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Adolescent Romantic Couples Influence on Substance Use in Young Adulthood

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Abstract

Research has demonstrated that adolescent peer group affiliations are consistent predictors of substance use initiation and maintenance; it is less clear how adolescent *romantic* relationships influence substance use behavior. Data were drawn from the National Longitudinal Study of Adolescent Health. Participants in the final dataset for the current study included adolescents (321 males and 321 females) who were identified in reciprocated romantic relationships at Wave 1 (1994-1995; mean age 16.7 years) that were followed into young adulthood and reassessed at two different time points (Wave 2 in 1996, mean age 17.7, and Wave 3 in 2001-2002, mean age 23.1). Data were gathered from both partners, and included demographic variables, longitudinal measures of substance use (alcohol, tobacco, and marijuana), and relationship seriousness. Hierarchical linear modeling using SAS PROC MIXED were utilized to test for individual versus partner influences. Results revealed individual and partner effects for the prediction of alcohol and tobacco, although individual effects were generally greater than partner influences. For marijuana use, as self-reported relationship seriousness increased, future marijuana use decreased. These findings suggest the developmental significance of adolescent romantic relationships on the prediction of future substance use behavior during young adulthood.

Keywords

Adolescence; romantic relationships; development; longitudinal; substance use

Adolescent peer group affiliations are among the strongest and most consistent predictors of the initiation and maintenance of substance use (Petraitis, Flay, & Miller, 1995; Bauman & Ennett, 1996; Fergusson, Swain, Nicola, & Horwood, 2002). Findings suggest a great degree of similarity between adolescents' substance use and that of their peers. While much attention has focused on the importance of peer networks, it is less clear in the literature how adolescent *romantic* relationships relate to substance use behavior. For example, it may be that affiliation with romantic partners who are using substances may cause an individual to initiate, maintain, or increase his/her substance use. To date, studies have not assessed if

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there is a longitudinal effect of adolescent partner substance use on an individual's subsequent substance use behavior. Additionally, longitudinal studies of adolescent couples have: (1) been unable to determine the function of gender on the role of romantic relationships on substance use; (2) not examined whether these associations depend on type of substance used; and (3) not evaluated potential interpersonal covariates such as relationship seriousness. Exploration of each of these areas is important for prevention research and will expand our understanding of how adolescent romantic relationships affect substance use behavior across development.

Background on Adolescent Romantic Relationships and Substance Use

The transition from adolescence to young adulthood is a critical period in human development, and is considered by some as a crisis period. In Erik Erikson's classic stages of psychosocial development, the ages between 12-19 represent the crisis of Identity versus Role Confusion in which young people struggle with self-identification of who they are, and the roles they will eventually play in adulthood. The ages between 20-30 bring about new responsibilities and challenges, including greater social interests, experiencing emotions of passion, intimacy, commitment, career development, and family roles. The acquisition of interpersonal skills is required, and certain decisions that may affect the life course are made [see Bergen, (2008) for an excellent review of traditional and contemporary theories of human development]. Two factors of particular developmental significance underlying the successful transition from adolescence to adulthood are the influence of drugs and alcohol and romantic partnerships.

Although romantic partners may be considered a subset of peer networks, adolescent romantic relationships have particular developmental significance (Furman & Simon, 2006; Sullivan, 1953). For instance, romantic relationships are critical to adolescent development in the areas of autonomy, dating and sexual behaviors, and mate selection (Aalsma, Fortenberry, Sayegh, & Orr, 2006; Giordano, Enno, & Wright, 2006; Adams, Laursen, & Wilder, 2001). In contrast to friendships or other peer relations, progression to a romantic relationship also represents a fundamental shift or "boundary crossing," especially if sexual contact occurs (Haynie, Giordano, Manning, & Longmore, 2005; Maccoby, 1990). Furthermore, in their study of adolescent romantic relationships and health-harming behaviors, Haynie et al. (2005) state the following:

The basic portrait of adolescents is that they are highly interested in and often emotionally engaged, but somewhat unsophisticated about how to navigate these early relationships—this then provides a general framework for our expectation that youths may be receptive to influence or control attempts initiated by the romantic partner. (p. 181)

Additionally, although adolescent romantic relationships may be shorter in duration than peer relationships, Haynie and colleagues acknowledge that the combination of intensity, frequent contact, and social awkwardness presents a unique environment in which behavioral influence (e.g. substance use) may occur (Haynie et al., 2005). Given the importance of romantic relationships for adolescent development and well-being, the goal of the current study was to longitudinally investigate the impact of romantic partners on adolescent substance use behavior drawing on data from the National Longitudinal Study of Adolescent Health (Add Health).

