

**Harsh parenting, deviant peers and adolescent risky behavior: understanding the  
meditational effect of adolescent attitudes and intentions**

by

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## **ABSTRACT**

The current study examined mechanisms proposed to explain the roles of harsh parenting and association with deviant peers on adolescent involvement in tobacco, alcohol use and risky sexual behaviors. Prospective, longitudinal data came from youth who participated throughout adolescence (n= 451). Information regarding observed harsh parenting and adolescent's relations with their peers was assessed in early adolescence (13 years), adolescent attitudes and intentions about risky behavior was assessed during middle adolescence (15 years), and engagement in risky behavior was assessed in late adolescence (18 years). Adolescent's gender, parents' education, parent tobacco and alcohol use and early adolescent' involvement in risky behaviors were used as control variables. Both harsh parenting and involvement with deviant peers was directly related to adolescent engagement in tobacco use, alcohol use and sexual behavior. Also, adolescent attitudes and intentions mediated this relationship. That is, harsh parenting and involvement with deviant peers was no longer associated with risky behavior once attitudes and intentions about risky behaviors was added in the model. This was true even after parent substance use and adolescent early involvement in risky behaviors were taken into account.

## CHAPTER 1: INTRODUCTION

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, occupation, and overall family life (Jessor, 1998; Crosnoe, & Johnson, 2011). Moreover, parents and peers, independently and in combination, may influence an adolescent's likelihood of engaging in risky behaviors (Elkington, Bauermeister, & Zimmerman, 2011). Specifically, an adolescent's exposure to harsh parenting (Conger, Ruter, Conger, 1994) as well as interactions with deviant peers (Kaplow, Curran, Dodge, 2002) influences adolescents decision to engage in risky behaviors. For example, adolescents receive information about various behaviors such as tobacco use, alcohol use and sexual behaviors from their parents (Maxwell, 2002) and peers (Whitaker, Miller, 2000). Based on this information, an adolescent must make their own evaluations about these behaviors. Such evaluations guide the adolescent in developing their own intentions and attitudes about involvement in these behaviors. Therefore, it may be that the development of a particular set of attitudes or intentions mediates the relationship between parental and peer influences and actual engagement in risky behaviors.

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. The present study addresses this gap by evaluating how

adolescent's attitudes and intentions may help to explain the association between harsh parenting and involvement with deviant peers on adolescent engagement in risky behaviors. To be sure of such an association, this study also takes into account parental engagement of risky behavior, as well as youth risky behavior during early adolescence. Chapter 2 begins with a review of the evidence for the association of both harsh parenting and involvement with deviant peers on adolescent involvement in risky behavior. It also considers evidence that adolescent's attitudes and intentions regarding such behaviors may help explain these associations.

### **Theoretical framework**

This study is guided by two theories: Bronfenbrenner's Bio-ecological Model (1979) and the Theory of Planned Behavior (Ajzen, 2005). See Figures 1 and 2 for a visual display of the theoretical models proposed in this paper. Each of these theories and their application to the present study are described below in detail.

**Bronfenbrenner's ecological theory:** In studying adolescent risky behavior, it is essential to examine the environment in which the upbringing of a child takes place (Blanton, Gibbons, Gerrard, Conger, & Smith, 1997). Bronfenbrenner's ecological model helps in understanding the interactions between individuals and their surrounding environment (Tudge, Mokrova, Hatfield, & Karnik, 2009). It focuses on four main systems which affect development including the microsystem, mesosystem, exosystem and macrosystem levels (Bronfenbrenner, 2005). In addition, an ontogenetic component details an individual's development and behaviors which influence functioning. For example, one individual behavior that may influence risky behavior is an adolescent's behavioral intentions. Specifically, Fishbein and Ajzen (1975) have suggested that



behavioral intentions could be a mediating variable on the association between outside influences and risky behaviors.

The aim of the current study is to explore the influence of parenting behavior and interactions with deviant peers on adolescent risky behaviors. Therefore, this study is focused on the microsystem and mesosystem layers of Bronfenbrenner's model.

According to Bronfenbrenner (1979), the microsystem is defined as "a pattern of activities, roles, and interpersonal relations experienced by the developing person in a given setting with particular physical and material characteristics." The microsystem involves a child's primary caregivers, parents, or peers. Enculturation of a child takes place mainly within the family so parents' beliefs and behaviors affect a child's beliefs and behaviors (Bronfenbrenner, 2005). Thus in this study, two microsystems, family and peers were examined to explain the effects of the surrounding environment on risky behaviors of an adolescent. Specifically, exposure to harsh parenting in the family and involvement with deviant peers was assessed.

According to Bronfenbrenner (1979), the mesosystem "comprises the interrelations among two or more settings in which the developing person actively participates". In the current study, the mesosystem is composed of the adolescent's relationship with both their parents and deviant peers. That is, the mesosystem represents the inter-connection between the adolescent and his or her parents and peers (Bronfenbrenner, 2005). As shown in Figure 1, adolescents are connected with their parents as well as with their peers. Indeed, research suggests that the positive influence of family is most important in childhood and adolescence as it helps to decrease the probability of adolescent engagement with deviant peers (Laursen & Collins, 1994). Thus, parenting plays an

important role in selecting peers during adolescence. In this way, the mesosystem could explain the relationship between parenting and deviant peer association which leads to adolescent involvement in risky behaviors.

