

Harsh Parenting, Deviant Peers, Adolescent Risky Behavior:  
Understanding the Meditational Effect of Attitudes and Intentions

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**Abstract**

Although research supports the influence of parents and peers on adolescent risky behavior, less is known about mechanisms proposed to explain this relation. This study examined the influence of adolescent attitudes and intentions about such behaviors. Prospective, longitudinal data came from rural youth who participated throughout adolescence (n= 451). Observed harsh parenting and relationship with deviant peers was assessed in early adolescence, attitudes and intentions were measured during middle adolescence, and risky behavior was assessed in late adolescence. Results indicated that parenting and deviant peers was related to engagement in tobacco use, alcohol use, and risky sexual behaviors. Moreover, attitudes and intentions mediated this relationship even after parent use and adolescent early involvement in these behaviors were taken into account.

## **Harsh Parenting, Deviant Peers, Adolescent Risky Behavior:**

### **Understanding the Meditational Effect of Attitudes and Intentions**

Adolescence is a period of experimentation with a variety of socially proscribed activities such as tobacco use, alcohol use, and engagement in risky sexual behaviors (Conger, Rueter, & Conger, 1994). Indeed, while such experimentation may be viewed as a normative part of adolescence (Muuss & Porton, 1998), studies show that youth who engage in risky behaviors are at increased risk of long-term health issues as well as problems in the areas of academics, work disruptions, and overall family life (Jessor, 1998; Crosnoe & Johnson, 2011). For example, early alcohol use places adolescents at greater risk for adult alcohol use disorders (Englund, Egeland, Oliva, & Collins, 2008) and early sexual initiation can lead to unplanned pregnancies and sexually transmitted diseases (Kincaid, Jones, Sterrett, & McKee, 2012). Therefore, it is important to understand factors that may influence adolescent substance use and engagement in risky sexual behavior. Studies show that both parents and peers may effect an adolescent's likelihood of engaging in such behaviors (Elkington, Bauermeister, & Zimmerman, 2011; Maxwell, 2002; Whitaker & Miller, 2000). Specifically, exposure to harsh parenting (Alati et al., 2014; Conger et al., 1994; Guilamo-Ramos et al., 2012) as well as interactions with deviant peers (Cruz, Emery, & Turkheimer, 2012; Kaplow, Curran, & Dodge, 2002; Osgood et al., 2013) may influence an adolescent's decision to engage in these behaviors.

Less is known, however, about the mechanisms proposed to explain the association between the influence of parents and peers on subsequent adolescent engagement in risky behaviors (Chaplin et al., 2012; Trucco, Colder, & Wiczorek, 2011). One possibility is that based on information received from parents and peers, an adolescent develops their own intentions and attitudes about their involvement in these behaviors (Vitoria, Salgueiro, Silva, &

de Vries, 2011). Therefore, it may be that the development of a particular set of attitudes mediates the relationship between parental and peer influences and actual engagement in risky behaviors. However, relatively few studies have prospectively evaluated how an adolescent's development of intentions to engage in risky behavior may ultimately influence the development of such behaviors (Halgunseth, Perkins, Lippold, & Nix, 2013). Moreover, minimal research has investigated the association of both parents and peers on a multitude of adolescent risky behaviors within the same model (Mak, Ho, & Day, 2012). In addition, most studies which have investigated parenting and adolescent substance use do not include parental use (Alati et al., 2014). For example, Halgunseth, et al. (2013) found a mediating influence of delinquent-oriented attitudes on the association between parental inconsistent discipline and adolescent substance initiation. Mares, Lichtwarck-Aschoff, and Engels (2013) found that the association between both parental alcohol-specific communication and disclosure of alcohol use on subsequent adolescent alcohol use was mediated by adolescent negative alcohol-related expectancies. In terms of smoking behavior, Mak, Ho, and Day (2012) examined the effects of parent and peer tobacco use on adolescent intention to initiate such behavior. They found that smoking of parents and peers was independently related to intentions to smoke in nonsmoking adolescents. For sexual behavior, studies show that parental control inhibits the development of adolescent mature decision-making skills which increases their risk to engage in sexual behaviors (see Kincaid et al., 2012).

Based on these studies, it is imperative to disentangle the unique effects that parents, peers, and adolescent intentions have on both substance use and risky sexual behavior. Therefore, the present study addresses this gap by prospectively evaluating how adolescent attitudes and intentions about risky behaviors may help to explain the association between

parenting and peer relationships on engagement in risky behaviors in a sample of rural adolescents. This is important as rural adolescents may be at greater risk for substance use disorders than adolescents from more urban settings (Rueter, Holm, Burzette, Kim, & Conger, 2007). To our knowledge, no study has yet examined the association between harsh parenting and involvement with deviant peers on adolescent engagement in tobacco use, alcohol use, and risky sexual behaviors. Moreover, to be sure of such an association, this study also takes into account parental engagement in these risky behaviors, as well as youth risky behavior during early adolescence.

### **Harsh Parenting and Adolescent Risky Behavior**

It has been suggested that parenting is one of the primary components responsible for predicting adolescent involvement in substance use (Cohen, Richardson, & LaBree, 1994). Indeed, research shows that harsh parenting is associated with both adolescent tobacco use (Mercken, Sleddens, de Vries, & Steglich, 2013; Shelton et al., 2008) and alcohol use (Alati et al., 2014; Conger et al., 1994; Conger & Conger, 2002). Specifically, Lamis, Malone, Lansford, and Lochman (2012) found that harsh parental discipline was associated with adolescent alcohol use onset, and Zucker, Donovan, Masten, Mattson, and Moss (2008) found that harsh and inconsistent parenting during early adolescence significantly predicted adolescent involvement in both tobacco and alcohol use, especially among adolescents 16 years and older. Similarly, Kim-Spoon, Farley, Holmes, and Longo (2014) found that adolescents were more likely to engage in substance use when raised by parents who used psychological and physical aggression. Other studies suggest that adolescents raised by harsh parents are at greater risk for involvement in risky behaviors than those youth who experience a more supportive style of parenting (Adalbjarnardottir & Hafsteinsson, 2001). Moreover, Eisenberg et al., (2005) concluded that

positive and supportive parenting, as opposed to harsh parenting practices, decreased adolescent involvement in risky behavior.

