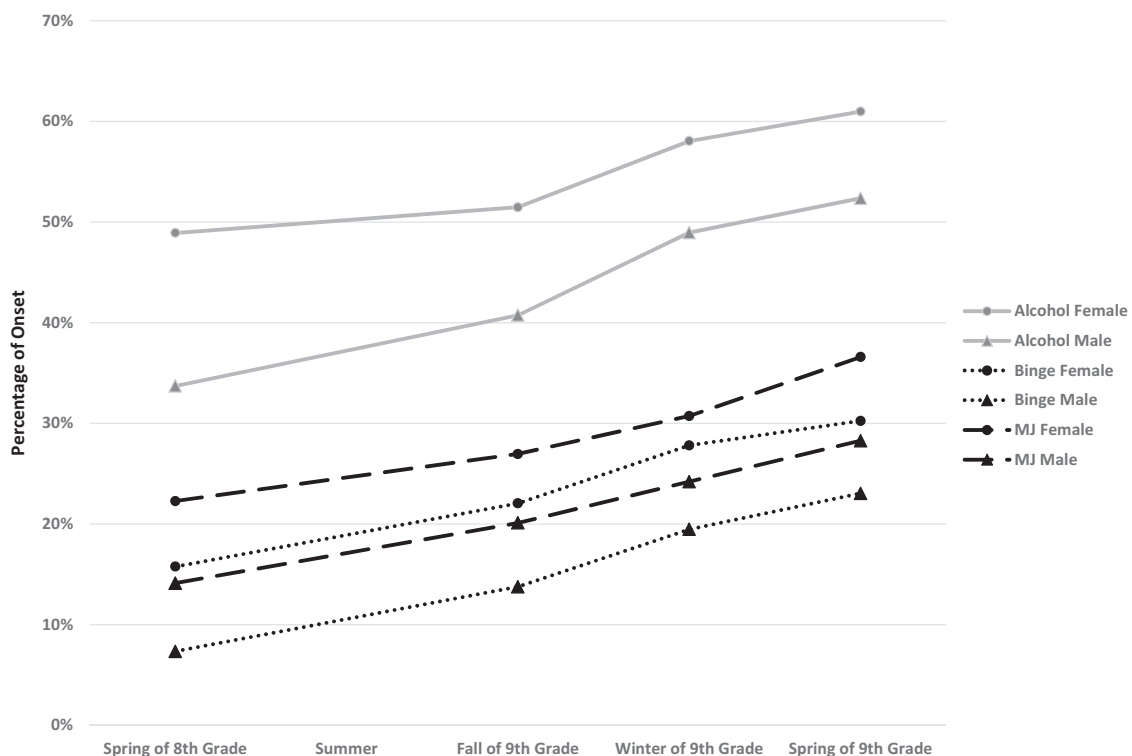


Figure 1. Prevalence of youth substance onset.

Table 2
Correlations Among Variables When Youth Are in 8th Grade

Variable	1	2	3	4	5	6	7	8	9	10
Girls										
1. Youth report: Poor relationship quality	—	-.37	.45	-.22	-.04	.11	.15	.43	.37	.27
2. Youth report: Monitoring	-.18	—	-.18	.22	-.01	.02	-.05	-.30	-.28	-.29
3. Parent report: Poor relationship quality	.31	-.02	—	-.45	.04	.08	.06	.14	.12	.22
4. Parent report: monitoring (exp)	-.12	.32	-.27	—	.09	-.02	-.16	-.21	-.17	-.15
5. Parent alcohol use	.01	.07	-.03	.04	—	.53	.08	.09	.07	.10
6. Parent binge drinking (sqrt)	.02	-.02	.07	-.11	.54	—	.02	.09	-.03	.19
7. Parent marijuana use (dichotomous) ^a	.04	-.08	.05	-.10	.04	.08	—	.11	.16	.12
8. Youth alcohol onset (8th grade) ^a	.12	-.26	.06	-.26	.11	.09	-.07	—	.38	.47
9. Youth binge drinking onset (8th grade) ^a	.07	-.12	.12	-.14	-.01	.10	.08	.35	—	.41
10. Youth marijuana use onset (8th grade) ^a	-.03	-.19	.13	-.08	-.03	-.02	-.08	.30	.27	—
Boys										

Note. Values at $p < .05$ (bolded). Pearson's Correlations Coefficient is reported unless otherwise noted. Correlations for girls are in the right upper quadrant, and for boys are in the left lower quadrant. Exp = exponential transformation; sqrt = square root transformation.