One potential mechanism for romantic partner influences on substance use has been labeled the *partner influence model*, or direct partner effects (Kenny, Kashy, & Cook, 2006). Regardless of how romantic relationships are formed, this perspective suggests that one partner's own problem behavior could influence the other's health behavior (Moffitt, Caspi,

Rutter, & Silva, 2001). For example, frequent alcohol or drug use by one individual could be associated with more frequent alcohol or drug use by the other individual in an attempt to share experiences or monitor the first partner's behavior. The partner influence model is inferred by a longitudinal association between substance use of one partner at Time 1 and the opposite partner's substance use at Time 2. Although a few longitudinal studies support the partner influence model for adolescents (Sieving, Perry, & Williams, 2000), research in this area remains quite limited.

Potential Covariates and Moderating Factors

The association between adolescent romantic relationships and substance use may also depend on specific covariates with known relations to the development of adolescent substance use. In addition to partner influence processes, it is therefore important to consider other constructs such as gender, the specific type of drug used, and the overall seriousness of the romantic relationship to fully understand substance use development across time.

Gender

Research exploring the role of gender in romantic relationships on substance use has found mixed results. Rhule-Louie and McMahon (2007), in their review of the literature, conclude that gender may be an important moderator in the expression of problem behavior in adolescent romantic relationships. For instance, females tend to be more interpersonally focused than males, evidencing a greater responsiveness to their partner's behavior. In line with this finding, some evidence indicates that female health-harming behavior may be more influenced by romantic relationships than males' health-harming behavior (Moffitt et al., 2001; Moretti, DaSilva, & Holland, 2004). Research has also demonstrated females can influence male partner behavior (Homish & Leonard, 2006). For example, there is evidence of considerable female influence on men who are in a committed relationship. Specifically, males with positive marital interactions are less likely to develop or continue risky health behaviors (including substance use), suggesting a type of protective influence or "marriage effect" (Harford, Hanna, & Faden, 1994; Labouvie, 1996). These conflicting findings highlight the importance of including gender as a potential moderator of the substance use and romantic partner relationship for adolescents.

Type of Drug Used

Furthermore, the strength of male versus female influence in a romantic relationship may also depend on the type of drug used. In a study of marijuana use in marital relationships, Leonard and Homish (2005) found that husbands were more likely than wives to initiate or maintain marijuana use over the transition to marriage, suggesting significant partner influences for males but not females. For alcohol consumption and tobacco use, research demonstrates significant influences for both males and females (Ennett & Baumann, 1994; Duncan, Boisjoly, Kremer, Levy, & Eccles, 2005). For adolescents in particular, group norms regarding alcohol consumption and tobacco use, combined with a strong desire for approval and closeness, may lead to significant change in substance use behavior. In an examination of peer influences on three different types of substances, Wills and Cleary (1999) sampled 1,190 adolescent subjects and measured their individual and peer levels of tobacco, alcohol, and marijuana use. The authors utilized latent growth curve analyses and found that initial peer use was positively related to rate of change in adolescent use. The authors concluded that their results offered support for influence effects for each type of substance, regardless of gender. Although this latter study focused on peer influences (vs. romantic partner influences), the results are informative in that they suggest no differences for influence effects based on type of drug. In sum, although some evidence suggests partner influences vary by gender and drug type, other findings demonstrate remarkably similar

trends, suggesting a need to consider both variables when trying to fully detangle mechanisms of partner influence.