Similar to findings regarding smoking and alcohol use, harsh parenting is considered to be one of the most important predictors of adolescent involvement in risky sexual behaviors (Baker et al., 1999; Jacobson & Crockett, 2000; Kotchick, Shaffer, Miller, & Forehand, 2001; Longmore, Manning, & Giordano, 2001). For example, emotional qualities of the parent-adolescent relationship, as well as communication about sex, may be associated with increased sexual behavior in adolescence (Guilamo-Ramos et al., 2012). One explanation is that sexually active adolescents who are raised by harsh parents reject or ignore any information regarding prevention of sexual activity provided by their parents (Meschke, Bartholomae, & Zentall, 2002). It may also be that adolescents raised by harsh parents do not receive any information regarding sexual behaviors from their parents at all. Therefore, adolescents may seek out such information from their peers, especially as peers become an integral part of an adolescent's life.

### **Involvement with Deviant Peers and Adolescent Risky Behavior**

Research suggests that during adolescence, parental influences decrease while peer influences increase (Stanton et al., 2002). Therefore, adolescent involvement with deviant peers may result in their engagement in risky behaviors (Chapman & Werner-Wilson, 2008). For the purpose of the current study, involvement with deviant peers was defined as friends of the adolescent who have engaged in tobacco use, alcohol use, and risky sexual activity. In some cases, the adolescent participates in risky behavior to secure their position in the peer group (Rubin et al., 1998); while in other instances, the adolescent may choose peers who are already engaging in similar risky activities (Irwin, Igra, Eyre, & Millstein, 1997; Musher-Eizenman, Holub, & Arnett, 2003; Rubin, Bukowski, & Parker, 1998).

Many researchers have found that when peers are involved in negative behaviors, then chances are the adolescent is also involved in the same behaviors (Rubin et al., 1998; Urberg, Deirmenciolu, & Pilgrim, 1997). That is, there is a direct association between adolescent involvement with deviant peers and their involvement in risky behaviors. For example, Maxwell (2002) found that adolescent involvement in smoking increased if they received approval from their peers about smoking. Similarly, adolescents who initiated smoking at an early age interacted with peers who were already involved in smoking (Ennett et al., 2008). Other studies have found that youth who do not smoke are more likely to initiate smoking if they do not have a supportive parent and are associated with peers who smoke (Chassin, Presson, Montello, Sherman, & McGrew, 1986; Kiuru, Burk, Laursen, Salmela–Aro, & Nurmi, 2010). In terms of alcohol use, there is a strong tendency for adolescents to seek out friends who engage in similar drinking patterns as themselves (Osgood et al., 2013). Indeed, Trucco, et al. (2011) found that affiliating with deviant peers was associated with a higher likelihood of alcohol use initiation. It was concluded that deviant peers model drinking behaviors which influences subsequent use. Similarly, in a study examining early adolescents, Light, Greenan, Rusby, Nies, and Snijders (2013) found evidence for both selection of friends based on alcohol use onset as well as risk of onset for those with friends already engaging in alcohol use.

In the same way that peers influence tobacco and alcohol use, they may also have a similar impact on sexual activity. For example, Potard, Courtois and Rusch (2008) found that when adolescents perceived that their peers had more liberal attitudes towards sexuality, then adolescent engagement in sexual activities increased. Indeed, Ali and Dwyer (2011) maintain that adolescents who have a higher proportion of peers who initiate sex and an increased number of sexual partners, then the likelihood of their own sexual behavior increases. Furthermore, it has

been suggested that even though older adolescents have more knowledge about the risks of unprotected sex, they still engage in such behaviors if their peers are supportive of this activity (Potard et al., 2008). Taken together, results of these studies highlight the important role of both parents and peers in the process of adolescent engagement in substance use and risky sexual behaviors.

### **Influence of Adolescent Attitudes and Intentions**

The theory of planned behavior (Ajzen, 2005) posits that intentions to participate in a particular behavior develop from specific attitudes regarding those behaviors. That is, individual attitudes about involvement in certain behaviors depend on his/her positive and negative evaluations about such behaviors. For example, if an adolescent has positive attitudes and intentions about achieving success in academics or obtaining future job security, then the likelihood of engaging in risky behaviors decreases (McLoyd et al., 2009). The same may be true regarding intentions to engage in risky behaviors during adolescence. It may be that if an adolescent has no intention of engaging in behaviors such as smoking, using alcohol, or having sex, then actual engagement in those behaviors may decrease. To be sure, Van De Ven, Engles, Otten and Van Den Eijnden, (2007) examined adolescent intentions of using tobacco in the future. They found a significant association between adolescent attitudes and intentions about tobacco use and actual engagement in smoking. Similarly, studies have shown that adolescents who have a positive perception about drinking alcohol engage in drinking behavior. In other words, adolescent alcohol use is dependent on their intention to consume it (Ajzen, 2005; Cooke, Sniehotta, & Schuez, 2007; Grazioli et al., 2015). Finally, in terms of sexual behavior, Albarrein, Johnson, Fishbein, and Muellerleile (2001) conducted a meta-analysis which concluded that adolescent condom use depended in large part on their intention of engaging in protected sex.