^a Indicates report of Spearman Correlation Coefficient.

Youth alcohol initiation. The univariate DTSA models identified youth and parent reports of lower quality parent–youth relationships (youth: $p < .001$, parent: $p < .001$) and less parental monitoring (youth: $p < .001$, parent: $p = .014$) as predictors of increased risk of alcohol initiation. Parent report of current binge

drinking was also associated with increased risk of alcohol initiation ($p = .023$). In the multivariate DTSA model, which included all five significant predictors from the univariate models, parent current binge drinking ($p = .021$), youth report of parent–youth relationship ($p = .004$), and youth report of parental monitoring

Table 3
Univariate and Full Discrete-Time Survival Models

	Univariate models				Full model			
	β	SE	t test	p	β	SE	t test	p
Youth alcohol use onset								
Student male ^a	-.32	.17	-1.93	.053				
Parent alcohol use	.09	.05	1.70	.089				
Parent binge drinking (sqrt)	.35	.15	2.28	.023	.34	.15	2.31	.021
Parent marijuana use (dichotomous) ^b	.27	.52	.52	.602				
Youth report: Parent–child relationship ^c	.10	.02	4.29	<.001	.08	.03	2.87	.004
Youth report: Parental monitoring	-.48	.11	-4.25	<.001	-.35	.12	-3.02	.003
Parent report: Parent–child relationship ^c	.07	.02	3.50	<.001	.02	.03	.71	.480
Parent report: Parental monitoring (exp)	-.02	.01	-2.47	.014	-.01	.01	-.72	.471
Youth binge drinking onset								
Student male ^a	-.33	.21	-1.58	.113				
Parent alcohol use	-.01	.06	-.22	.826				
Parent binge drinking	.28	.17	1.60	.109				
Parent marijuana use ^b	1.09	.45	2.42	.015	.94	.49	1.93	.054
Youth report: Parent–child relationship ^c	.15	.03	5.59	<.001	.12	.03	3.63	<.001
Youth report: Parental monitoring	-.56	.11	-5.11	<.001	-.44	.12	-3.79	<.001
Parent report: Parent–child relationship ^c	.11	.02	4.86	<.001	.05	.03	1.61	.107
Parent report: Parental monitoring	-.03	.01	-3.52	<.001	-.01	.01	-1.23	.220
Youth marijuana use onset								
Student male ^a	-.27	.19	-1.42	.156				
Parent alcohol use	.00	.06	.05	.961				
Parent binge drinking	.34	.16	2.10	.036	.26	.18	1.50	.135
Parent marijuana use ^b	.59	.50	1.19	.233				
Youth report: Parent–child relationship ^c	.11	.02	4.65	<.001	.08	.03	2.77	.006
Youth report: Parental monitoring	-.46	.10	-4.64	<.001	-.37	.11	-3.45	.001
Parent report: Parent–child relationship ^c	.10	.02	5.33	<.001	.06	.02	2.67	.007
Parent report: Parental monitoring	-.02	.01	-3.07	.002	-.01	.01	-.91	.362

Note. The bold correlations are significant at $p < .05$. Exp = exponential transformation; sqrt = square root transformation.

^a 0 = female, 1 = male. ^b 0 = no marijuana use in last year, 1 = marijuana use in last year. ^c higher scores reflect poorer parent–child relationship quality.

($p = .003$) remained independently significant, and in the expected direction. Gender differences were found in the strength of two predictors. Youth-reported higher quality parent–youth relationship ($p = .012$) and greater parental monitoring ($p = .046$) were stronger protective factors of alcohol initiation for girls than for boys.

Youth binge drinking initiation. The univariate DTSA models identified youth and parent reports of lower quality parent–youth relationships (youth: $p < .001$, parent: $p < .001$) and less parental monitoring (youth: $p < .001$, parent: $p < .001$) as associated with increased rate of binge drinking initiation. Parent report of current marijuana use was also associated with increased risk of binge drinking initiation ($p = .015$). In the multivariate DTSA model, which included all five significant predictors from the univariate initiation models, youth report of parent–youth relationship ($p < .001$) and youth report of parental monitoring ($p < .001$) remained independently significant, and in the expected direction. Gender differences in the influence of youth reported parent–youth relationship and parental monitoring on the risk of binge drinking initiation were not detected.