Relationship Seriousness

Finally, when considering the link between romantic partners and substance use, there is also some evidence that the quality or degree of seriousness of the relationship matters. In a recent investigation, Brook, Pahl, and Cohen (2008) examined marijuana use and relationship quality in a sample of 534 young adults from late adolescence to early adulthood. The authors found that marijuana use during this transitional period was associated with negative relationship quality indicators such as less relationship cohesion, harmony, and greater conflict. Although the authors controlled for factors such as early interpersonal adjustment and quality of parent relationships, the direction of these effects is often unclear. Although substance use among partners may diminish relationship quality over time, some evidence also suggests relationship conflict and difficulties may increase substance use. For example, Newcomb (1994) utilized prospective data and structural equation modeling techniques, and demonstrated that relationship quality and drug use acted in a reciprocal fashion; the variables were both predictors and consequences. It is also the case that relationship quality may exert a protective role in the manifestation of substance use behavior. Although studies have primarily assessed married couples, evidence suggests positive relationship qualities can “facilitate a turning point and provide an opportunity to change trajectories in problem behavior” (Rhule-Louie & McMahon, 2007, pg. 70). However, whether and to what degree relationship quality is related to adolescent substance use remains unclear.

Current Study

Despite the developmental importance of adolescent romantic relationships, the above review suggests research on romantic partners and substance use in adolescent populations is scarce. Studies have been predominantly restricted to adults, married couples, or adolescent peer groups (vs. adolescent romantic partners). Additionally, studies have tended to rely on second-hand reports of substance use behavior rather than couple-based report (i.e. information gathered from both partners; van der Zwaluw et al., 2009). Lastly, previous research has drawn on primarily cross-sectional samples or retrospective survey data, thus prohibiting examination of these relations across time.

The current study utilizes a representative sample of adolescents involved in romantic relationships at baseline. Participants are then assessed at two subsequent time points in early adulthood when the majority of romantic partnerships are no longer intact. This affords an excellent opportunity to explore several dimensions of adolescent romantic relationships and substance use simultaneously across the critical time period between ages 17-23. The study consists of two broad aims:

1. In an attempt to better understand the role of partner influences on substance use, the current study will assess whether adolescent romantic partners have a unique influence on substance use behavior above and beyond the effects of individual substance use. Furthermore, we will examine the longitudinal relevance of partner influences across multiple time points.
2. While it is recognized that other contextual variables may play an important role in understanding substance use behavior during adolescence, we will also evaluate to what extent gender, type of substance used, and relationship quality impact adolescent substance use behaviors across time.

Methods

Study Description

The sample was drawn from Waves 1, 2 and 3 from the National Longitudinal Study of Adolescent Health (Add Health). The basic design of the recruitment strategy of Add Health has been described in detail elsewhere (Udry&Bearman, 1998). Briefly, a random sample of 80 high schools was selected and stratified into 80 clusters based on seven factors: (1) geographical region in United States, (2) urbanicity (urban, suburban, rural), (3) school size, (4) school type (public, private, parochial), (5) percent white, (6) percent black, and (7) grade span. After the schools were selected, self-report questionnaires were administered on a single day with over 90% of all students enrolled participating in the in-school survey. In-school questionnaires and in-home interviews were conducted with this sample beginning in 1994 and 1995. At that time, 90,118 adolescents completed the in-school questionnaire. Additionally, 20,745 adolescents from 132 schools were interviewed in their homes. The second survey (Wave II) was conducted in 1996, with 13,570 respondents re-interviewed (from the original sample that had completed in-home interviews). The third survey (Wave III) was conducted in 2001 – 2002 with 14,322 respondents re-interviewed.

A unique feature of Add Health is 14 schools were selected for the saturated sample (2,526 adolescents) in which all of the adolescents were enrolled in an effort to explore social and friendship networks. Within the romantic relationship section of the in-home questionnaire, the participant is asked if they “have had a special romantic relationship with any one” in the last three months. The participant is then asked to identify up to three separate romantic relationships over the last 18 months. Relationship specific items are asked, including relationship seriousness and sexual behavior specific to each romantic couple. After the relationship section is completed, the participant is asked to search the directory of their school to highlight the name of their identified partner(s). If a partner in the school is identified, a code creates a link between the adolescent romantic couples. Hence, partnerships identified by the participant can be matched to the nominated partner’s completed data. As a result, if a participant identifies a participant from the same school building as a romantic partner, data on the complete couple is available. Participant data was not included if a participant identified a partner outside of the school system or refused to identify a partner.