Hennessy, Bleakley, & Fishbein (2012) also found that it is possible to predict future involvement in risky sexual encounters based on specific attitudes or intentions about that activity. Likewise, Akers et al. (2011) maintain that an adolescent's personal values oriented toward abstinence was associated with engagement in sexual activity, even after controlling for perceived peer attitudes.

In light of such general findings about parent and peer influences on adolescent engagement in risky behavior, we propose that they also influence adolescent intention to engage in such activities (Albarrcin et al., 2001; Buckley, Chapman, & Sheehan, 2010; Hennessy et al., 2012; Karimy, Niknami, Hidarnia, & Hajizadeh, 2012). However, relatively few studies have prospectively evaluated how parenting and peers are related to adolescent development of attitudes and intentions and engagement in risky behaviors over time (Gutman, Eccles, Peck, & Malanchuk, 2011; Halgunseth et al., 2013; Trucco et al., 2011). The present study addressed this gap by evaluating how harsh parenting and association with deviant peers relates to adolescent engagement in later risky behaviors, as mediated through adolescent intentions and attitudes regarding such behaviors.

### **The Present Investigation**

The present investigation evaluated how observed harsh parenting and involvement with deviant peers was associated with adolescent tobacco use, alcohol use, and risky sexual behaviors. We used data from a two-decade longitudinal study of a cohort of rural adolescents and their families followed from early to late adolescence. We measured observed harsh parenting and association with deviant peers when adolescents were 13 years old, and tobacco use, alcohol use, and risky sexual behaviors when these same adolescents were 18 years old. Attitudes and intentions about engagement in risky behaviors were assessed when youth were 15

years old. In addition, adolescent early involvement in sexual behavior and use of tobacco and alcohol, as well as substance use by their parents were assessed when the adolescent was 13 years old (see Figure 1).

Following from our review of the literature, we expected that both observed harsh parenting and adolescent involvement with deviant peers would be associated with later adolescent risky behavior. It was also expected that attitudes and intentions about risky behavior during middle adolescence would mediate this relationship, even after taking into account parental behavior and youth engagement in risky behaviors during early adolescence. It is important to control for parental substance use and early adolescent risky behavior as research suggests that parent use is related to adolescent use (Redonnet, Chollet, Fombonne, Bowes, & Melchior, 2012), and early onset of risky behaviors (Connolly & McIsaac, 2011; Ellickson, Tucker, & Klein, 2003; Gruber, DiClemente, Anderson, & Lodico, 1996; Gutman et al., 2011) leads to greater dependency into adulthood.

Finally, to ascertain whether adolescent gender or parent education played a role in any of the pathways within the model, these constructs were also included as covariates in the analyses. Past evidence suggests that adolescent boys are more involved in tobacco use, alcohol use and risky sexual behaviors than adolescent girls (Melby, Conger, Conger, & Lorenz, 1993). However, Simons-Morton, Haynie, Crump, Eitel, and Saylor, (2001) found that girls may be more susceptible to peer pressure which may lead to more alcohol use than boys. In addition, a study conducted by White, Pandina, and Chen (2002) showed that parent educational attainment had a negative relationship with adolescent involvement in risky behaviors such as tobacco use.

## **Method**

## Participants

Data come from the Iowa Youth and Families Project (IYFP) which were collected annually from 1989 through 1994 ( $n = 451$ ). Participants included the target adolescent (52% female), his/her parents, and a sibling within four years of age of the target adolescent. When interviewed for the first time in 1989, the target adolescent was in seventh grade ( $M$  age = 13.2 years; 236 girls, 215 boys). Participants were recruited from both public and private schools in eight rural Iowa counties. Due to the rural nature of the sample, there were few minority families (approximately 1%); therefore, all of the participants were Caucasian. Seventy-eight percent of the eligible families agreed to participate. The families were primarily lower middle- or middle-class. In 1989, parents averaged 13 years of schooling and had a median family income of \$33,700. Families ranged in size from four to 13 members, with an average size of 4.94 members. Fathers' average age was 40 years, while mothers' average age was 38. In 1994, the families from the IYFP continued in another project, the Family Transitions Project (FTP). The same target adolescents participated in the FTP in order to follow their transition into early adulthood. The FTP has followed the target youth from as early as 1989 through 2010 ( $M$  target age = 35 years), with a 90% retention rate.

The present study includes targets who participated from early through late adolescence. The data were analyzed at the three developmental time points. The first was when the target adolescent was 13 years old (1989). The second period was during middle adolescence when the target was 15 years old (1991). Finally, the last time point occurred when the target was in late adolescence at age 18 years (1994).

## **Procedure**

Throughout the target's adolescence, families were visited in their homes twice each year by a trained interviewer. Each visit lasted approximately two hours, with the second visit occurring within two weeks of the first visit. Incentives were provided for participation. During the first visit, each family member completed a set of questionnaires pertaining to subjects such as individual characteristics and peer relationships. During the second visit, family members participated in structured interaction tasks that were videotaped. In the present analyses, observer ratings from the parent-adolescent discussion task were used. This task involved parents and their adolescent discussing general questions about family life such as household chores and family rules which lasted 25 minutes. Trained observers coded the quality of these interactions using the Iowa Interaction Rating Scales (Melby & Conger, 2001) which have been shown to demonstrate adequate variability and reliability (Melby & Conger, 2001). The means and standard deviations for all study constructs are provided in Table 1.

## **Measures**

### **Early Adolescence, Age 13**

*Harsh parenting.* Observer ratings were used to assess parents' hostility, antisocial behavior, and angry coerciveness toward the adolescent during the discussion task. Data on the discussion task was collected in 1989 when the adolescent was 13 years old. Each rating was scored on a 9-point scale, ranging from low (no evidence of the behavior) to high (the behavior is highly characteristic of the parent). Hostility was defined as hostile, annoyed, critical, and disapproving behavior toward the adolescent. Angry coercion involves an attempt to control or change the other person's behavior in a hostile manner. Antisocial behavior was characterized by egotistic, immature, rebellious, and indifferent behavior towards the adolescent.