Youth marijuana initiation. The univariate DTSA model identified youth and parent reports of lower quality parent–youth relationships (youth: $p < .001$, parent: $p < .001$) and less parental monitoring (youth: $p < .001$, parent: $p = .002$) were associated with increased risk of marijuana initiation. Parent report of current binge drinking was also associated with increased risk of marijuana initiation ($p = .036$). In the multivariate DTSA model, which included all five significant predictors from the univariate models, after adjusting for all other covariates, youth report of parent–youth relationship ($p = .006$), youth report of parental monitoring ($p = .001$), and parent report of parent–youth relationship ($p = .007$) remained significant in the expected direction. Gender differences in the strength of one predictor was found. Youth reported greater parental monitoring was a stronger protective factor for marijuana initiation for girls compared with boys ($p = .015$).

Discussion

This study examined parenting factors that may predict initiation of alcohol use, binge drinking, and marijuana use during the transition from early adolescence to middle adolescence; all of these behaviors are known to have deleterious long-term consequences for youth. Three predictors were targeted: parent–youth relationship quality, parental monitoring, and parent substance use. We treated youth and parent perspectives on relationship quality and monitoring as separate constructs, and also investigated gender differences in the strength of the predictors on youth substance use and binge drinking initiation. Results show the importance of considering the unique contribution of different aspects and perceptions of parenting on youth substance use initiation, as these results were independent and differed in magnitude. Results also show that there were both common and unique predictors of youth substance use initiation.

It is evident from our results that parental monitoring and relationships between parents and adolescents during this transitional period (from middle school to high school, and from early adolescence to the beginning of mid-adolescence) is of considerable practical interest. During this period, many youth began using (and abusing) alcohol and marijuana for the first time. We note that

the rates of onset in this rural and suburban sample are higher than national rates. Others have also found that youth in rural areas have higher rates of substance use compared with urban samples (e.g., Coomber et al., 2011; Wiens, Haden, Dean, & Sivinski, 2010). Across a 1-year period (from the end of 8th grade to the end of 9th grade), alcohol initiation had increased from 40 to 65%, binge drinking initiation tripled (from 10 to 30%), and marijuana use initiation had doubled (from 20 to 40%). Youth-perceived parental monitoring alone was found to cut the odds of onset by approximately one-third, on average. Such findings have great relevance for prevention programs, especially for youth living in rural and suburban areas as were participants in this study.

Youth ratings of parent relationship quality and monitoring were significant predictors of alcohol use, binge drinking, and marijuana use initiation in the multivariate model, but parent reports, while predictors in univariate models, were not significant predictors in the multivariate models. Apparently the univariate effects of parent reports were largely a result of their correlation with youth reports, but it was the youths' perspectives that had a salient impact on their drinking behavior. Evidently, if youth perceive that their relationship with their parent is poor and their parent does not know what they are doing, alcohol involvement (any drinking, drinking to get drunk) will be more likely to occur regardless of what parents may believe. These results concur with a meta-analysis showing stronger associations for youth report of parent–youth conflict on their problem behaviors, than for parent reports (Weymouth et al., 2016), and broadens the finding to include alcohol use and binge drinking initiation during the transition from early to middle adolescence.

Although youth (but not parent) report of parental monitoring predicted youth marijuana onset, parent perception of parent–child relationship quality was a significant predictor of youth marijuana onset, in addition to youth's perspective. There is limited knowledge about youth perceptions of their relationships with their parents and early marijuana use. One study found that adolescents initiating early marijuana use reported poorer family relationships, lower school commitment, scored higher on sensation seeking, and had other conduct problems compared with later users and nonusers (Flory, Lynam, Milich, Leukefeld, & Clayton, 2004), but this study did not address parent perceptions. Also, contrary to our expectations, parent marijuana use did not significantly predict youth marijuana initiation, while others have found parent marijuana use to predict the likelihood of youth marijuana use (Bailey et al., 2016). The lack of significance may be because of the low prevalence of parent-reported marijuana use in this sample, a matter of statistical power. Much more research is needed to understand predictors of marijuana use onset during early adolescence, and perceptions and attitudes toward marijuana appear important to consider. Parent and youth perceptions about marijuana norms were associated with parent and adolescent marijuana use in one study (Bailey et al., 2016). Another study found that youth with parents who perceive that there is little risk to marijuana use will likely have a similar perception (Kandel, Griesler, Lee, Davies, & Shaffsan, 2001). Somewhat ironically, this may be particularly true for youth who have a positive relationship with their parents (Choquet, Hassler, Morin, Falissard, & Chau, 2008).

