

ORIGINAL ARTICLE

## The influence of parents and friends on adolescent substance use: a multidimensional approach

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### Abstract

*Objective:* The current study examined longitudinal associations between friend's substance use, friendship quality, parent-adolescent relationship quality, and subsequent substance use among an adult population. *Design:* Participants were 166 adolescents, their parents, and their close same-sex friends recruited from both urban and suburban high schools surrounding a large metropolitan area. Measures of relationship characteristics in the 10th grade were used to predict concurrent substance use and changes in substance use over a 1-year period. *Results:* The most consistent predictor of the use of different substances and changes in substance use over time was the friend's substance-using behavior. Negative interpersonal interactions with a friend were related only to tobacco use, and friendship support neither contributed to nor protected against substance use. Mother-adolescent relationship support was associated with lower levels of concurrent substance use, as well as lower levels of hard drug use over time. *Conclusions:* Findings highlight the need to examine parents and peers simultaneously and the importance of parental relationships and peer behavior on adolescent substance use. Limitations and future directions are discussed.

**Keywords:** Adolescent, substance use, peer, friendship, parental, relationship quality.

### Introduction

Even after decades of research, prevention campaigns and the “war on drugs,” alcohol and drug use by adolescents remain significant public health concerns. Well over half of American adolescents have used alcohol and tobacco, and nearly that many have tried marijuana or hard drugs (Johnston, O'Malley, & Bachman, 2002). Adolescents who use alcohol, tobacco, and other drugs are at increased risk for a number of negative outcomes, including diminished school functioning, deterioration of physical health, and increased rates of psychopathology (Myers, Brown, Tate, Abrantes, & Tomlinson, 2001). Furthermore, initiation of substance use early in adolescence is predictive of numerous negative outcomes in adulthood, including decreased competence in work and family roles, lower levels of

education obtained and continued drug involvement (Kandel, Davies, Karus, & Yamaguchi, 1986). Given the significance of adolescent substance use, investigators have put forth great effort to identify psychosocial factors that may be linked to substance use (see Windle, 1999).

Among the most important factors in the development of substance use is an adolescent's peers. Indeed, it is well established that adolescents who have drug-using friends are more likely to use drugs themselves (Ary, Tildesley, Hops, & Andrews, 1993; Windle, 2000). Friends not only provide immediate access to substances, but also model drug-using behavior and help shape beliefs and positive attitudes toward the use of drugs (Farrell & White, 1998). Friend's substance use is also likely to influence perceptions of how normative substance use is among peers. Adolescents are significantly more likely to use substances if they believe close friends are using and that substance use is common among their larger group of peers (Bauman, Botvin, Botvin, & Baker, 1992; Epstein, Botvin, Baker, & Diaz, 1999; Scheier & Botvin, 1997).

Another potentially important dimension of peer influence on substance use is the quality of the relationships adolescents have with their friends. For example, investigators have found that conflict and hostility in friendships have been associated with greater substance use (Windle, 1994; Dishion, Capaldi, Spracklen, & Li, 1995); however, others have found no evidence of such a link (Hussong, 2000). The links between positive features of adolescent relationships and substance use are less clear. Some investigators have found friendships characterized by positive characteristics, such as support, to be associated with lower levels of substance use (Averna & Hesselbrock, 2001; Scholte, van Lieshout, & van Aken, 2001), whereas others have found them to be associated with greater rates of substance use (Hussong, 2000; Windle, 1994). The quality of friendships between deviant peers, where substance use is most likely to occur, tends to be characterized by noxious behaviors (e.g., using obscene gestures, hitting, poking, grabbing, pushing) and reciprocity of negative interactions (Dishion, Andrews, & Crosby, 1995). However, because characteristics of one's friends' behaviors (e.g., substance use) and the quality of friendships tend to overlap, it is possible that friendship quality adds little to the prediction of substance use after the deviancy of the friend is taken into account. Unfortunately, there have been few simultaneous examinations of these multiple aspects of adolescent friendships.