For the purposes of this study, we assessed only reciprocated romantic relationships. Reciprocated relationships indicate that both members of the couple identified the other person as a romantic partner. We chose to use reciprocated couple members in order to increase our confidence that the actual relationship(s) existed. It is possible to identify more than one romantic partner in this database. Individuals who were in more than one romantic relationship were excluded from the analyses. We retained romantic relationships in the order they were reported, which is a similar procedure used by other researchers utilizing the romantic partner database (i.e. Cleveland, Herrera, & Stuewig, 2003; Haynie, Giordano, Manning, & Longmore, 2005). Reciprocated couples at Wave 1 were studied since the vast majority of romantic relationships did not continue at Wave 2 (374 dyads at Wave 1, 80 dyads at Wave 2). Hence, the analysis focuses on the role of Wave 1 romantic partnerships on future substance use behavior at Waves 2 and 3.

Participants

Three hundred seventy-four adolescent couples (748 individuals) were identified in reciprocated romantic relationships at Wave 1. There are 448 individuals at Wave 2, consisting of 160 Wave 1 couples (320 individuals) and 128 individual (40 males and 88 females) whose partners were not in the sample. There are 504 individuals at Wave 3,

consisting of 185 Wave 1 couples (370 individuals) and 134 individuals (44 male and 90 female) whose partners were not in the sample. Longitudinally, 103 Wave 1 couples have no missing values on study variables from Wave 1 to Wave 3.

The final data set consisted of 321 males and 321 females with 94 individuals missing data at Waves II or III. The age range of participants at Wave 1 was 11 to 19 years (Mean = 15.9), with 72% of participants self-identifying as White and 11% as Black.

Measures

Alcohol—Alcohol use was measured with three items, which were totaled, at Waves 1, 2, and 3 (Wave 1 $\alpha = .89$). The participants were asked to indicate the number of days over the past 12 months that they have used alcohol, drank 5 or more drinks in a row, and gotten drunk or “very, very high” on alcohol. An example of an item is “During the past 12 months, on how many days did you drink alcohol?”

Tobacco—Cigarette smoking was assessed with two items, which were totaled, at Waves 1, 2, and 3 (Wave 1 $\alpha = .78$). The first asked “During the past 30 days, on how many days did you smoke cigarettes?” and the second asked “During the past 30 days, on the days you smoked, how many cigarettes did you smoke each day?”

Marijuana—Marijuana use was assessed with a single item at Waves 1, 2, and 3 (“During the past 30 days, how many times did you use marijuana?” range 0 – 100).

Relationship Seriousness (within-couple)—The participants were asked a series of questions that were specific to their relationship seriousness at Wave 1. The items were asked of each individual in a couple and were specific to the romantic couple. Scores were based on a total score of 6-items (0 = no, 1 = yes; Wave 1 $\alpha = .78$). Items include “I gave my partner a present,” “My partner gave me a present,” “I told my partner I loved him or her,” “My partner told me that he or she loved me,” and “We thought of ourselves as a couple.” Higher scores on this measure are equivalent to “better” relationship seriousness.

Couple interaction index—This index was obtained by calculating the product of actor and partner scores (actor substance use X partner substance use). Accordingly, higher scores on this measure indicate a greater effect of the dyad on the outcome.

Demographic variables—Demographic information utilized in the analysis includes age at Wave 1, gender and race (White, Black, and other).

Statistical analyses—Demographic and behavioral characteristics of the Add Health survey subjects were summarized including mean and standard deviations. Mixed effect models with random subject-specific intercepts were used to examine the associations of adolescent relationships and later substance use (alcohol, tobacco, marijuana) for couple partners. The subject-specific random effects are introduced to accommodate the within-subject correlation among the observations contributed by the same subjects. All analyses included demographic variables of baseline age, gender, and race as covariates.