**Theory of planned behavior:** This is based on theory of reasoned action theory (see Figure 2) (Ajzen, 2012). Theory of planned behavior primarily focuses on intentions to participate in behaviors which develop from attitudes about those behaviors (Ajzen, 2005). The theory of reasoned action is based on the assumption that human beings are usually rational and use information available to them very efficiently before making decisions about their behaviors (Ajzen & Fishbein, 1980). According to this theory, it is necessary to study a person's nature as well as other social influences acting on them (Ajzen & Fishbein, 1980). Theory of planned behavior further scrutinizes the process of these influences and their effects on intentions about behaviors, which in turn, lead to actual involvement in respective behaviors. Individual attitudes about involvement in certain behaviors depend on his/her positive and negative evaluations about it. These evaluations many times are based on their knowledge as well as the social influences or pressures put on them (Ajzen, 2005).

Adolescents obtain knowledge about the consequences of their involvement in risky behaviors from multiple sources (Cohen, Richardson, & La Bree, 1994). In turn, adolescents can evaluate the consequences of their behaviors based on the information received (positive or negative perceptions), from whom they get the information (parents, peers, teachers, media) and the degree of social influences or pressures involved. Subjective norms of parents and peers affect adolescent's subjective norms. These norms affect adolescent's intentions to become involved in certain behaviors (Ajzen, 2005).

Perceived behavioral control is an important component in the theory of planned behavior which is very similar to Bandura's concept of self-efficacy. Perceived behavioral control explains the participation in a specific behavior which could be measured by intentions (Ajzen, 2005). The theory suggests that attitudes are a function of beliefs (Ajzen & Fishbein, 1980). According to Ajzen (2005), attitudes about behaviors depend on surrounding individuals. That is, adolescents are able to think about what will change in the future, as well as the consequences of their behaviors (Ajzen, 2005). For example, if an adolescent believes that participating in a certain behavior will lead to a positive outcome, they would be defined as having favorable attitudes for participating in those behaviors; hence the probability of that person engaging in that behavior more frequently (Ajzen, 2005). Thus, favorable attitudes and beliefs about participation in the behavior could create stronger behavioral intentions (Ajzen, 2005). Specific to this paper, adolescent intentions and attitudes regarding risky behaviors was used as a mediator to explain the association between harsh parenting and involvement with deviant peers on adolescent risky behaviors.

Figure 1. Bronfenbrenner's ecological model (Bronfenbrenner, 1979)

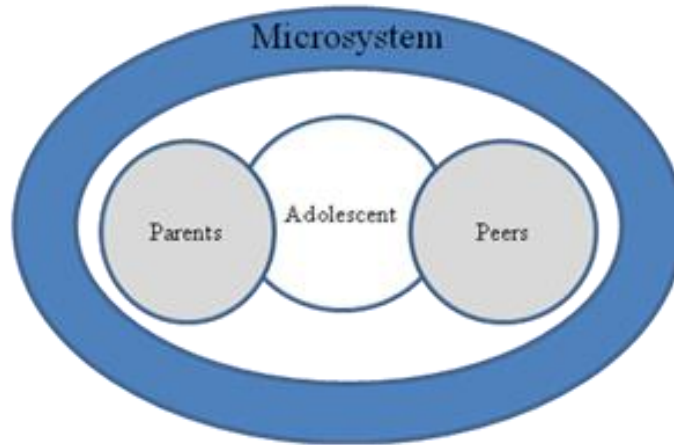
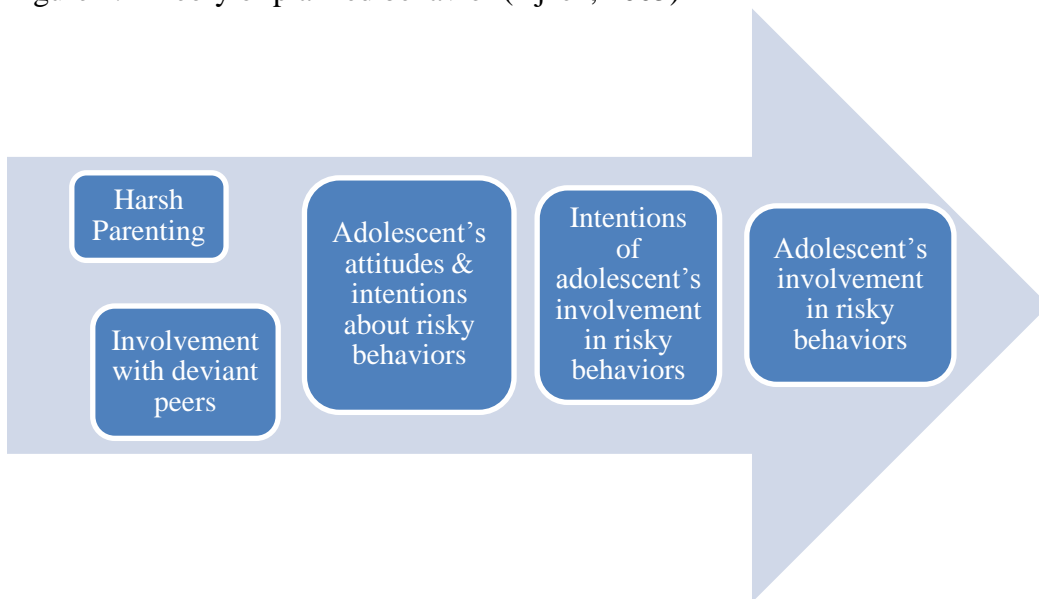