Friendships are not the only close relationship that has been linked to substance use; parent-adolescent relationships have long been linked to a range of risky behaviors. For example, parental support, manifested in affection, praise, and encouragement, is a strong buffer against substance use (Barber, 1992; Knight, Broome, Cross, & Simpson, 1998). Likewise, parental conflict has been implicated as a predictor of adolescent substance use. Farrell and White (1998) found that drug use increased as a function of overt conflict between adolescents and their mothers. Similarly, Brody, and Forehand (1993) found that high mother-adolescent conflict was associated with adolescent drug use problems.

In studies that have simultaneously examined parent and friendship factors and their impact on adolescent substance use, there have been inconsistent findings. For example, some have demonstrated that the power of parents is inconsequential after accounting for friends' influences (Crawford & Novak, 2002), whereas others have demonstrated that parental factors offer a unique explanation of adolescent substance use, above and beyond the influence of friends (e.g., Bahr, Marcos, & Maughan, 1995). These findings illustrate the importance of examining these important relationships simultaneously. To date, the work that has done so has primarily focused on peer relations in general, rather than specific friendships per se.

*Present study*

Past work has demonstrated that the characteristics of adolescents' friendships are associated with adolescent substance use. Often, however, many of these investigations have examined only one aspect of friendship, such as friend's substance use. Similarly, most studies have only examined the influence of parents or friends, but not both. Further work is needed to determine how friendship quality and friend's substance use work in concert with parent-adolescent relationships. The current study builds on previous research on friendship characteristics and substance use by (i) assessing multiple dimensions of friendships, including the friend behavior and friendship qualities; (ii) assessing how friendship characteristics and parent-child relationship quality work in concert in predicting substance use; and (iii) examining these relationships over a critical 1-year period of adolescent development. Given that a single close friend can have a strong positive or negative influence on the course of substance use (McCrary, 2004), the present study focused on a particular close friendship (vs. friendships in general).

**Methods***Adolescent participants*

The participants for the current study come from a multi-year study on relationships and adjustment in adolescence. Participants were recruited through letters sent to families of 10th graders in public schools in both urban and suburban areas of a large metropolitan city in the Western United States. Participants who responded to the initial letters were remunerated \$25 for allowing staff to visit their home and describe the project to them and their parents. Subsequently, participants were paid \$60 for a laboratory visit that included interviews, questionnaires, and observations. At the time of the initial recruitment, the participants were asked to invite their parents and a close same-sex or other-sex friend to participate in the study. A total of 200 adolescents, 196 mothers, and 191 friends agreed to participate. For the present study, we restricted the sample to the 166 individuals who participated with a close *same-sex* friend.

Targeted recruitment efforts designed to reflect national demographic characteristics resulted in a sample of 200 (100 males and 100 females) with an average age of 15.3 years,  $SD = 0.53$  at time 1. We excluded 25 who participated with a close other-sex friend, as it is possible that a close other-sex friend may not have the same influence on substance use as a same-sex friend. Additionally, we excluded seven who had no friend participant, and two were lost because of technical problems. The reduced sample comprised of 91 female and 75 male participants (age:  $M = 15.3$ , range = 14–16 years). The sample was 71% Caucasian, 11% Hispanic, 9% African-American, and 8% of another ethnic background. The subsample of 166 adolescents was compared to the 34 excluded adolescents on all variables used in this study, and no differences were found.

Data were also obtained from the participant's same-sex friends and mother. Ninety-five percent of the 166 participants' mothers participated, and 67% of the 118 fathers or stepfathers who resided with the participants completed the questionnaires; however, only 17% of the 48 non-resident fathers completed them; in some instances, this was because the adolescents had limited contact with them. Because of the lower response rates of fathers, we utilized only the data from the residential mothers in the present study.

### Procedure

Data were collected for two consecutive years, beginning when participants were in the 10th grade. In the first wave, participants completed questionnaires and took part in two or three laboratory sessions in which they were interviewed about each of their close relationships and were observed interacting with their mother and their friend. Similarly, close friends and mothers participated in a laboratory session and completed questionnaires. Depending upon the number of visits and whether they had a romantic partner (for participation in a related research study), participants received \$130–150 at time 1; mothers and close friends received \$40. Fathers received \$15 for completing questionnaires at home.