The outcome variables of interest were substance use (alcohol, tobacco, and marijuana) across time (as measured by Waves 2 and 3) and modeled in 3 separate analyses by substance use. To determine if adolescent romantic partners have a unique influence on substance use behavior above and beyond the effects of individual substance use, we included both individual *and* partner characteristics as predictors, as recommended via the Actor Partner Interaction Model (Kenny, Kashy, & Cook, 2006). Specifically, our predictors

included baseline individual levels of substance use, baseline partner levels of substance use, and individual and partner reports of relationship seriousness. Next, we examined to what extent gender moderates these relations. Gender interaction terms were created (individual substance use x gender, partner substance use x gender) and were subsequently included in the model. Finally, we were also interested in whether or not partner similarity (or dissimilarity) in substance use behavior at baseline predicted future substance use at Waves 2 and 3. This couple interaction index (an interaction term defined as the product of individual and partner scores of baseline substance use) was included in the final model.

Using multivariate analyses, a taxonomy of nested models was created (Singer & Willett, 2004). The final model was selected based on examination of statistical significance of the unique predictors, as well as changes in overall model fit by sequential deletion of predictors at each step. The most complex model was fit first (the model with all individual level predictors, partner level predictors, and demographic covariates). Partner and couple level predictors were then deleted according to significance of the predictors and change in model fit. Improvement in model fit was assessed by the change in Akaike Information Criterion (AIC) and Bayesian Information Criterion (BIC). Both criteria assess model fit as a function of model complexity, with smaller values of AIC and BIC indicating better model fit (see Raftery, 1995 for review of BIC and evaluation of BIC value differences between models). All analyses were executed using SAS PROC MIXED 9.0.

Results

Descriptive statistics and sample characteristics

Table 1 displays means and standard deviations for males and females at Wave 1, as well as measures of relationship seriousness and substance use at Waves 1, 2, and 3. The mean age of the sample was 17.1 ($SD = 1.3$) for males, and 16.4 ($SD = 1.3$) for females. Female ratings of their relationship seriousness ($M = 4.8$, $SD = 1.4$) and male ratings of relationship seriousness ($M = 4.9$, $SD = 1.5$) were similar in magnitude. In contrast, levels of substance use as measured at baseline, Wave 2, and Wave 3 for adolescent males versus females were less congruent (see Table 1). An individual's substance use was correlated with his/her romantic partner's substance use to a low-moderate degree (alcohol, $r = .25$; marijuana $r = .02$; tobacco, $r = .41$).

Multivariate findings for predicting alcohol use

The full model (presented in Table 2) evidenced the best fit to the data with AIC and BIC values for the full model being 5719.7 and 5791.0, respectively. According to the model, individual and partner factors both significantly predicted future alcohol use (as measured at Waves 2 and 3), though individual factors had a slightly greater effect ($\beta^* = .55$, $p < .001$ for individual alcohol use; $\beta^* = .31$, $p < .001$ for partner alcohol use). The main effect for gender was also significant, with males exhibiting greater overall alcohol use than females across time ($\beta^* = 1.59$, $p = .01$).

A significant couple interaction effect also emerged in the prediction of future alcohol use (couple interaction term: $\beta^* = -.03$, $p = .001$). As plotted in Figure 1, at the higher end of individual alcohol use, partner alcohol has little influence or predictive power. However, when an individual's alcohol use was on the lower end, partner alcohol use was related to future use.

Multivariate findings for predicting tobacco use

The main effect model had the best fit for the prediction of future smoking. The value of AIC was reduced to 7695.3 from the full model (7702.5), and the BIC value was reduced to

7748.8 from the full model (7773.8). Similar to the above findings for alcohol use, both individual factors and partner influences significantly predicted future smoking ($\beta^A = .68, p < .001$ for individual smoking; $\beta^A = .10, p = .01$ for partner smoking). The main effect for gender was also significant, with males exhibiting greater overall future tobacco use than females ($\beta^A = 2.30, p = .05$).