During the discussion task, mothers and fathers, along with their adolescent discussed questions from a series of cards labeled specifically for either the parent or the teenager. Parents and youth took turns reading questions related to subjects such as school activities, family rules, and parental discipline. The person reading the card was instructed to read each question out loud and give his or her answers first. The rest of the family members were instructed to give their individual answers next and then everyone discussed together about the answers that were given. They were to go on to the next card once they felt they had said everything they wanted to about each question. Scores were averaged across each parent to create a manifest variable and were internally consistent ( $\alpha = .86$ ) and demonstrated acceptable inter-rater reliability (.94).

*Adolescent association with deviant peers.* Adolescent association with deviant peers was assessed through self-report in 1989 when the adolescent was 13 years old. Adolescents were asked whether or not they had a friend who engaged in tobacco use, alcohol use, and sexual behavior in the past year. This construct consisted of 3 items with responses ranging from 0 = none of them to 4 = all of them (Simons, Johnsons, Conger, & Elder, 1998). Item responses were averaged to create a manifest indicator in the model ( $\alpha = .71$ ).

### **Middle Adolescence, Age 15**

*Adolescent attitudes and intentions.* Adolescent attitudes and intentions were assessed through self-report in 1991 when the adolescent was 15 years old. Adolescents reported on three questions related to engagement in future risky behavior which included, “Do you think that you will smoke cigarettes or use tobacco in the future, what is the likelihood that you will drink alcohol in the next year, and do you think that you will have sexual intercourse in the next year.” The responses were on a seven point scale, ranging from “I definitely will not” to “I definitely will.” Adolescents were also asked to report on how dangerous to their health smoking

cigarettes or using tobacco is and how dangerous drinking is. Responses ranged from 1 = extremely dangerous to 7 = not at all dangerous. Finally, adolescents were asked to compare themselves to others in terms of the likelihood that they would have a tobacco related illness at some time in the future, as well as the likelihood that they would have a drinking problem at some point in the future (1 = much less likely than others to 7 = much more likely than others). All items were averaged together and were internally consistent ( $\alpha = .82$ ).

### **Late Adolescence, Age 18**

*Adolescent tobacco use.* Adolescent tobacco use was assessed through self-report in 1994 when the adolescent was 18 years old. Adolescents reported on their frequency of tobacco use either by chewing or smoking in the past month (Maxwell, 2002). Responses ranged from 0 = never to 5 = every day.

*Adolescent alcohol use.* Adolescent alcohol use was assessed through self-report in 1994 when the adolescent was 18 years old. Adolescents reported on their frequency of drinking alcohol (beer, wine, hard liquor), having 3 or 4 drinks in a row, and having 5 or more drinks in a row in the past month. Responses ranged from 0 = never to 5 = every day. Scores were averaged together to create a manifest indicator in the model ( $\alpha = .92$ ; Conger et al., 1994).

*Adolescent risky sexual behavior.* Adolescent sexual behavior was assessed through self-report in 1994 when the adolescent was 18 years old. Adolescents were asked if they have had sexual intercourse within past 12 months. If they answered “yes” then they were asked questions regarding the frequency of condom use (1 = always used to 5 = never used) and number of sexual partners (1 = involved with 1 partner, 2 = 2 partners, 3 = 3 partners, 4 = 4 or more partners). The scores above were averaged together to create a manifest variable (Beadnell et. al., 2005).

### **Covariates, Age 13**

The covariates were assessed in 1989 when the adolescent was 13 years old and included adolescent gender (0 = male; 1 = female), and parent's highest grade of education completed which ranged from 8.50 = beyond eighth grade to 19 = master's degree. Parents also reported on their own tobacco and alcohol use (0=have not used this substance, 1= used this substance). All parent scores were averaged together to create manifest variables. Finally, adolescents reported if they had ever used tobacco and alcohol (0= have not used this substance, 1= used this substance) and ever engaged in sexual behavior (0=have not had sexual intercourse, 1= have had sexual intercourse) during early adolescence.

### **Results**

We used IBM SPSS AMOS 21 (Arbuckle, 2005) to estimate each model using full information maximum likelihood estimation (Allison, 2003). This is a powerful estimation of parameters and a widely accepted procedure in longitudinal research, rather than deleting cases with missing data (Duncan, Duncan, & Strycker, 2013). Attrition analyses were conducted to examine if adolescents assessed in the present analysis varied in tobacco use, alcohol use, and risky sexual behavior compared to those adolescents who were not retained in the study. Overall, adolescent behaviors did not statistically vary on any of the key outcomes ( $p > .05$ ). Descriptive statistics are reported in Table 1. Next, correlations were calculated (see Table 2) and as expected, observed harsh parenting during early adolescence was statistically and significantly related to late adolescent tobacco use ( $r = .17, p < .01$ ), alcohol use ( $r = .18, p < .01$ ), and risky sexual behavior ( $r = .14, p < .01$ ). Early adolescent association with deviant peers was also significantly related to tobacco use ( $r = .23, p < .01$ ) alcohol use ( $r = .19, p < .01$ ) and risky sexual behavior ( $r = .12, p < .05$ ) during late adolescence. Adolescent attitudes

and intentions about risky behavior during middle adolescence was statistically and significantly related to late adolescent tobacco use ( $r = .48, p < .01$ ), alcohol use ( $r = .46, p < .01$ ), and risky sexual behavior ( $r = .41, p < .01$ ). As expected, harsh parenting ( $r = .19, p < .01$ ) and involvement with deviant peers ( $r = .37, p < .01$ ) was also significantly related to adolescent attitudes and intentions regarding risky behaviors.