The second wave of data collection was conducted a year later when most of the sample was in the 11th grade. The participants, parents, and friends completed a set of questionnaires similar to the ones gathered in the first wave. Participants were paid \$60–90 at time 2, depending on their level of participation; mothers, friends, and fathers received \$15–25 for completing questionnaires.

### Measures

*Relationship quality.* A modified version of the network of relationships inventory (NRI; Furman & Buhrmester, 1985) was used to assess the participant's perceptions of close relationships. This version of the NRI was a 33-item self-report questionnaire that asked participants to rate aspects of their relationship with their mother, father, and their same-sex friend. Each item was rated using a 5-point Likert scale.

For the purposes of the proposed project, the negative interaction and support factors for relationships with mother, father, and same-sex friend were used. The negative interaction factor comprised of three, three-item scales: (i) conflict, (ii) antagonism, and (iii) criticism. The support factor was comprised of five, three-item scales: (i) seeking a safe haven, (ii) providing a safe haven, (iii) seeking a secure base, (iv) providing a secure base, and (v) companionship. The support scales used in the present study were designed to assess aspects of attachment, caregiving, and affiliation. The internal consistencies of the two factors for each relationship all exceeded  $\alpha = 0.90$ .

Mothers and friends completed a similar questionnaire about their relationship with the participant that yielded comparable factors,  $\alpha$ s  $> 0.89$ . The participant's and the other persons' reports (i.e., mother or friend) of support and negative interaction were significantly related,  $M r = 0.43$ , range = 0.28–0.54, all  $p$ s  $< 0.05$ . Given the high degree of overlap, reports were combined into composite scores.

*Substance use.* The Drug Involvement Scale for Adolescents (DISA; Eggert, Herting, & Thompson, 1996) was used as a comprehensive assessment of substance use. The DISA specifically inquires about the use of tobacco, beer, wine, hard liquor, and 10 different drugs (marijuana, cocaine, opiates, depressants, tranquilizers, hallucinogens, inhalants, stimulants, over-the-counter drugs, and club drugs). To assess frequency, participants were asked how often they had used a particular substance in the past 30 days, using an 8-point scale (1 = never used; 2 = used, but not in past 30 days; 3 = used once in past 30 days; 4 = used 2–3 times in the past 30 days; 5 = used about once a week; 6 = used several times a week; 7 = almost every day; and 8 = use every day). For the present study, we examined the use of (i) tobacco, (ii) alcohol, (iii) marijuana, and (iv) so-called hard drugs

(cocaine, opiates, depressants, tranquilizers, hallucinogens, inhalants, stimulants, over-the-counter drugs, and club drugs).

The DISA also assesses inter- and intra-personal problems that result from substance use, problems controlling their use of drugs and adverse consequences they may have experienced as a result of using substances. The inter- and intra-personal problems, control problems and adverse consequences scales were combined to make a negative outcomes scale, as all were highly related,  $r_s > 0.90$ ,  $p_s < 0.01$ . The DISA was administered using computer-assisted self-interviewing as such administration increases the candor of responses (Turner et al., 1998).

*Friend's substance use.* The youth self-report (YSR; Achenbach & Edelbrock, 1983) was administered to the close friend. For the present study, the YSR item "I use drugs for non-medical purposes" was used to assess the friend's illicit substance use. Preliminary analyses suggest that this single item is a strong indicator of substance use; results from participants who completed both the YSR and the more detailed DISA demonstrate the YSR substance use item is highly correlated with a composite of the frequency of using the substances on the DISA,  $r = 0.65$ ,  $p < 0.001$ . Additionally, the YSR substance use item was significantly correlated with the DISA measure of negative outcomes resulting from substance use,  $r = 0.58$ ,  $p < 0.001$ .