Figure 2. Theory of planned behavior (Ajzen, 2005)



## CHAPTER 2. LITERATURE REVIEW

### 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, & La Bree, 1994). Indeed, research shows that harsh parenting is associated with both adolescent tobacco use (Shelton et al., 2008) and alcohol use (Conger, Rueter, & Conger, 1994; Conger & Conger, 2002). Specifically, 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. Other studies suggest that adolescents raised by authoritarian parents are at greater risk for involvement in risky behaviors than those youth who experience more of an authoritative style parenting (Adalbjarnardottir & Hafsteinsson, 2001). Indeed, Eisenberg et al., (2005) concluded that positive and supportive parenting, as opposed to harsh parenting practices decreased adolescent involvement in risky behavior.

Harsh parenting is also 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). One explanation may be that sexually active adolescents who are raised by harsh parents may reject or ignore any information regarding prevention of sexual activity provided by their parents (Meschke, Bartholomae, Zentall, 2002), or adolescents may not receive any information 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, Li, Pack, Cottrell, Harris, & Burns, 2002). Involvement with deviant peers results in the development of risky behaviors during adolescence (Chapman, Werner-Wilson, 2008). For the purpose of the current study, involvement with deviant peers is defined as friends of the adolescent who have engaged in risky behaviors such as tobacco use, alcohol use, and sexual activity. In some cases, the adolescent initiates the risky behavior to secure their position in their peer group (Rubin, Bukowski, Parker, 1998), while in other instances, the adolescent chooses 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, Bukowski, Parker, 1998; Urberg, Deirmenciolu, & Pilgrim, 1997). For example, a direct association has been found between adolescent involvement with deviant peers and their involvement in risky behaviors such as tobacco (Maxwell, 2002) and alcohol use (Conger & Rueter, 1996). Specifically, adolescents who initiated smoking at an early age interacted with peers who were already involved in smoking (Ennett, et. al, 2008). If adolescents receive approval from their peers about smoking, then the chances of becoming involved in smoking are increased (Maxwell, 2002). Similarly, Conger and Rueter (1996) concluded

that 10<sup>th</sup> grade adolescent drinking behavior was strongly associated with friends who also used alcohol.

In the same way that peers' influence tobacco and alcohol use, they may have a similar impact on sexual activity. For example, Potard, Courtois and Rusch (2008) found that when adolescents perceive that their peers have more liberal attitudes towards sexuality, then the chances of an adolescent engaging in sexual behavior increases. Moreover, 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 in this respect (Potard, Courtois and Rusch, 2008). Taken together, the literature suggests there is a relationship between harsh parenting and adolescent engagement in risky behaviors, as well as involvement with deviant peers and engagement in risky behaviors. Moreover, there is evidence to suggest that a combination of non-supportive parenting and involvement with deviant peers may place adolescents at increased risk. For example, youth who are not currently smoking are more likely to initiate smoking if they do not have a supportive parent and are associated with peers who smoke (Chassin, et. al., 1986; Kiuru, Burk, Laursen, Salmela-Aro, & Nurmi, 2010). Taken together, parental and peer influences may independently impact adolescents' involvement in risky behaviors and also have a cumulative affect where they work in combination to impact future behavior. Thus, the current study examines the longitudinal association of both harsh parenting and involvement with deviant peers during early adolescence on risky behaviors of tobacco and alcohol use, as well as engagement in sexual behaviors during late adolescence.

### **Influence of adolescent attitudes and intentions**

The theory of planned behavior (Ajzen, 2005) focuses on intentions to participate in behaviors which develop from attitudes about 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 behavior 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 et al. (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 if adolescents have a positive perception about drinking alcohol, they engage in drinking behavior. That is, adolescent alcohol use is dependent on their intention to consume it (Cooke, Sniehotta, Schuz, 2007; Ajzen, 2005). Finally, Albarrcin, Johnson, Fishbein, and Muellerleile (2001) conducted a meta-analysis which concluded that the prediction of adolescent condom use depended in large part on their intention of engaging in protected sex. If an adolescent has a specific attitude or intention regarding future engagement in a risky sexual encounter, then based on their attitudes and intentions it is possible to predict their future involvement in the respective behavior (Hennessy, Bleakley & Fishbein; 2012).



There is ample evidence to suggest that parents and peers contribute to an adolescent's intention to engage in various risky activities (Albarrcin, Johnson, Fishbein, & Muellerleile, 2001; Buckley, Chapman & Sheehan, 2010; Hennessy, Bleakley & Fishbein, 2012; Karimy, Niknami, Hidarnia & Hajizadeh, 2012). Despite this research, few studies have examined the association between harsh parenting and involvement with deviant peers, as mediated by adolescent attitudes and intentions on their later risky behaviors. The present study attempts to fill this methodological gap.