### **Testing the Direct & Mediational Pathways**

Structural equation modeling was used to test our conceptual model (see Figure 1). For model fit we used standard chi square index of statistical fit, the root mean square error of approximation (RMSEA; Browne & Cudeck, 1993) and the Confirmatory Fit Index (CFI; Kenny, 2011). Chi-square fit index is generally significant when the sample size is equal to 400 or above (Kenny, 2011). RMSEA is considered best fit when below .05 and reasonable fit when between .05 and .08 (Hu & Bentler, 1999). Finally, when CFI is equal to or above .90 then the model is said to have excellent fit (Kenny, 2011).

*Direct effects.* We first assessed the direct effect of observed harsh parenting and adolescent association with deviant peers during early adolescence on late adolescent tobacco use, alcohol use, and engagement in risky sexual behaviors (see Figure 2). Model results, while small in magnitude, indicated that observed harsh parenting at age 13 was associated with higher levels of adolescent tobacco use ( $\beta = .11^*, t = 2.92$ ), alcohol use ( $\beta = .13^{**}, t = 2.75$ ), and risky sexual behavior ( $\beta = .11^*, t = 2.12$ ) at age 18 years. Similarly, association with deviant peers at age 13 was associated with increased adolescent tobacco use ( $\beta = .14^{**}, t = 2.79$ ), alcohol use ( $\beta = .12^{**}, t = 2.28$ ), and risky sexual behavior ( $\beta = .13^{**}, t = 2.60$ ) at age 18 years. The model's CFI was .97 and RMSEA was .06. The Chi square was significant  $X^2(10, N = 451) = 26.98; p = .03$ . Together this represents an adequate fit of the data. For parsimony, covariates were analyzed

in the reported model, but only shown for the mediational model below, as results were similar with and without the covariates in the model.

**Mediational effects.** Next the mediational model was tested which included adolescent attitudes and intentions during middle adolescence, as well as the covariates assessed during early adolescence. As shown in Figure 3, adolescent attitudes and intentions about risky behaviors mediated the relationship between observed harsh parenting and association with deviant peers on later adolescent tobacco use, alcohol use, and risky sexual behavior even after controlling for parent tobacco use, alcohol use, and early adolescent engagement in risky behaviors. That is, harsh parenting ( $\beta = .10^*$ ,  $t = 2.37$ ) and association with deviant peers ( $\beta = .19^{***}$ ,  $t = 3.90$ ) significantly predicted adolescent attitudes and intentions about risky behaviors. Also, adolescent attitudes and intentions about risky behaviors was significantly related to tobacco use ( $\beta = .41^{***}$ ,  $t = 8.00$ ), alcohol use ( $\beta = .42^{***}$ ,  $t = 8.27$ ) and risky sexual behavior ( $\beta = .41^{***}$ ,  $t = 7.87$ ) in late adolescence, with moderate effect sizes. Once adolescent attitudes and intentions was added to the model, all of the initial direct paths were no longer significant. Only statistically significant pathways were included in the figures and covariate table (see Table 3). The comparative fit index was .99. The RMSEA value was .04. The value of chi square value was  $X^2(10, N=451) = 18.52$ ,  $p = .05$ , representing a good fit of the data.

### Discussion

This investigation evaluated the association between observed harsh parenting and adolescent involvement with deviant peers when youth were in early adolescence and youth engagement of alcohol use, tobacco use, and risky sexual behavior during late adolescence. In addition, adolescent attitudes and intentions regarding involvement in these behaviors were examined as a mediating mechanism during middle adolescence. This study adds to the sparse

literature that has examined the roles of parenting and peers within the context of adolescent attitudes and intentions about later involvement in risky behaviors (Halgunseth et al., 2013; Trucco, et al., 2011). To be sure these significant associations were not due to parental use of substances or early adolescent engagement in risky behaviors, these earlier behaviors were considered as well. As hypothesized, both observed harsh parenting and association with deviant peers in early adolescence was significantly associated with adolescent engagement in risky behaviors five years later. However, this direct relationship was no longer significant after including adolescent attitudes and intentions regarding these risky behaviors during middle adolescence in the model. This suggests that attitudes and intentions fully explained the association between parenting and association with deviant peers on later risky behaviors. That is, harsh parenting and association with deviant peers was no longer related directly to adolescent engagement in risky behaviors once attitudes and intentions about such behaviors were added in the model. This was true even after parental substance use and early adolescent involvement in risky behaviors were taken into account. These results are consistent with Ajzen's (2005) idea that intentions and attitudes develop from an adolescent's surrounding environment. Thus, it appears that parents and peers play a significant role in the development of adolescent attitudes and intentions about risky behaviors, which in turn, affect their engagement in risky behaviors in the late adolescent years.

Also important, the current study employs a research design that overcomes some of the methodological limitations found in many earlier studies of parenting, peers, and risky youth outcomes. First, it uses a prospective, longitudinal research design, thus eliminating retrospective biases inherent in measures based on recall of early adolescent experiences. The current investigation also used multiple informants, including ratings of parenting behavior by trained

observers. This approach reduces method variance biases produced by reliance on a single informant. It is particularly noteworthy that the magnitude of the association between observed harsh parenting and adolescent risky behaviors was similar to that of adolescent self-report of deviant peers and later risky behavior. This is remarkable given that one set of associations is based on the same reporter and the other on two different reporters.