Multivariate findings for predicting marijuana use

The best fitting model for predicting future marijuana use included the main effects model and the gender interaction model. The value of AIC was reduced to 7619.7 from the full model (7620.7), and the BIC was reduced to 7677.7 from the full model (7687.6). In contrast to significant partner effects for alcohol and tobacco use, only individual effects significantly predicted future marijuana use ($\beta^A = 2.28, p < .05$ for individual marijuana use). The main effect for gender was also significant, with males exhibiting greater overall marijuana use than females across time ($\beta^A = 2.28, p = .01$). As depicted in Figure 2, a significant gender interaction also emerged in the prediction of future marijuana use. Although male and female marijuana use increased over time, males increased at a higher rate ($\beta^A = .37, p = .01$). Finally, relationship seriousness also emerged as a significant predictor for future marijuana use. Specifically, as self-reported relationship seriousness increased, future marijuana use decreased ($\beta^A = -.75, p = .01$).

Discussion

The present study yielded important information concerning the longitudinal relevance of adolescent romantic relationships for predicting future substance use behavior in adulthood. Adolescent romantic relationships are central to the critical period of adolescent development, and although the duration of these partnerships may be brief, these relationships have distinct features and may impact development of substance use behavior in either a positive or negative direction (Furman & Shomaker, 2008). In our study we found evidence that romantic relationships in adolescence predicted future alcohol and tobacco use in adulthood, although individual effects were generally stronger than partner effects. However, the finding of unique partner influences for alcohol and tobacco use highlights the importance of considering both when investigating substance use development and progression across time. The findings are particularly interesting in that romantic partnerships during adolescence (Wave 1) impacted future substance use (Waves 2 and 3) regardless of relationship continuity.

Despite these findings, the exact casual mechanism for this statistical association remains unknown. Consistent with the *partner influence model* (Kenny, Kashy, & Cook, 2006) frequent alcohol or drug use by one individual could be associated with more frequent alcohol or drug use by the other individual in an attempt to share experiences or monitor the first partner's behavior. Alternatively, having a partner engages in substance use during adolescence may affect a variety of life-course events (e.g., decision to go to college, engage in extra-curricular activities/hobbies, closeness with family or non-substance using peers) that could either increase or decrease one's drinking/smoking habits 2-5 years later. Parallel findings within the adult literature (Ogden, Morgan, Heavner, Davis, & Steichen, 1997; Lichtenstein, Andrews, Barckley, Akers, & Severson, 2002) suggest partner influences may arise through a variety of mechanisms, from simple replication of partners' attitudes and behaviors across time, to more direct methods of drug use initiation, coercion, or exacerbation (Moffitt et al., 2001; Rhule-Louie & McMahon, 2007). Furthermore, a significant couple interaction effect was found for predicting future alcohol use. Thus, the adolescents most susceptible to partner influences may be those who find a romantic partner with levels of drug use widely divergent from their own. This is in contrast to van der

Zwaluw and colleagues (2009); however, the results of this study utilized data from both individuals rather than having participants report on their partners substance use.

One potential mechanism that was present in the current study is selection effects (i.e., when one partner chooses another partner based on a common attribute such as alcohol or drug use). Selection effects were controlled for by measuring each individual participant's prior smoking, alcohol, and marijuana use. The robust standardized beta coefficients for individual and partner influences suggest it is likely *both* selection and partner influences were at work in our sample. These findings coincide with theories that both influence and selection processes are vital to understanding adolescent substance use (Leonard & Mudar, 2003). Furthermore, it appears that individual effects are more important than partner influences, although both should be considered when investigating adolescent substance use development and progression across time.

With respect to marijuana use, only individual effects emerged as a significant predictor of future use. Although little evidence was found for partner influences on marijuana use, gender and relationship seriousness emerged as significant covariates. Specifically, we found that male marijuana use increased at a faster rate than female marijuana use over time, and higher self-reported relationship seriousness was associated with decreased use. Additionally, the partner marijuana by gender interaction approached statistical significance ($p < 0.06$). This latter finding of significant male influence on partner drug use is consistent with past research suggesting that females may be more vulnerable to health-harming behavior from partners than males (Moffitt et al., 2001; Moretti et al., 2004).