## Results

### *Preliminary analyses*

Preliminary analyses were conducted to test for potential gender differences. There were no significant differences between males and females on the substance use measures. There were significant mean differences between males and females on same-sex friend support (males  $M = 3.20$ , females  $M = 3.68$ ;  $t(164) = -3.90$ ,  $p < 0.01$ ) and negative interactions (males  $M = 1.93$ , females  $M = 1.64$ ;  $t(164) = 2.86$ ,  $p < 0.01$ ), as well as mother-adolescent support (males  $M = 3.06$ , females  $M = 3.35$ ;  $t(164) = -2.75$ ,  $p < 0.01$ ). Accordingly, we ran all analyses controlling for gender; none of the results, however, differed as a result of controlling for gender. Furthermore, we examined interactions with gender and each independent variable to determine whether the association between the independent variables and substance use varies as a function of gender. None of these analyses were significant and, thus, gender was not examined in further analyses.

### *Links between relationship characteristics and substance use*

Tables I and II depict the correlations between the relationship variables in the 10th grade and substance use frequency during the 10th and 11th grades. Friend's substance use was strongly associated with all measures of participant substance use in 10th and 11th grades. The frequency of negative interactions with a friend was related to higher levels of tobacco, marijuana, and negative outcomes of use in the 10th grade. The degree of same-sex friend support was not related to substance use in the 10th or 11th grade. The degree of support in relationships with mothers was significantly negatively correlated with all substance use outcomes in the 10th and 11th grades. Negative interactions with mother were generally unrelated to substance use frequency in the 10th and 11th grades. Father-adolescent relationship qualities were not significantly related to any of the substance use outcomes

Table I. Correlations between 10th grade predictors and substance use frequency in 10th grade

	Tobacco	Alcohol	Marijuana	Hard drug	Negative outcomes
Friend's substance use	0.42**	0.43**	0.50**	0.20*	0.50**
Friendship support	0.14	0.05	0.07	0.07	0.05
Friendship negative	0.27*	0.10	0.20*	0.07	0.16*
Mother-adolescent support	-0.21**	-0.25**	-0.26**	-0.20*	-0.25**
Mother-adolescent negative	0.20*	0.13	0.15	0.12	0.17*
Father-adolescent support	-0.08	0.05	-0.05	-0.04	0.00
Father-adolescent negative	0.06	0.04	0.11	-0.06	0.02

\* $p < 0.05$ , \*\* $p < 0.01$ .

Table II. Correlations between 10th grade predictors and substance use frequency in 11th grade

	Tobacco	Alcohol	Marijuana	Hard drugs	Problematic
Friend's substance use	0.42**	0.37**	0.39**	0.23*	0.42**
Friendship support	0.14	0.12	0.04	0.00	0.09
Friendship negative	0.09	0.11	0.15	0.00	0.10
Mother-adolescent support	-0.23**	-0.21**	-0.21**	-0.30*	-0.19*
Mother-adolescent negative	0.18*	0.00	0.07	0.14	0.00
Father-adolescent support	-0.04	-0.03	-0.05	-0.13	-0.07
Father-adolescent negative	-0.03	-0.04	0.13	-0.06	0.04

\* $p < 0.05$ , \*\* $p < 0.01$ .

and thus were dropped from further analyses. (We also examined the links for just those adolescents from intact families and found no significant relations with quality of relationships with fathers.)

#### *Frequency of substance use in 10th grade*

We conducted hierarchical linear regression analyses to determine how friendship factors and mother-adolescent relationship quality operate together in predicting substance use. First, we examined the relations between friend's substance use, friendship qualities, and mother-adolescent relationship qualities in the 10th grade and the concurrent levels of substance use. The mother-adolescent relationship quality and the friendship factors were simultaneously entered.

Results revealed that higher levels of friend's substance use were associated with higher levels of tobacco, alcohol, and marijuana use as well as negative outcomes of use. Higher levels of negative interactions with a friend and lower levels of friendship support were associated with more frequent tobacco use (see Table III). Lower levels of mother-adolescent support were associated with more frequent alcohol, marijuana, and hard drug use and with more negative outcomes (see Table III).