Altogether, the results replicate and extend previous studies examining the effects of parents and peers on youth risk outcomes. For example, Halgunseth et al. (2013) found a mediating influence of delinquent-oriented attitudes on the relation between parental inconsistent discipline and adolescent delinquency. Trucco et al. (2011) found that perceived peer attitudes mediated the association between peer delinquency and alcohol use. The current study helps to expand these studies by considering parents, peers, and adolescent views about substance use and risky sexual behaviors on later engagement in such behavior. Once we take into account an adolescent's intention to engage in future risky behaviors or their belief of how dangerous risky behaviors can be, the impact that parents and peers play in such future engagement is lessened. This attests to the importance of examining adolescent goals and values about their own behavior. While the current results showed that both harsh parenting and association with deviant peers was significantly related to adolescent intentions and attitudes, future research should continue to investigate the mechanisms that help to shape such attitudes and intentions about risky behavior throughout the adolescent years. In addition, we examined the influence of parenting and peers separately within the model, but future studies should examine the cumulative effect of parenting and peers on adolescent involvement in risky behaviors.

It should be acknowledged that there are alternative explanations for some of the findings. For example, it could be that genetic factors help to explain some of the observed

associations. For example, genetic influences such as pubertal development, testosterone levels, and dopaminergic systems may help account for individual differences in behavior (Harden, 2014). Indeed, it was found that adolescents who experienced poor family functioning, as well as off-time pubertal timing demonstrated increased risk of substance use (Hummel, Shelton, Heron, Moore, & van den Bree, 2013). Thus, future research should explore not only the importance of parenting and peer contexts, but how genetics influence adolescent risky outcomes.

There are also limitations of this study worthy of comment. The sample was limited in terms of ethnic and racial diversity, as well as geographic location. In addition, all adolescents in these analyses lived with their biological parents. Future research using more diverse samples is needed. Another limitation is that the data were collected some years ago and the prevalence of adolescent risky behavior may be different from current trends. Although there has been a downward trend in adolescent alcohol use in Iowa since the 1990s, the overall number of youth who use alcohol is still concerning. For example, results from the Iowa Youth Survey (IYS) indicate that youth in Iowa report current and binge drinking rates higher than national averages (Iowa Consortium for Substance Abuse Research and Evaluation, 2013). Indeed, a substantial majority of the rural youth in the current study experienced a high prevalence of substance use disorders (Rueter, et al., 2007). Specifically, many first experienced alcohol use disorders as adolescents with a substantial proportion continuing into adulthood. These rates of alcohol use were more prevalent than those from other samples in urban areas, indicating that rural young adults may be at an even higher risk for substance use problems (Rueter, et al., 2007).

In closing, the current results suggest that adolescent attitudes and intentions surrounding risky behavior may help to explain the association between harsh parenting and involvement with deviant peers on an adolescent's future engagement of risky behaviors. This is an important

finding with potential applied implications. For example, this finding can motivate clinicians and policy makers to use and develop effective educational and preventive interventions designed to promote healthy attitudes surrounding substance use and sexual behavior. A systemic approach to prevention and intervention of risky behaviors should be taken which includes not only the adolescent but their parents and peers as well. Prevention programs should not only address the prevalence and predictors of risky behaviors but more importantly, as this study implies, programs should address individual attitudes and intentions about these risky behaviors. That is, programs could evaluate an adolescent's positive and negative evaluations about risky behaviors. This could be done by asking youth if they think they will smoke cigarettes or use tobacco in the future, drink alcohol, or have sexual intercourse in the next year. For adolescents who indicate an intention to smoke, drink, or engage in sexual behaviors, additional programming could be provided beyond basic education in the risks of these behaviors.

In addition, family-based programs that focus on decreasing harsh parenting, as well as increasing positive attitudes and intentions toward risky behaviors may be effective in reducing engagement in these behaviors (Halgunseth et al., 2013). Likewise, efforts toward promoting positive attitudes towards risky behaviors may diminish the impact that deviant peer affiliations have on such behaviors. In short, educators must speak frankly to young adolescents, their parents, and their peers about intentions to engage in future risky behaviors or their belief of how dangerous risky behaviors can be as this is a powerful predictor of subsequent risky behavior in late adolescence.

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**Table 1**

*Descriptive Statistics for Study Variables (N =451)*

Variables	<i>M</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>
<u>Early Adolescence, Age 13</u>				
Harsh parenting	1.90	0.56	1	4
Adolescent association with deviant peers	0.32	0.55	0	4
<u>Middle Adolescence, Age 15</u>				
Adolescent attitudes and intentions	2.25	1.12	1	7
<u>Late Adolescence, Age 18</u>				
Adolescent tobacco use	1.02	1.78	0	5
Adolescent alcohol use	0.51	0.65	0	3
Adolescent sexual behavior	0.78	0.93	0	4
<u>Covariates, Age 13</u>				
Parent education	13.38	1.62	8.50	19
Parent tobacco use	0.30	0.36	0	1
Parent alcohol use	0.36	0.31	0	1
Adolescent tobacco use	0.15	0.3	0	1
Adolescent alcohol use	0.19	0.28	0	1
Adolescent sexual behavior	0.01	0.09	0	1