This study also uniquely found that parent binge drinking predicted youth alcohol initiation. We expected that parent alcohol use would also be predictive of youth alcohol initiation; however,

it was not. Parent alcohol use within the past year appeared to be normative in this sample and not have a negative effect on youth. However, when parents engage in binge drinking (more than five drinks in a row), this impacts their adolescent's alcohol use. This effect was significant even when parent monitoring was taken into account, indicating that such drinking behaviors by parents has an additional impact other than decreasing their monitoring. By binge drinking, parents may communicate an acceptance of alcohol use to their adolescent, or alcohol may be more readily available in those households, or both. We did not find that parent binge drinking predicted youth binge drinking onset; however, because alcohol abuse usually takes time to develop, perhaps that relationship would be evident among older adolescents. Nevertheless, because early adolescent alcohol use is associated with continued alcohol use in later adolescence (e.g., Brook et al., 2010), onset of alcohol use at this age is still of concern.

Gender differences in the strength of these parenting factors on youth substance initiation partially supported our hypotheses. Specifically, poorer parent–youth relationships (youth report) put girls more at risk for alcohol initiation than boys. Also, lower parental monitoring (youth report) put girls more at risk for alcohol and marijuana initiation. Other research has found that parental monitoring was a stronger protective factor for girls than for boys on their marijuana use, and the protection was most evident during middle adolescence (Epstein et al., 2016). Our study provides additional support for a gender difference during early adolescence. On the other hand, Tebes et al. (2011) found that adult monitoring was more protective for Black boys than for girls on alcohol and marijuana use during early adolescence. Youth race and ethnicity may explain these mixed results on gender differences.

On the other hand, no gender differences were found for the predictors of binge drinking. Youth report of poor parent–child relationship quality and parental monitoring were significant predictors for both girls and boys. There also were no gender differences for the impact of parent binge drinking on youth alcohol onset. It appears that promoting good quality parent–youth relationships and monitoring could be an effective strategy for preventing or reducing the onset of binge drinking in both adolescent boys and girls.

Limitations

The study sample consisted mostly of White or Hispanic/Latino youth and their parents, and was conducted in rural and suburban school districts in the northwestern United States, so it remains to be seen how generalizable the findings are. Future studies examining broader or different populations are indicated.

In this study, substance use data from the primary parent (the parent who spends the most time in caregiving) was utilized, limiting our results to the influence of the primary parent. To get a breadth of family influence, studying the monitoring, relationship quality, and substance use by all adults in the household would be informative. Although one-fourth of the parent sample in this study were male, fathers are underrepresented. Further, assessing substance use exposure and availability in the home (including from siblings) would augment this study.

Finally, peer influence was not explicitly addressed in the present study, and may mediate, entirely or partially, the effect of poor

parent–youth relationships on youth substance use. Peer influence has often been reported in the literature, but not invariably, and the conditions under which it occurs have yet to be firmly established.

Further Study and Implication for Clinical Practitioners and Prevention Strategies

Early adolescence is an ideal time to intervene to prevent underage drinking, binge drinking, and marijuana use. In a review of substance abuse prevention studies, Gottfredson and Wilson (2003) found that substance use prevention programs were more effective if they occurred when youth were in middle school than in elementary or high school, illustrating the potential of positive youth outcomes when intervening during early adolescence. Our present study provides strong evidence that both poor parent–youth relationships and lack of parental monitoring during early adolescence are risk factors for alcohol use, binge drinking, and marijuana use initiation during the transition to middle adolescence (through the first year of high school). Moreover, it is consistent with existing literature suggesting that parental monitoring may be particularly important for girls. These results underscore the importance for clinicians and practitioners to attend to these salient parenting factors during this critical adolescent development period.