### **The present investigation**

The present study examined the degree to which harsh parenting and involvement with deviant peers is associated with adolescent tobacco use, alcohol use, and risky sexual behaviors, using longitudinal data from early to late adolescence. This study was designed to meet two overall objectives. The first objective was to assess the relationship among 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. The second objective was to ascertain whether adolescent attitudes and intentions regarding these behaviors mediated the relationship (see Figure 3). Attitudes and intentions were assessed when the youth were 15 years old. In addition, adolescent early involvement in sexual behavior and use of tobacco and alcohol, as well as use by their parents were assessed when the adolescent was 13 years old. Based on the literature, it was expected that both harsh parenting and involvement with deviant peers would be associated with later adolescent risky behavior. It was also expected that adolescent attitudes and intentions about risky behavior during middle adolescence would mediate this relationship, even after taking into account parental

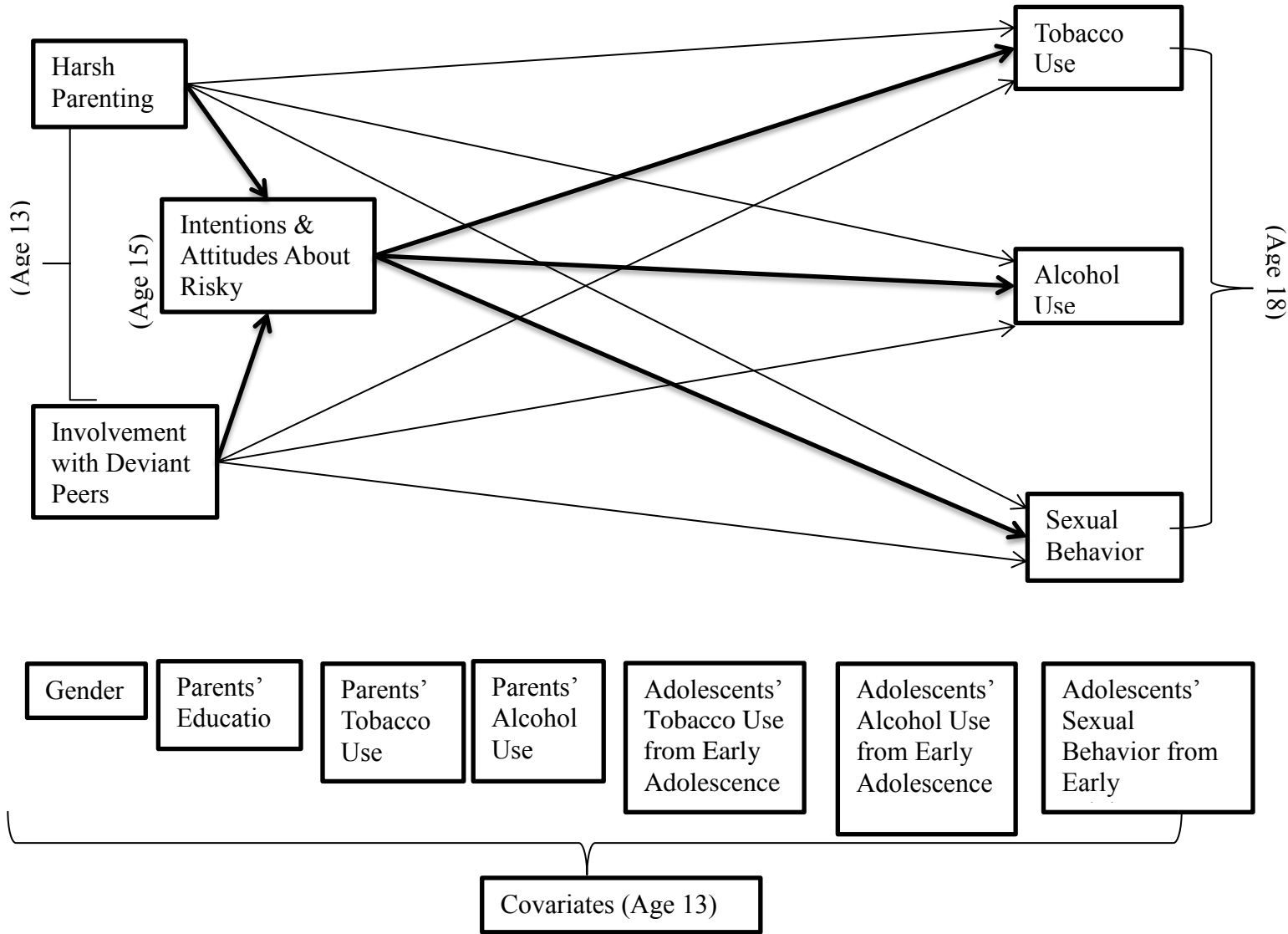
behavior and engagement in risky behaviors during early adolescence. It is important to control for early adolescent risky behavior as research suggests that early onset of behaviors such as alcohol use (Ellickson, Tucker, & Klein, 2003; Gruber, DiClemente, Anderson, & Lodico, 1996) leads to greater dependency on behaviors into adulthood.