**Table 2**

*Correlations Between the Variables Used in Analyses*

	1	2	3	4	5	6	7	8	9	10	11	12
<u>Early Adolescence, Age 13</u>												
1. Harsh parenting	1.00											
2. Association with deviant peers	0.09	1.00										
<u>Middle Adolescence, Age 15</u>												
3. Adolescent attitudes & intentions	0.19**	0.37**	1.00									
<u>Late Adolescence, Age 18</u>												
4. Adolescent tobacco use	0.17**	0.23**	0.48**	1.00								
5. Adolescent alcohol use	0.18**	0.19**	0.46**	0.44**	1.00							
6. Adolescent sexual behavior	0.14**	0.12*	0.41**	0.18**	0.36**	1.00						
<u>Covariates, Age 13</u>												
7. Parent education	-0.18**	-0.01	-0.20**	-0.12*	-0.11**	-0.17**	1.00					
8. Parent tobacco use	0.18**	0.16**	0.26**	0.23**	0.08	0.15**	-0.24**	1.00				
9. Parent alcohol use	0.12*	0.04	0.07	-0.02	0.15**	0.13*	0.03	0.11*	1.00			
10. Adolescent tobacco use	0.09	0.40**	0.40**	0.24**	0.23**	0.13**	-0.04	0.13**	0.02	1.00		
11. Adolescent alcohol use	0.10*	0.40**	0.29**	0.14**	0.22**	0.13*	-0.03	0.03	0.05	0.45**	1.00	
12. Adolescent sexual behavior	-0.01	0.17**	0.19**	0.16**	0.01	-0.01	-0.07	0.12*	-0.03	0.11*	0.10*	1.00

Note. \*  $p < .05$ ; \*\*  $p < .01$

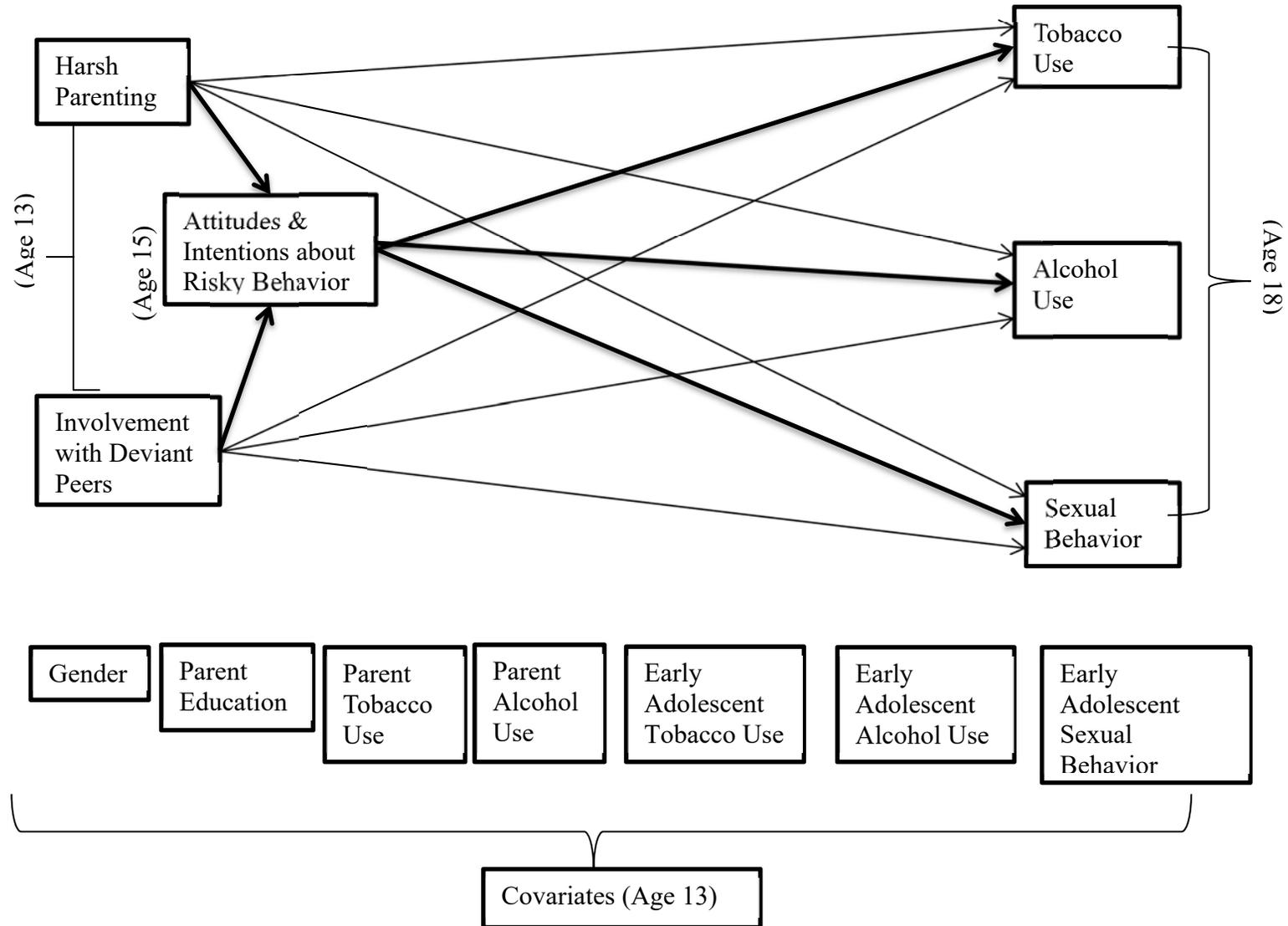
**Table 3**

*Standardized Coefficients of Covariates in the Mediation Path Model*

	$\beta$	t-ratio
<u>Early Adolescence, age 13</u>		
Adolescent tobacco use		
Adolescent attitudes & intentions about risky behaviors	0.26***	5.18
Adolescent involvement with deviant peers	0.23***	4.97
Adolescent alcohol use		
Adolescent alcohol use (age 18)	0.10*	2.22
Adolescent involvement with deviant peers	0.28***	6.14
Adolescent sexual behavior		
Adolescent involvement with deviant peers	0.10*	2.45
Adolescent attitudes & intentions about risky behaviors	0.10*	2.18
Adolescent gender		
Adolescent tobacco use (age 18)	-0.15***	-3.46
Parent education		
Harsh parenting	-0.15**	-3.18
Adolescent attitudes & intentions about risky behaviors	-0.10*	-2.52
Parent tobacco use		
Harsh parenting	0.13**	2.66
Adolescent involvement with deviant peers	0.12**	2.77
Adolescent attitudes & intentions about risky behaviors	0.14**	3.22
Adolescent tobacco use (age 18)	0.13**	3.00
Parent alcohol use		
Harsh parenting	0.10*	2.16