The results also show that youth perceptions of these parenting factors have a salient impact on drinking behaviors. Youth perspectives on their relationship quality with their parents and parental monitoring are important to include in clinical work as well as in future research. Further, this study found that parents significantly rated their relationship quality and monitoring higher than adolescents did. This does not preclude assessing parent perspectives, but does reinforce the importance of assessing both perspectives. Both perspectives are likely important for deciding how to intervene on adolescent alcohol use, particularly in cases where parent and youth perspectives are highly discrepant.

A parenting intervention that focuses on how to communicate with their young adolescent about alcohol and marijuana in an open and nonconflictual manner could have a positive impact, especially for girls. In addition, intervening on parent drinking behaviors, particularly binge drinking, may also contribute to lowering the likelihood of youth alcohol onset. However, as we have noted, a great deal remains to be learned about how parents may affect adolescents' decisions about marijuana use, and ongoing studies of these matters will only serve to strengthen the effectiveness of clinical interventions and prevention efforts.

References

- Adams, R. E., & Laursen, B. (2007). The correlates of conflict: Disagreement is not necessarily detrimental. *Journal of Family Psychology, 21*, 445–458. <http://dx.doi.org/10.1037/0893-3200.21.3.445>
- Bailey, J. A., Hill, K. G., Guttmanova, K., Epstein, M., Abbott, R. D., Steeger, C. M., & Skinner, M. L. (2016). Associations between parental and grandparental marijuana use and child substance use norms in a prospective, three-generation study. *Journal of Adolescent Health, 59*, 262–268. <http://dx.doi.org/10.1016/j.jadohealth.2016.04.010>
- Bechtold, J., Simpson, T., White, H. R., & Pardini, D. (2015). Chronic adolescent marijuana use as a risk factor for physical and mental health problems in young adult men. *Psychology of Addictive Behaviors, 29*, 552–563. <http://dx.doi.org/10.1037/adab0000103>