The present study advances the literature in three important ways. First, data come from a prospective, longitudinal research study which utilized multiple informants, including ratings of parent behavior by trained observers. Second, much of the previous literature has not addressed multiple risky behaviors; thus, the current study analyzed three risky behaviors within the same model. Finally, few studies have considered the association between harsh parenting, involvement with deviant peers, and adolescent attitudes and intentions about risky behaviors in the same model, while at the same time, control for parental behavior and risky behavior of youth during early adolescence. Gutman, Eccles, Peck, and Malanchuk (2011) mentioned that it is essential to investigate a developmental lagged model by assessing the effects of risky behaviors in early adolescence on risky behavior in later adolescence. No study to which we are aware has considered all of these variables together to examine the mediational effect of adolescent intentions to engage in risky behaviors.

Finally, to ascertain whether child's gender, parents' education, parents' tobacco and alcohol use, and adolescents' risky behaviors in early adolescence plays a role in any of the pathways within the model, these constructs were 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 et. al, (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 the probability of females becoming regular smokers were higher than that of males. This study also found that parent educational attainment had a negative relationship with adolescent involvement in risky behaviors such as tobacco use. Parents' tobacco use and alcohol use have also been shown to be related to adolescents' risky behaviors (Redonnet, Chollet, Fombonne, Bowes, 2012). And lastly, early use of tobacco and alcohol use (Gutman, Eccles, Peck, and Malanchuk, 2011) as well as the onset of early sexual behaviors (Connolly, & McIsaac, 2011) increases adolescents' chances of their involvement in risky behaviors during late adolescence.

**Figure 3 Conceptual model used in present investigation**



## CHAPTER 3. METHODOLOGY

### Sample

Data come from the Iowa Youth and Families Project (IYFP) which were collected annually from 1989 through 1994; ( $n = 451$ ). Starting in 1994, participants continued on with the study now known as the Family Transition Project (FTP). Family participants included a target adolescent, a sibling within four years of age of the target adolescent, the mother and father of the target adolescent and a sibling. When interviewed for the first time in 1989, the target adolescents were 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% of the population); therefore, the participants were mostly Caucasian. The families were primarily lower middle- or middle-class.

### Procedure

Throughout the target's adolescence, families were visited twice in their homes each year by a trained interviewer. During the first visit, family members completed a set of questionnaires pertaining to subjects such as parenting, individual characteristics, and family and peer interactions. The second visit occurred within 2 weeks of the first visit. During this visit, family members participated in observed interaction tasks. The tasks were meant to bring forth both positive and negative interactions between the family members. One of the tasks was a family discussion task (25 minutes), in which all the family members discussed a general question about family life such as household chores, family activities, and parenting. This task was designed to elicit a wide range of specific

behaviors including negative parenting behaviors. Trained observers coded the quality of parenting behaviors using the Iowa Interaction Rating Scales (Melby & Conger, 2001) which has been shown to have adequate variability and reliability (.94) (Neppel, et al., 2009). The current study includes 451 target youth (236 girls) who participated from early to late adolescence. Specifically, harsh parenting and involvement with deviant peers were assessed when youth were age 13, adolescent attitudes and intentions about risky behaviors were assessed at age 15 years, and adolescent involvement in risky behaviors was during late adolescence at age 18 years.

## Measures

### Early adolescent predictors, age 13

*Harsh Parenting:* Observer ratings were used to assess parents' hostility, antisocial behavior, and angry coerciveness toward the adolescent during the family interaction task when the target adolescent was 13 years old, (Neppel et. al, 2009). These items were 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. The behavior of a person that attempts to control or change the other person's behavior in a hostile manner was defined as angry coercion. Antisocial behavior was characterized by egotistic, immature, rebellious, and indifferent behavior towards each other. These items were averaged to create a manifest variable of harsh parenting. The cronbach's alpha is .86 and inter-rate reliability was (.94) (Neppel et. al, 2009).

*Involvement with Deviant Peers:* Adolescent association with deviant peers was assessed through self-report when the target adolescent was 13 years old. Adolescents

were asked questions that assessed 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 in which the response ranged from 0 = none of them to 4 = all of them (Simons, Johnsons, Conger, Elder, 1998). The responses were averaged together to create a manifest variable. The cronbach's alpha is .71

### **Mediating construct – middle adolescence, age 15**

*Adolescent Attitudes and Intention:* .Adolescents were asked a set of three questions for tobacco use, alcohol use and a question about sexual behavior. It includes adolescent's goals of using tobacco and alcohol in the future as well as their intentions to have sexual intercourse in the near future (1 = I definitely will not to 7 = I definitely will); how dangerous they feel about these risky behaviors (1 = Extremely dangerous to 7 = Not at all dangerous); what the chances are of getting an illness in the future due to these behaviors as compared to others (1 = Much less likely than others to 7 = Much more likely than others). All items were averaged to use as a manifest variable in the model. The coefficient alpha for this construct was .82.

### **Late adolescent risky behaviors, age 18**

*Tobacco Use:* Adolescents responded to one question that asked the frequency of tobacco use either by chewing or by smoking in the past month. Higher scores indicated higher frequency of using tobacco with the range of responses from 0 = never to 5 = every day (Maxwell, 2002).