*Note. All insignificant values are omitted from the table. \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$*

Figure 1. Conceptual Model



**Figure 2. Direct Effects**

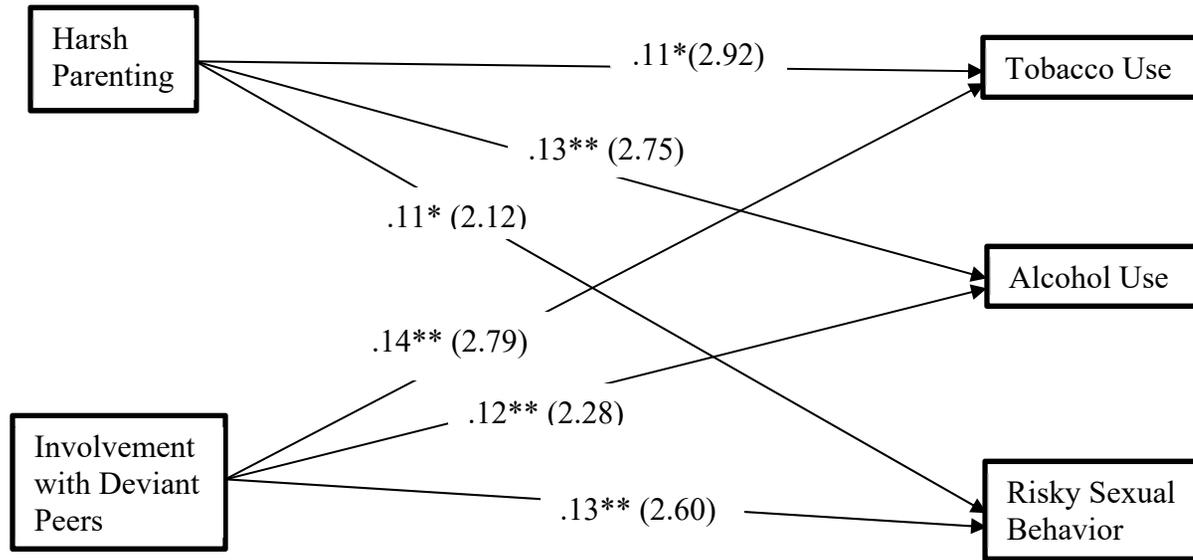


Figure 2: Direct paths include standardized  $\beta$  values & (t values);  $X^2 = (10, N = 451) = 26.98, p = .03$ ; CFI = .97; RMSEA = .06;

\* $p < .05$ ; \*\* $p < .01$ . The statistically non-significant pathways were not included in the figure.

**Figure 3. Mediational Effects**

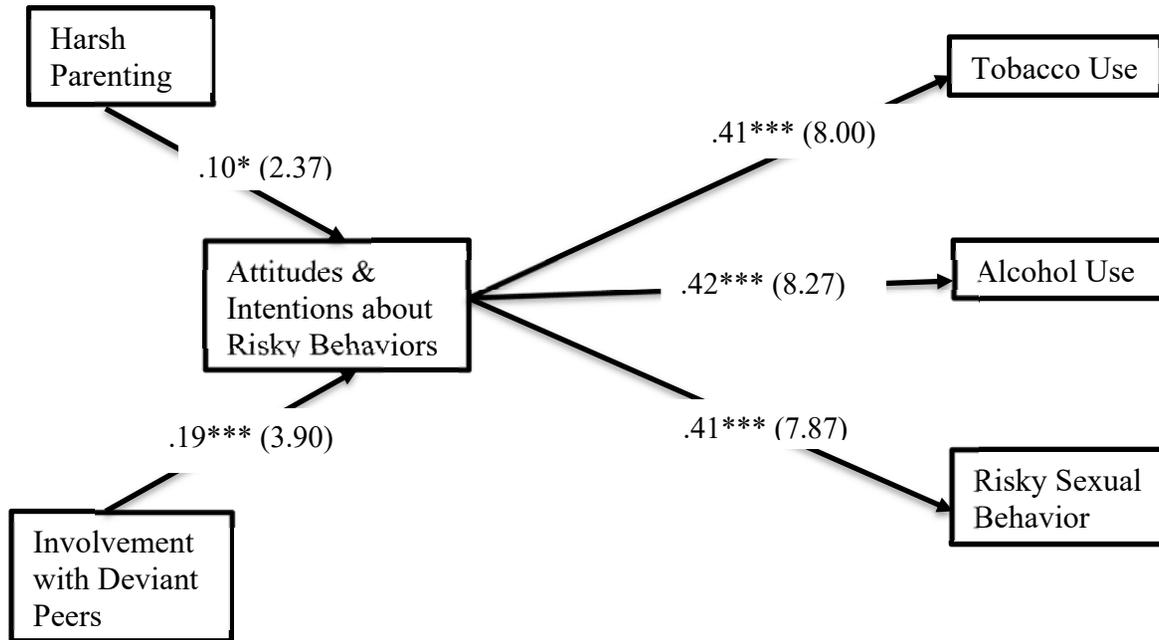


Figure 3: Mediation paths include standardized  $\beta$  values & (t values);  $X^2 = (10, N = 451) = 18.52, p = .05$  CFI = .99; RMSEA = .04;

\* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ . The statistically non-significant pathways were not included in the figure.