- Boles, S., Biglan, A., & Smolkowski, K. (2006). Relationships among negative and positive behaviours in adolescence. *Journal of Adolescence*, 29, 33–52. <http://dx.doi.org/10.1016/j.adolescence.2005.01.007>
- Brook, J. S., Balka, E. B., Crossman, A. M., Dermatis, H., Galanter, M., & Brook, D. W. (2010). The Relationship between parental alcohol use, early and late adolescent alcohol use, and young adult psychological symptoms: A longitudinal study. *The American Journal on Addictions*, 19, 534–542. <http://dx.doi.org/10.1111/j.1521-0391.2010.00083.x>
- Buu, A., Dabrowska, A., Mygrants, M., Puttler, L. I., Jester, J. M., & Zucker, R. A. (2014). Gender differences in the developmental risk of onset of alcohol, nicotine, and marijuana use and the effects of nicotine and marijuana use on alcohol outcomes. *Journal of Studies on Alcohol and Drugs*, 75, 850–858. <http://dx.doi.org/10.15288/jsad.2014.75.850>
- Capaldi, D. M., Tiberio, S. S., Kerr, D. C. R., & Pears, K. C. (2016). The relationships of parental alcohol versus tobacco and marijuana use with early adolescent onset of alcohol use. *Journal of Studies on Alcohol and Drugs*, 77, 95–103. <http://dx.doi.org/10.15288/jsad.2016.77.95>
- Chen, P., & Jacobson, K. C. (2012). Developmental trajectories of substance use from early adolescence to young adulthood: Gender and racial/ethnic differences. *Journal of Adolescent Health*, 50, 154–163. <http://dx.doi.org/10.1016/j.jadohealth.2011.05.013>
- Choquet, M., Hassler, C., Morin, D., Falissard, B., & Chau, N. (2008). Perceived parenting styles and tobacco, alcohol and cannabis use among french adolescents: Gender and family structure differentials. *Alcohol and Alcoholism*, 43, 73–80. <http://dx.doi.org/10.1093/alcac/agm060>
- Colder, C. R., Campbell, R. T., Ruel, E., Richardson, J. L., & Flay, B. R. (2002). A finite mixture model of growth trajectories of adolescent alcohol use: Predictors and consequences. *Journal of Counseling and Clinical Psychology*, 70, 976–985. <http://dx.doi.org/10.1037/0022-006X.70.4.976>
- Coomber, K., Toumbourou, J. W., Miller, P., Staiger, P. K., Hemphill, S. A., & Catalano, R. F. (2011). Rural adolescent alcohol, tobacco, and illicit drug use: A comparison of students in Victoria, Australia, and Washington State, United States. *The Journal of Rural Health*, 27, 409–415. <http://dx.doi.org/10.1111/j.1748-0361.2010.00360.x>
- De Los Reyes, A., & Kazdin, A. E. (2005). Informant discrepancies in the assessment of childhood psychopathology: A critical review, theoretical framework, and recommendations for further study. *Psychological Bulletin*, 131, 483–509. <http://dx.doi.org/10.1037/0033-2909.131.4.483>
- De Los Reyes, A., Thomas, S. A., Swan, A. J., Ehrlich, K. B., Reynolds, E. K., Suarez, L., . . . Pabón, S. C. (2012). “It depends on what you mean by ‘disagree’”: Differences between parent and child perceptions of parent–child conflict. *Journal of Psychopathology and Behavioral Assessment*, 34, 293–307. <http://dx.doi.org/10.1007/s10862-012-9288-3>
- Englund, M. M., Egeland, B., Oliva, E. M., & Collins, W. A. (2008). Childhood and adolescent predictors of heavy drinking and alcohol use disorders in early adulthood: A longitudinal developmental analysis. *Addiction*, 103(Suppl. 1), 23–35. <http://dx.doi.org/10.1111/j.1360-0443.2008.02174.x>
- Epstein, M., Hill, K. G., Roe, S. S., Bailey, J. A., Iacono, W. G., McGue, M., . . . Haggerty, K. P. (2016). Time-varying effects of families and peers on adolescent marijuana use: Person-environment interactions across development. *Development and Psychopathology*. Advance online publication. <http://dx.doi.org/10.1017/S0954579416000559>
- Flory, K., Lynam, D., Milich, R., Leukefeld, C., & Clayton, R. (2004). Early adolescent through young adult alcohol and marijuana use trajectories: Early predictors, young adult outcomes, and predictive utility. *Development and Psychopathology*, 16, 193–213. <http://dx.doi.org/10.1017/S0954579404044475>