#### *Relationship characteristics and changes in substance use*

We examined the longitudinal relations between friend's substance use, friendship quality, and mother-adolescent relationship quality in the 10th grade and the changes in substance

Table III. Standardized betas in regression analyses predicting tobacco, alcohol, marijuana, hard drug use and negative outcomes in 10th grade

Predictor variable	Tobacco	Alcohol	Marijuana	Hard drugs	Negative outcomes
Friend's substance use	0.33**	0.39**	0.43**	0.15	0.45**
Friendship support	-0.18*	0.00	0.09	0.13	0.08
Friendship negative	0.18*	0.01	0.12	0.00	0.06
Mother-adolescent support	-0.15	-0.19*	-0.19*	-0.19*	-0.17*
Mother-adolescent negative	0.09	0.03	-0.01	0.05	0.04
R <sup>2</sup>	0.27**	0.22**	0.29**	0.08*	0.29**

\* $p < 0.05$ , \*\* $p < 0.01$ .

Table IV. Standardized betas in regression analyses predicting tobacco, alcohol, marijuana, hard drug use and negative outcomes in 11th grade

Predictor variable	Tobacco	Alcohol	Marijuana	Hard drugs	Negative
Outcomes					
Step 1					
Time 1	0.72**	0.60**	0.63**	0.40**	0.58**
R <sup>2</sup>	0.52*	0.37**	0.40**	0.16**	0.33**
Step 2					
Friend's substance use	0.15*	0.13*	0.11	0.05	0.18*
Friendship support	0.08	0.10	0.02	-0.07	0.08
Friendship negative	-0.14*	0.04	0.03	-0.08	0.07
Mother-adolescent support	-0.08	-0.11	-0.06	-0.19*	-0.11
Mother-adolescent negative	0.03	-0.13	-0.04	0.01	-0.14*
R <sup>2</sup> Δ	0.05*	0.04	0.02	0.05	0.05*

\* $p < 0.05$ , \*\* $p < 0.01$ .

use in the 11th grade. As with the concurrent regression analyses, hierarchical regression analyses were conducted to determine how friendship factors and mother-adolescent relationship quality operate together in predicting the frequency of substance use. To control for prior use, we entered substance use frequency in the 10th grade as the first step.

As shown in Table IV, results revealed that higher levels of a close friend's substance use were associated with increased use of alcohol and tobacco and negative outcomes in the 11th grade. Higher levels of negative interactions with a friend were associated with increases in tobacco use in the 11th grade. Furthermore, lower levels of mother-adolescent support were associated with increased use of hard drugs in the 11th grade.

## Discussion

Overall, the pattern of findings emphasizes the importance of a multidimensional approach for understanding the links between close relationships and substance use. By examining different dimensions of relationships with friends and parents, we were able to get a clearer picture of the specific links these relationships had with usage of different substances.

The feature of friendships that was most predictive of substance use was the close friend's substance use. Friend's substance use was significantly correlated with all indices of frequency and problematic use of substances. Moreover, it was a significant predictor in all regressions predicting concurrent levels of substance use, with the exception of hard

drug use. Longitudinal analyses revealed that friend's substance use was predictive of the increases in alcohol and tobacco use and negative outcomes of use. Thus, friend's substance use is both a robust proximal correlate and a predictor of subsequent substance use. Substance use at this age is socially embedded (Johnson & Johnson, 1996). Face-to-face interactions with other adolescents who use or do not use substances may have the most influence on the decision to engage in substance use. These findings are consistent with a number of prior studies (e.g., Ennett, Bauman, & Koch, 1994; Beck & Treiman, 1996; Hussong, 2000). However, this study demonstrates that the substance use of an individual close friend is an important influence on adolescent behavior regardless of whether the relationship between an adolescent and his/her friend is supportive or full of conflict.

Indeed, the qualities of the friendships were predictive of later tobacco use. Regression analyses revealed significant relations between the frequency of negative interactions with a friend and tobacco use in both the 10th and 11th grades. Negative interactions with friends were also significantly correlated with marijuana and negative outcomes of use in the 10th grade, but these effects were not significant predictors of changes over time. In contrast, friend's substance use was significantly correlated with tobacco, alcohol, marijuana, hard drug use, and negative outcomes and was a significant predictor of change over time in tobacco and alcohol use and negative outcomes. These findings highlight the importance of examining multiple aspects of friendships simultaneously; both the characteristics of friends and the qualities of the friendship were linked to substance use, but only by examining them simultaneously was it discovered that only friends' substance use is predictive of changes in substance use and negative consequences over time (with the exception of tobacco use).