*Alcohol Use:* Adolescents responded to the questions that assessed their alcohol drinking (beer, wine and hard liquor) frequency in the past month, ranging from 0 = never to 5 = every day. Each target adolescent answered 2 questions indicating he/she

used three kinds of alcohol: use of beer, wine or wine coolers, and hard liquor. Also, adolescents were asked if they had 3 or 4 drinks in a row as well as 5 or more drinks in a row. All responses were averaged to create a manifest indicator in the model (Conger, Rueter, & Conger, 1994). The cronbach's alpha of this variable was .92

*Risky Sexual Behavior:* Initially adolescents were asked if they had sexual intercourse within past 12 months. If they answered "yes" they were asked questions regarding the frequency of condom use and number of partners. Frequency of use of protective measures ranged from 1 = always used to 5 = never used. The question was targeted for condom use. Number of partners was coded as 0 = not involved in sexual behavior, 1 = involved with 1 partner, 2 = 2 partners, 3 = 3 partners, 4 = 4 or more partners. The frequency of use of protective measures (1 to 5) and number of partners (0 to 4) were averaged together to create a manifest variable. Higher scores indicated high risky sexual behavior and low scores indicated low risky sexual behavior (Beadnell et. al., 2005).

### **Covariates, age 13**

The control variables utilized in this study consisted of adolescent gender (female = 1; male=0), parent education (8.50-19 years), as well as parent tobacco and alcohol use, and adolescent tobacco, alcohol use and risky sexual behavior during early adolescence. During early adolescence parents reported their years of education as well as their own tobacco and alcohol use (0=haven't used this substance, 1= used this substance). Finally adolescents reported if they ever used tobacco and alcohol (0= haven't used this substance, 1= used this substance) and sexual behavior (0=haven't had sexual intercourse, 1= have had sexual intercourse) during early adolescence.



## CHAPTER 4: RESULTS

The first hypothesis examined whether observed harsh parenting and involvement with deviant peers in early adolescence directly predicted engaging in risky behaviors in late adolescence. The second hypothesis determined if this relationship was mediated through adolescent attitudes and intentions about risky behaviors as assessed during middle adolescence. Structural equation model (SEMs) were used to test hypotheses using AMOS (Arbuckle, 2005). Full information maximum likelihood (FIML) was used to handle missing data as it is a powerful estimation of parameters as well as a widely accepted procedure in longitudinal research (Duncan, Duncan, and Strycker, 2013).

For the analyses, the first step was to conduct descriptive statistics on all of the study variables (See Table 1). Second, correlations were run using SPSS in order to determine if a significant relationship existed between the variables in the model (See Table 2). As expected, 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 involvement with deviant peers was also significantly related to tobacco use ( $r = .23, p < .01$ ) alcohol use ( $r = .19, p < .01$ ) and risky sexual behavior ( $r = .12, p < .01$ ) during late adolescence. Adolescent's attitudes and intentions about risky behavior during middle adolescence was statistically and significantly positively 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 significantly related to adolescent's attitudes and intentions about risky behaviors.

### *Structural Equation Model Results*

Structural equation modelling was used to test our conceptual model shown in Figure 3. We first assessed the direct effect of harsh parenting and adolescent involvement with deviant peers during early adolescence on late adolescent tobacco use, alcohol use and engagement in risky sexual behaviors. For model fit we used standard chi square index of statistical fit, the root mean square error of approximation (RMSEA; Browne and 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 (Kenny, 2011). Since our sample size was 451, we focus on CFI and RMSEA values to show model fit. When CFI is equal to or above .90 then the model is said to have excellent fit (Kenny, 2011). When RMSEA is below .05 then it is considered best fit and when RMSEA is between .05 and .08, it is considered reasonable fit (Hu, Bentler, 1999).

Consistent with the first hypothesis (see Figure 4), model results indicated that harsh parenting at age 13 years 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, involvement with deviant peers at age 13 years 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. This model had a good fit as its CFI is .97 and RMSEA was .06. Chi square value was also significant  $X^2(10, N = 451) = 26.98$ ;  $p = .003$ . For parsimony, control variables are included in the reported model, but only shown for the mediational model below, as results were similar.

Next an indirect effects or mediational model was tested that included the adolescent attitudes and intentions during middle adolescence, as well as the control variables assessed during early adolescence. As shown in Figure 5 and Table 3, results supported

hypothesis 2 and 3 in that adolescent's attitudes and intentions about risky behaviors mediated the positive relationship between harsh parenting and involvement with deviant peers with tobacco, alcohol use and risky sexual behavior even after controlling for parent tobacco, alcohol use and early adolescent engagement in risky behaviors. That is, harsh parenting ( $\beta = .10^*$ ,  $t = 2.37$ ) and involvement with deviant peers ( $\beta = .19^{***}$ ,  $t = 3.90$ ) significantly predicted adolescent's attitudes and intentions about risky behaviors. Also, adolescent's attitudes and intentions about risky behaviors significantly predicted increased 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. Once this variable was added to the model, all the initial direct paths were no longer significant. Only statistically significant pathways are included in the figures and control variables which are shown in Table 3. The comparative fit index for this model was .99. The RMSEA value was .04. Chi square was marginally significant. The value of chi square value was  $X^2(10, N= 451) = 18.52$ ,  $p = .05$ .