- Galambos, N. L., & Maggs, J. L. (1991). Out-of-school care of young adolescents and self-reported behavior. *Developmental Psychology*, 27, 644–655. <http://dx.doi.org/10.1037/0012-1649.27.4.644>
- Gottfredson, D. C., & Wilson, D. B. (2003). Characteristics of effective school-based substance abuse prevention. *Prevention Science*, 4, 27–38. <http://dx.doi.org/10.1023/A:1021782710278>
- Graham, J. W., Hofer, S. M., Donaldson, S. I., MacKinnon, D. P., & Schafer, J. L. (1997). Analysis with missing data in prevention research. In K. J. Bryant, M. T. Windle, & S. G. West (Eds.), *The science of prevention: Methodological advances from alcohol and substance abuse research* (pp. 325–366). Washington, DC: APA. <http://dx.doi.org/10.1037/10222-010>
- Johnston, L. D., O'Malley, P. M., Bachman, J. G., Schulenberg, J. E., & Miech, R. A. (2014). *Demographic subgroup trends among adolescents in the use of various licit and illicit drugs, 1975–2013* (Monitoring the Future Occasional Paper 81). Ann Arbor, MI: Institute for Social Research, University of Michigan. Retrieved from <http://monitoringthefuture.org/pubs.html#papers>
- Kafka, R. R., & London, P. (1991). Communication in relationships and adolescent substance use: The influence of parents and friends. *Adolescence*, 26, 587–598.
- Kandel, D. B., Griesler, P. C., Lee, G., Davies, M., & Shaffsan, C. (2001). *Parental influences on adolescent marijuana use and the baby boom generation: Findings from the 1979–1996 National Household Surveys on Drug Abuse* (Report No. SAMHSA-Ser-A-13; SMA-01–3531). Rockville, MD: Office of Applied Studies, Substance Abuse and Mental Health Services Administration (DHHS/PHS). Retrieved from ERIC database (ED466906).
- Kerr, D. C. R., Tiberio, S. S., & Capaldi, D. M. (2015). Contextual risks linking parents' adolescent marijuana use to offspring onset. *Drug and Alcohol Dependence*, 154, 222–228. <http://dx.doi.org/10.1016/j.drugalcdep.2015.06.041>
- Kerr, M., & Stattin, H. (2000). What parents know, how they know it, and several forms of adolescent adjustment: Further support for a reinterpretation of monitoring. *Developmental Psychology*, 36, 366–380. <http://dx.doi.org/10.1037/0012-1649.36.3.366>
- Lac, A., Unger, J. B., Basáñez, T., Ritt-Olson, A., Soto, D. W., & Baezconde-Garbanati, L. (2011). Marijuana use among Latino adolescents: Gender differences in protective familial factors. *Substance Use & Misuse*, 46, 644–655. <http://dx.doi.org/10.3109/10826084.2010.528121>
- Lam, C. B., McHale, S. M., & Crouter, A. C. (2014). Time with peers from middle childhood to late adolescence: Developmental course and adjustment correlates. *Child Development*, 85, 1677–1693. <http://dx.doi.org/10.1111/cdev.12235>
- Light, J. M., Greenan, C. C., Rusby, J. C., Nies, K. M., & Snijders, T. A. B. (2013). Onset to first alcohol use in early adolescence: A network diffusion model [Special issue]. *Journal of Research on Adolescence*, 23, 487–499. <http://dx.doi.org/10.1111/jora.12064>
- Little, R. J., & Rubin, D. B. (2002). *Statistical analysis with missing data* (2nd ed.). New York, NY: Wiley. <http://dx.doi.org/10.1002/9781119013563>
- Mair, C., Lipperman-Kreda, S., Gruenewald, P. J., Bersamin, M., & Grube, J. W. (2015). Adolescent drinking risks associated with specific drinking contexts. *Alcoholism: Clinical and Experimental Research*, 39, 1705–1711. <http://dx.doi.org/10.1111/acer.12806>
- Metzler, C. W., Biglan, A., Ary, D. V., & Li, F. (1998). The stability and validity of early adolescents' reports of parenting constructs. *Journal of Family Psychology*, 12, 600–619. <http://dx.doi.org/10.1037/0893-3200.12.4.600>
- Miech, R. A., Johnston, L. D., O'Malley, P. M., Bachman, J. G., & Schulenberg, J. E. (2016). *Monitoring the Future national survey results on drug use, 1975–2015: Vol. I. Secondary school students*. Ann Arbor, MI: Institute for Social Research, The University of Michigan. Retrieved from http://monitoringthefuture.org/pubs/monographs/mtf-vol1_2015.pdf
- Miller, S. M., Siegel, J. T., Hohman, Z., & Crano, W. D. (2013). Factors mediating the association of the recency of parent's marijuana use and