Moreover, the data illustrate the value of examining the contributions of both peer and parental relationships during this developmental period when adolescents face the task of balancing familial ties with peer relations. Whereas level of support in friendships were unrelated to changes in substance use, greater levels of support in relationships with mothers were associated with less frequent use of all substances in the 10th and 11th grades, as well as fewer negative outcomes. Analyses indicated that mother-adolescent support was predictive of lower levels of all substance use in the 10th grade (with the exception of tobacco), as well as decreases in hard drug use in the 11th grade. Indeed, parent support has consistently been a strong protection against pathology and substance abuse (Barber, 1992). The fact that mother-adolescent support was inversely correlated with many different types of substance use, whereas friendship qualities were not, is consistent with previous research indicating that parents and peers may affect adjustment through different mechanisms.

The findings of the current study also provide support for examining the multiple dimensions of substance use. When only one substance is examined or when composite scores are derived from compiling numerous substances, it is difficult to determine if the findings apply to all substances or just particular ones. For example, we found that negative interactions with friends only provided a unique contribution to the prediction of tobacco use. Similarly, friend's substance use was associated with increased use of alcohol and tobacco in the 11th grade, as well as negative outcomes in the 11th grade, but was not predictive of increased use of marijuana and hard drug use in the 11th grade. It appears that the increased use of marijuana and hard drugs is influenced by factors other than simply a friend's substance use. On the other hand, lower levels of support from mothers were predictive of increased hard drug use, but not increased tobacco or alcohol use. Again, these differences in findings suggest that friends and mothers play somewhat different role,



and that it is important to distinguish between the relationship factors influencing “soft” or “licit” (e.g., alcohol or tobacco ) versus “hard” or “illicit” (e.g., cocaine, methamphetamines) substances.

### **Limitations and future directions**

The present study focused on a single close friendship. It would also be important to incorporate other key relationships that emerge in adolescence, including other-sex friends and romantic partners. As other-sex friends become part of the peer network, the number of other-sex friends as well as the quality of those relationships may play an important role and may reflect the degree to which adolescents are socially adjusted. Similarly, romantic partners may also influence substance use (Troost, Langan, & Kellar-Guenther, 1999). In short, our understanding of familial and peer risk factors for substance use will benefit from taking into account the changing face of the peer environment across adolescence and examining the different familial and peer risk and protective factors associated with various facets of substance use. Finally, given that parental behavior is an important influence on adolescent behavior, it would be important for future studies to include measures of parental substance use or parental attitudes toward substances.

The present study used multiple reporters to assess qualities of relationships, but the assessment of substance use relied on the report of the participants and friends themselves. Self-reports of substance use have been found to be valid, but some subset of adolescents may underreport their usage. If anything, we believe that such underreporting may have attenuated the effects found here, as one might anticipate severe users to be most likely to underreport. In any case, it would be important in future work to include alternative or multiple indices of substance use.

Future research should include longitudinal analyses across adolescence into young adulthood to see how these processes may change. In particular, it is important to consider these processes in a developmental context, in which the relative contribution of different features of friendships may evolve over time. Some data suggest that the links between deviant friendship process in late adolescence and substance use in early adulthood may not be as strong as the links between early and middle adolescence, although they are still substantial (Dishion & Owens, 2002).

Despite these limitations, the present study demonstrates the importance of different aspects of peers and parents on different dimensions of adolescent substance use over time. Specifically, the present study suggests that aspects of relationships with parents remain critical even in mid and late adolescence. Conversely, the present study suggests the behaviors in which peers engage are a more important influence than the quality of the friendship itself. Finally, the present study demonstrated how different aspects of parents and peers influence the use and outcomes of specific substances differently. These findings have implications for intervention and prevention approaches which focus on social influences of adolescent substance use behavior.

### *Declaration of interest*

The authors report no conflicts of interest. The authors alone are responsible for the content and writing of the paper.

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