In regards to relationship seriousness, our findings are in line with recent work investigating associations between marijuana use and young adulthood relationships (Brook, Pahl, & Cohen, 2008). Brook et al. (2008) sampled 534 young adults during the transition from adolescence to young adulthood, and investigated the relation between marijuana use (e.g. "During the past 5 years, how often did you use marijuana or hashish?") and relationship seriousness (relationship cohesion, relationship harmony, and disagreements with a significant other). Results mirrored those in the current study, suggesting an inverse relation between marijuana use and perceived relationship seriousness among romantic couples. Although possible mechanisms explaining the inverse relation between marijuana use and relationship seriousness were not assessed in the current study, theories put forth by Brook and colleagues involving role incompatibility, the effects of marijuana use on emotional and intimacy development, and associated depressive symptoms and/or a motivational syndrome may all function to explain this apparent developmental trend.

Although results in this study do make a clear contribution to understanding the complex relation between adolescent romantic partners and substance use across time, the current findings must be interpreted in the context of the study's limitations. One concern includes utilizing a select sample. As described earlier, individuals in the current study were identified from the saturated school sample (2,456 participants) with 748 individuals identified as being in a romantic partnership. Although the number of participants was reduced, we felt the 374 couple sample was the most appropriate group to study in order to illuminate any partner effects on substance use behavior over time. A second limitation is our sample was identified as being in a romantic relationship only at Wave 1. Eighty couples, from the original 374 couples, were also identified as being in the same relationship at Wave 2, hence, most of individuals did not remain in the same romantic relationships at subsequent Waves. In a separate analysis, we found that partner effects, in a similar direction, were also noted for this sub-sample of youth who continue in the same relationship between Waves 1 and 2. Hence, the current analysis is striking since romantic partnerships during adolescence (Wave 1) impacted future substance use (Waves 2 and 3).

regardless of relationship continuity. Lastly, our measure of relationship seriousness, consisted of rather indistinct questions (e.g. “I gave my partner a present”, “I told my partner I loved him or her”) surrounding each participant’s relationship with his or her partner. Without a measure of convergent validity, it is unclear if our scale accurately captured the construct of overall relationship seriousness. Items assessing relationship quality found within the Brook et al. study included additional dimensions such as physical affection, disagreements, and “talk” about breaking up or separating. Relationship quality is likely a multi-dimensional construct (that would include components such as seriousness, commitment, compatibility, communication), and our measure was rather limited. Researchers have begun to describe the communication and interaction among adolescent romantic couples using a variety of novel methodologies and techniques such as narrative coding and video-recall (see Galliher, Enno, & Wright, 2008 for a review). Utilizing these or similar measures are likely to summarize more salient aspects of romantic interactions among adolescent couples, and may predict future drug use behavior beyond the significant effect for marijuana use found in this study.

To date empirical evidence from adult studies, as well as literature investigating the role of peer relationships, is fairly conclusive; both partner selection and partner influence processes impact adolescent substance use behavior (Wills & Clearly, 1999; Simons-Morton, 2007). Accordingly, some researchers suggest, “It is likely that both influence and selection processes are at work among adolescents, although it is by no means clear whether one process or the other is more important or whether the relative importance differs according to developmental factors” (Leonard & Mudar, 2003, pg. 117). From this perspective, future research should incorporate each model in order to provide key insights into the ways adolescent substance use develops across time.

Although our findings suggest the need for more research on the associations between adolescent romantic relationships and substance use, we have not discovered the exact mechanisms responsible for partner influences on health-harming behavior. It will be important to explore and understand how adolescent romantic partners influence each other’s drug use beyond effects explained by individual use, as well as potential influences from peers and other important relationships in a young adult’s life. In sum, research exploring the possibility of substance use interventions not only with peer, but also romantic, relationships is warranted.