- their adolescent children's subsequent initiation. *Psychology of Addictive Behaviors*, 27, 848–853. <http://dx.doi.org/10.1037/a0032201>
- Muthén, B., & Masyn, K. (2005). Discrete-time survival mixture analysis. *Journal of Educational and Behavioral Statistics*, 30, 27–58. <http://dx.doi.org/10.3102/10769986030001027>
- Muthén, L. K., & Muthén, B. O. (1998–2012). *Mplus user's guide* (7th ed.). Los Angeles, CA: Author.
- Office of Applied Studies. (2002). *Results from the 2001 National Household Survey on Drug Abuse: Volume 1. Summary of national findings* (DHHS Publication No. SMA 02–3758, NHSDA Series H117). Rockville, MD: Substance Abuse and Mental Health Services Administration.
- Ohanessian, C. M. (2012). Parental problem drinking and adolescent psychosocial adjustment: The mediating role of adolescent–parent communication. *Journal of Research on Adolescence*, 22, 498–511. <http://dx.doi.org/10.1111/j.1532-7795.2012.00791.x>
- Prinz, R. J., Foster, S., Kent, R. N., & O'Leary, K. D. (1979). Multivariate assessment of conflict in distressed and nondistressed mother-adolescent dyads. *Journal of Applied Behavior Analysis*, 12, 691–700. <http://dx.doi.org/10.1901/jaba.1979.12-691>
- Robin, A. L., & Foster, S. L. (1989). *Negotiating parent-adolescent conflict: A behavioral-family systems approach*. New York, NY: Guilford Press.
- Schepis, T. S., Desai, R. A., Cavallo, D. A., Smith, A. E., McFetridge, A., Liss, T. B., . . . Krishnan-Sarin, S. (2011). Gender differences in adolescent marijuana use and associated psychosocial characteristics. *Journal of Addiction Medicine*, 5, 65–73. <http://dx.doi.org/10.1097/ADM.0b013e3181d8dc62>
- Singer, J. D., & Willett, J. B. (2003). *Applied longitudinal data analysis: Modeling change and event occurrence*. New York, NY: Oxford University Press. <http://dx.doi.org/10.1093/acprof:oso/9780195152968.001.0001>
- Skeer, M. R., McCormick, M. C., Normand, S. L., Mimiaga, M. J., Buka, S. L., & Gilman, S. E. (2011). Gender differences in the association between family conflict and adolescent substance use disorders. *Journal of Adolescent Health*, 49, 187–192. <http://dx.doi.org/10.1016/j.jadohealth.2010.12.003>
- Steinberg, L. (2001). We know some things: Parent-adolescent relationships in retrospect and prospect. *Journal of Research on Adolescence*, 11, 1–19. <http://dx.doi.org/10.1111/1532-7795.00001>
- Svensson, R. (2003). Gender differences in adolescent drug use: The impact of parental monitoring and peer deviance. *Youth & Society*, 34, 300–329. <http://dx.doi.org/10.1177/0044118X02250095>
- Tebes, J. K., Cook, E. C., Vanderploeg, J. J., Feinn, R., Chinman, M. J., Shepard, J. K., . . . Connell, C. M. (2011). Parental knowledge and substance use among African American Adolescents: Influence of gender and grade level. *Journal of Child and Family Studies*, 20, 406–413. <http://dx.doi.org/10.1007/s10826-010-9406-3>
- Tharp, A. T., & Noonan, R. K. (2012). Associations between three characteristics of parent-youth relationships, youth substance use, and dating attitudes. *Health Promotion Practice*, 13, 515–523. <http://dx.doi.org/10.1177/1524839910386220>
- Tobler, A. L., & Komro, K. A. (2010). Trajectories or parental monitoring and communication and effects on drug use among urban young adolescents. *Journal of Adolescent Health*, 46, 560–568. <http://dx.doi.org/10.1016/j.jadohealth.2009.12.008>
- Van Ryzin, M. J., & Dishion, T. J. (2014). Adolescent deviant peer clustering as an amplifying mechanism underlying the progression from early substance use to late adolescent dependence. *Journal of Child Psychology and Psychiatry*, 55, 1153–1161. <http://dx.doi.org/10.1111/jcpp.12211>
- Wang, B., Stanton, B., Li, X., Cottrell, L., Deveaux, L., & Kaljee, L. (2013). The influence of parental monitoring and parent-adolescent communication on Bahamian adolescent risk involvement: A three-year longitudinal examination. *Social Science & Medicine*, 97, 161–169. <http://dx.doi.org/10.1016/j.socscimed.2013.08.013>
- Westling, E., Andrews, J. A., Hampson, S. E., & Peterson, M. (2008). Pubertal timing and substance use: The effects of gender, parental monitoring and deviant peers. *Journal of Adolescent Health*, 42, 555–563. <http://dx.doi.org/10.1016/j.jadohealth.2007.11.002>
- Weymouth, B. B., Buehler, C., Zhou, N., & Henson, R. A. (2016). A meta-analysis of parent-adolescent conflict: Disagreement, hostility, and youth maladjustment. *Journal of Family Theory & Review*, 8, 95–112. <http://dx.doi.org/10.1111/jftr.12126>
- Wiens, B. A., Haden, S. C., Dean, K. L., & Sivinski, J. (2010). The impact of peer aggression and victimization on substance use in rural adolescents. *Journal of School Violence*, 9, 271–288. <http://dx.doi.org/10.1080/15388220.2010.483180>
- Wills, T. A., Sandy, J. M., Yaeger, A., & Shinar, O. (2001). Family risk factors and adolescent substance use: Moderation effects for temperament dimensions. *Developmental Psychology*, 37, 283–297. <http://dx.doi.org/10.1037/0012-1649.37.3.283>
- Wills, T. A., & Yaeger, A. M. (2003). Family factors and adolescent substance use: Models and mechanisms. *Current Directions in Psychological Science*, 12, 222–226. <http://dx.doi.org/10.1046/j.0963-7214.2003.01266.x>

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