**Figure 4 Direct Effects.**

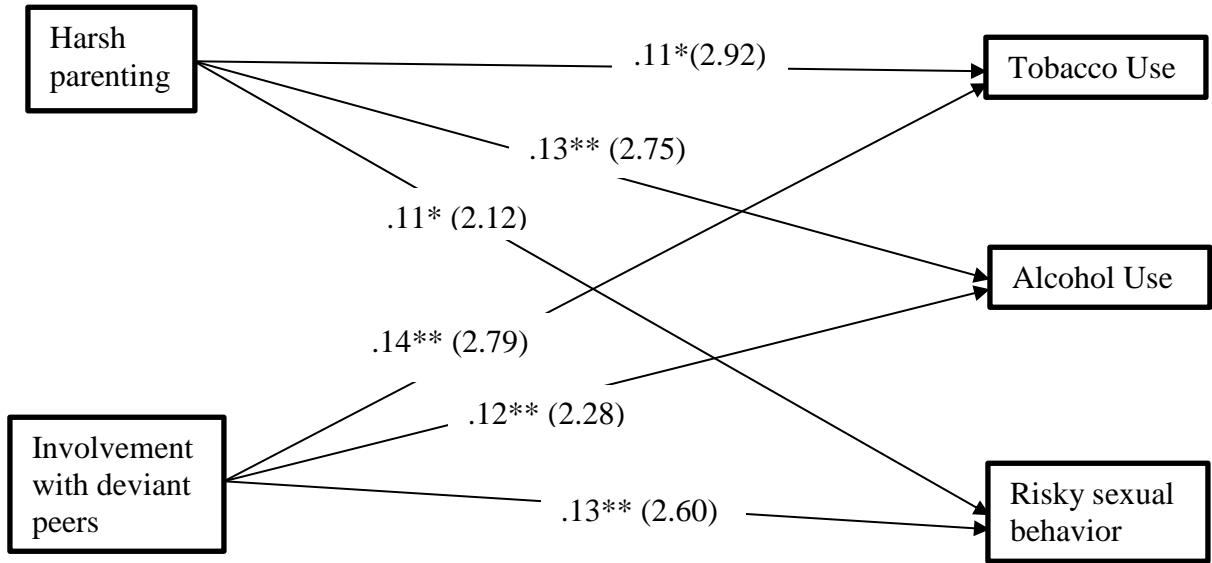


Fig 4: Direct Paths including standardized  $\beta$  values & (t values);  $X^2 = (10, N = 451) = 26.98, p = .03$ ; CFI = .97; RMSEA = .06; \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .000$

**Figure 5 Mediation Effects.**

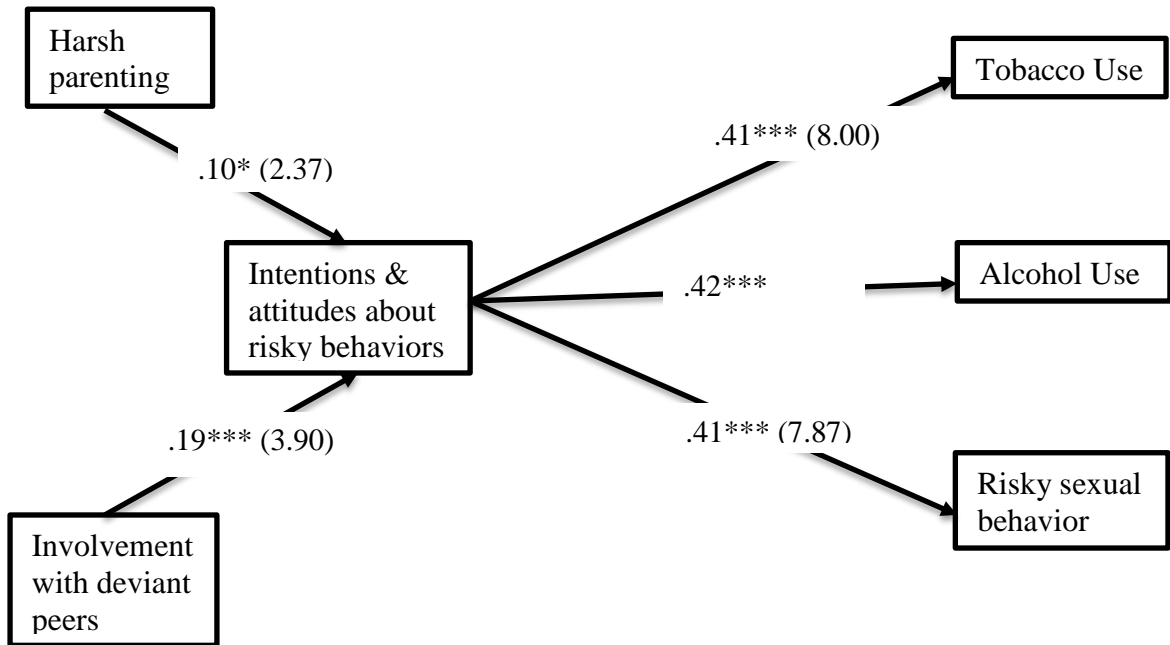


Fig 5: Mediation Paths including standardized  $\beta$  values & (t values);  $X^2 = (10, N = 451) = 18.52, p = .05$  CFI = .99; RMSEA = .04; \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .000$   
 Note: The insignificant relation was not included in the figure 4 and 5.

## CHAPTER 5: DISCUSSION

This investigation examined the associations among 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, youth 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 harsh parenting and deviant peers within the context of adolescent attitudes and intentions about risky behavior and later risky behaviors. To be sure those significant associations were not due to parental use of substances or early adolescent engagement in risky behaviors; these earlier behaviors were used as controls within the model.