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Figure 1.
Couple interaction effect on Wave 3 alcohol use based on multilevel model

Figure 2.
Gender effect of Wave 1 marijuana use on Wave 3 marijuana use based on multilevel model

Table 1

Sample characteristics

Variable	Mean (Standard Deviation) / Percent	
	Male (n = 374 at Wave 1)	Female (n= 374 at Wave 1)
Age Wave 1	17.1 (1.3) (13 - 19.7)	16.4 (1.3) (12.1 - 19.2)
White	72%	72%
Black	12%	11%
Other race	14%	16%
Relationship Seriousness Wave 1	4.9 (1.5) (0 - 6)	4.8 (1.4) (0 - 6)
Substance use [*]		
Alcohol Wave 1	7.4 (6.0) (0 - 18)	6.2 (6.4) (0 - 18)
Smoke Wave 1	10.7 (18.2) (0 - 84)	8.1 (15.0) (0 - 60)
Marijuana Wave 1	3.7 (12.3) (0 - 100)	0.9 (3.8) (0 - 30)
Alcohol Wave 2 ^a	6.6 (6.1) (0 - 18)	5.9 (6.4) (0 - 18)
Smoke Wave 2 ^a	10.9 (19.0) (0 - 118)	9.9 (16.3) (0 - 55)
Marijuana Wave 2 ^a	3.3 (13.2) (0 - 150)	1.3 (4.5) (0 - 30)
Alcohol Wave 3 ^b	6.2 (4.9) (0 - 18)	4.3 (3.8) (0 - 16)
Smoke Wave 3 ^b	15.1 (20.7) (0 - 70)	12.9 (19.9) (0 - 110)
Marijuana Wave 3 ^b	4.8 (14.4) (0 - 100)	1.3 (4.5) (0 - 30)

^aResults based on Time 2 subjects n=200 for male and n=250 for female

^bResults based on Time 3 subjects n=229 for male and n=276 for female

^{*}Alcohol was assessed with three items to indicate the number of days over the past 12 months participants used alcohol, drank five or more drinks in a row, and or got drunk or "very, very high" on alcohol. Cigarette smoking was assessed with two items, which asked "During the past 30 days, on how many days did you smoke cigarettes?" and "During the past 30 days, on the days you smoked, how many cigarettes did you smoke each day?" Marijuana use was assessed with a single item that asked, "During the past 30 days, how many times did you use marijuana? range 0 - 100".

Table 2Multilevel modeling to test baseline actor and partner effects on substance use at Waves 2 and 3^a

Model	Measures	Alcohol	Smoking	Marijuana
Main Effect Model	Intercept	8.92 (2.29) ***	5.70 (7.06)	3.68 (5.96)
	Time	-1.11 (0.30) ***	3.97 (0.76) ***	1.08 (0.85)
	Age at Time1	-0.20 (0.11)	-0.78 (0.39) *	-0.24 (0.32)
	White	1.88 (0.46) ***	3.18 (1.47) *	-1.03 (1.19)
	Black	-0.51(0.42)	-0.75 (2.01)	-0.80 (1.66)
	Male	1.59 (0.55) **	2.30 (1.07) *	2.28 (0.93) *
	Baseline actor substance use	0.55 (0.08) ***	0.68 (0.04) ***	0.38 (0.14) **
	Baseline partner substance use	0.31 (0.08) ***	0.10 (0.04) **	-0.20 (0.18)
	Baseline actor relationship seriousness	-0.13 (0.12)	-0.54 (0.37)	-0.75 (0.32) *
	Baseline partner relationship quality	-0.17 (0.12)	0.28 (0.37)	0.57 (0.32)
Gender Interaction Model	Baseline actor $SU^2 \times$ Male	-0.06 (0.05)		0.37 (0.16) *
	Baseline partner $SU^2 \times$ Male	-0.006 (0.05)		0.19 (0.18)
Couple Interaction Model	Couple interaction	-0.03 (0.01) ***		

^aBeta regression coefficient (standard error) reported;² substance use;*
p < .05;**
p < .01,***
p < .001