As hypothesized, both harsh parenting and association with deviant peers in early adolescence was significantly associated with adolescent engagement in risky behaviors positivity five years later. However, this direct relationship was no longer significant after including adolescent attitudes and intentions regarding these risky behaviors during middle adolescence. This suggests that attitudes and intentions fully explained the association between parenting and deviant peers on later risky behaviors. That is, harsh parenting and involvement with deviant peers was no longer associated with adolescent risky behaviors once attitudes and intentions about risky behaviors were added in the model. This was true even after parent substance use and adolescent early involvement in risky behaviors were taken into account.

Altogether, the current results seem to replicate and extend previous studies examining the effects of parents and peers on youth risk outcomes (Elkington,

Bauermeister, & Zimmerman, 2011). In particular, the current study helps to expand previous studies by considering adolescent views about risky behaviors. 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 risk behavior throughout the adolescent years. In addition, we have examined the influence of parenting and peers separately, but future studies should examine the cumulative effect of parenting and peers on adolescent involvement in risky behaviors.

In terms of the confounding associations, results showed an association between low parental education and harsh parenting. This is consistent with the literature that finds if parents are well educated (Steinberg, 2010) they are less likely to exhibit harsh parenting towards their children. Also, there was an association between parent tobacco use and alcohol use with harsh parenting, supporting prior research (Conger & Rueter, 1996). This study also found associations among adolescent engagement in tobacco use, alcohol use (Morton et. al, 2001) and risky sexual behavior in early adolescence, and involvement with peers who engage in the same risky behaviors. The results also indicated that if parents are less educated then adolescents developed strong intentions and attitudes about risky behaviors. Finally, parent tobacco use was associated with adolescent tobacco use.

Similarly, early adolescent involvement in tobacco use and sexual behavior was related to intentions and attitudes about risky behaviors in mid-adolescence.

Results from this study show that parents and peers both affect adolescent involvement in risky behaviors. Also adolescent's intentions and attitudes mediate these relationships. This is consistent with Ajzen's (2012) 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 involvement in risky behaviors in late adolescence.

It should be acknowledged that there are alternative explanations for some of the findings. For example, it could be that shared genetic factors between parents and children helps to explain some of the observed associations. Genetic factors might be passed directly from parent to child. Likewise, genetically influenced individual differences of adolescents might elicit certain kinds of parenting practices thereby modifying the direction of influence in Figure 3. Thus, future research should explore the genetic influence of both parents and children in the context of parenting and child 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 (rural Iowa). In addition, all adolescents in these analyses lived with their biological parents. Future research using more diverse samples is needed.

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. These kinds of basic research findings 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. Clinicians and policy makers must take a systemic approach to prevention and intervention of risky behaviors including not only the adolescent but their parents and peers. Finally, educators must speak frankly to young adolescents 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.



## APPENDIX

**Table 1: Descriptive statistics for study variables (N = 451)**

	<i>M</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>	<i>Range</i>
<i>Late Adolescence, Age 18</i>					
Adolescent tobacco use	1.02	1.78	0	5	0 – 5
Adolescent alcohol use	0.51	0.65	0	3	0 - 5
Adolescent risky sexual behavior	0.78	0.93	0	4	0 - 4
<i>Middle Adolescence, age 15</i>					
Adolescent attitudes and intentions about risky behaviors	2.25	1.12	1	7	1 – 7
<i>Early Adolescence, age 13</i>					
Harsh parenting	1.9	0.56	1	4	0 - 9
Adolescent involvement with deviant peers	0.32	0.55	0	4	0 - 4
Adolescent tobacco use	0.15	0.3	0	1	0-1
Adolescent alcohol use	0.19	0.28	0	1	0-1
Adolescent risky sexual behavior	0.01	0.09	0	1	0-1
Adolescent gender	0.52	0.5	0	1	0-1
Parents' education	13.38	1.62	8.5	19	
Parents' tobacco use	0.30	0.36	0	1	0-1
Parents' alcohol use	0.36	0.31	0	1	0-1

**Table 2.** Correlation Matrix

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

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

**Table 3.** Standardized coefficients of control variables in the mediation path model

	$\beta$	t-ratio
<i>Early Adolescence, age 13</i>		
Adolescents' tobacco use		
Adolescents' attitudes & intentions about risky behaviors	.26***	5.18
Adolescents involvement with deviant peers	.23***	4.97
Adolescents' alcohol use		
Adolescents' alcohol use (Age 18)	.10*	2.22
Adolescents involvement with deviant peers	.28***	6.14
Adolescents' sexual behavior		
Involvement with deviant peers	.10*	2.45
Adolescents' attitudes & intentions about risky behaviors	.10*	2.18
Gender		
Adolescents' tobacco use (Age 18)	-.15***	-3.46
Parents' education		
Harsh parenting	-.15**	-3.18
Adolescents' attitudes & intentions about risky behaviors	-.11*	-2.52
Parents' tobacco use		
Harsh parenting	.13**	2.66
Adolescents involvement with deviant peers	.12**	2.77
Adolescents' attitudes & intentions about risky behaviors	.14**	3.22
Adolescents' tobacco use (Age 18)	.13**	3.00
Parents' alcohol use		
Harsh parenting	.10*	2.16

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

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