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Romantic Relationships and Substance Use in Early Adulthood: An Examination of the Influences of Relationship Type, Partner Substance Use, and Relationship Quality

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Abstract

This study used longitudinal data from 909 young adults to examine associations between substance use and romantic relationship status and quality. Heavy alcohol use, marijuana use, and cigarette smoking, as well as relationship status, relationship quality, partner substance use, and other salient life circumstances were assessed at four time points in the two years after high school. Marriage, cohabiting relationships, and noncohabiting dating relationships were associated with reductions in heavy drinking and marijuana use relative to non-dating after adjusting for adolescent substance use; marriage compared to not dating was associated with reductions in cigarette smoking. For those in romantic relationships, partner substance use moderated the associations between relationship quality and substance use for heavy drinking and marijuana use, supporting the hypothesis derived from the Social Development Model that the protective effect of stronger social bonds depends on the use patterns of the partner to whom an individual is bonded.

The developmental period immediately after high school is characterized by increases in rates of heavy episodic drinking, marijuana use, and cigarette smoking (Arnett 2005; Bachman et al. 1997; White et al. 2006). An important source of influences on substance use during this developmental period is romantic relationships. Romantic relationship status, stability, and quality, as well as partner's own substance use, have been found to be related to substance use and abuse and other forms of problem behavior, even after adjusting for prior patterns of behavior (Bachman et al. 1997; Rhule-Louie and McMahon 2007). Prior studies, however, have not fully accounted for the heterogeneity of relationship status in the immediate post-high school period, failing to distinguish statuses of marriage, cohabitation without marriage, dating without cohabitation, and being truly single. Also, prior studies have not tested for the interaction between relationship quality and partner behavior, which is expected to be significant by the Social Development Model, a theoretical model that integrates social control, social learning, and differential association theories (Catalano and Hawkins 1996). The present study attempts to address these gaps by examining the effects of romantic relationships on heavy drinking, marijuana use, and cigarette smoking during the first two years after high school.

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Relationships Status

Most studies of the effects of romantic relationship status on substance use have focused on marriage and have found a strong protective effect of marriage on substance use and abuse (for a review see Rhule-Louie and McMahon 2007). The "marriage effect" has been noted in all types of health research: adults, and especially men, who are married report lower rates of morbidity, mortality, substance use disorders, mental illness, and distress than those not married (Horwitz, White, and Howell-White 1996; Umberson 1987). A protective effect of marriage has also been noted for other problem behaviors such as crime and violence (Horney, Osgood, and Marshall 1995; Sampson and Laub 1993). The protective effects of marriage are partly due to selection because healthier individuals may be more likely to marry than non-healthy individuals (Chen and Kandel 1998; Horwitz and White 1991). Numerous studies have found, however, that marriage is associated with reductions in substance use and related problems even when prior patterns of substance use were controlled (e.g., Bachman et al. 1997; Burton et al. 1996; Chilcoat and Breslau 1996; Curran, Muthén, and Harford 1998; Horwitz et al. 1996; Labouvie 1996; Leonard and Das Eiden 1999; Leonard and Rothbard 1999; Miller-Tutzauer, Leonard, and Windle 1991). The protective effect of marriage has been interpreted as stemming from the social support and social control that marriage generally provides (e.g., Maume, Ousey, and Beaver 2005; Sampson and Laub 1993; Umberson 1987). It has also been argued that the effect is primarily indirect, through marriage reducing exposure to substance-using friends (e.g., Bachman et al. 2002; Warr 1998).

The protective effect of marriage might extend to the relationship status of living with a romantic partner, but not being married. In a nationally representative sample aged 18 to 90 years, Ross (1995) found with respect to depression that cohabiting, compared to being single, had similar, though weaker, benefits. However, findings for the association between cohabiting and substance use are less clear. Although cohabiters tend to have elevated levels of substance use in adolescence prior to entering these relationships (Bachman et al. 1997; Horwitz and White 1998; Newcomb and Bentler 1987), both Bachman et al. (1997) and Horwitz and White (1998) found that earlier levels of substance use did not fully account for higher levels of substance use among cohabiters compared to married and single individuals. These findings suggest that while cohabitation offers some of the social support of marriage, it is a less traditional choice that may be associated with greater tolerance of substance use. However, Bachman and colleagues (1997) found that levels of substance use for those cohabiting but were engaged to be married were similar to their married peers, suggesting a possible anticipatory protective effect (see also Miller-Tutzauer et al. 1991). Crosnoe and Riegle-Crumb (2007) reported that the association between cohabiting (versus being single) and alcohol use was nonsignificant when alcohol use during adolescence and other life circumstances (e.g., employment and educational status) were adjusted.

Research on single young adults indicates they have higher rates of substance use than their married counterparts, although prior studies have generally categorized all non-married, noncohabiting young adults as "single." There may be important differences between single individuals involved in stable dating relationships and those not. As suggested by Ross (1995), dating relationships may be at the low end of continuum of relationship types in terms of attachment and support, and provide protective benefits like the more "serious" statuses of cohabitation and marriage, but to a lesser degree. They may also provide some of the protective benefits of marriage in terms of reduced time spent socializing with substance-using peers. Conversely, those in dating relationships may be involved in more active socializing and experience higher exposure to substance-using peer networks than those who are truly single. Some truly single individuals may be loners who engage in few social activities that involve substance use, while others may spend more time socializing

and drinking or using drugs as a means to establish social relationships or to find a partner. Given the paucity of research on the effect of noncohabiting dating relationships on substance use, the current study distinguishes single, unattached individuals from single individuals involved in a dating relationship and compares both groups to married and cohabiting young adults in terms of changes in their substance use from adolescence into early adulthood. More accurately capturing the heterogeneity of relationship statuses in early adulthood will allow for more precisely gauging and locating effects of romantic relationships on substance use and provide a basis for determining whether protective mechanisms are inherent in romantic relationships or are particular to certain types of relationships.

Relationship Characteristics and Substance Use

Previous research suggests that the effects of intimate partner relationships on substance use depend on partner use and the quality of the relationship (Rhule-Louie and McMahon 2007). Some of the association between an individual's substance use and that of their partner is due to individuals choosing partners who engage in similar types of behaviors. There has been evidence of "assortative mating" with respect to alcohol, marijuana, and cigarette use (Labouvie 1996; Leonard and Das Eiden 1999; Leonard and Mudar 2003). Evidence also supports a "contagion effect" in which change in use is influenced by the patterns of use of the new partner (Homish and Leonard 2005; Homish, Leonard, and Cornelius 2007; Leonard and Homish 2005).

Findings with respect to relationship quality have been mixed. Maume and colleagues (2005) found that marriages with low levels of attachment had no effect on marijuana cessation, whereas those married individuals with high attachment were significantly more likely to cease their use compared to those who were not married. Studies have found that poor marital quality is related to more heavy drinking, particularly by the husband (e.g., Horwitz and White 1991; Kearns-Bodkin and Leonard 2005). Some research on desistance from criminal offending indicates that it is quality of the relationship that accounts for the deterrent effect of marriage on crime commission (Sampson and Laub 1993; Simons et al. 2002). Capaldi and colleagues (2008) found that while partner antisocial behavior predicted both greater likelihood of and persistence in crime, and length of the romantic partner relationship (an indicator of level of seriousness or commitment) was negatively associated with persistence in crime, attachment to partner had no unique association with either aspect of criminality.

In the current study, we draw upon the social development model (SDM) proposed by Catalano and Hawkins (1996) to investigate the associations between relationship quality and substance use. This model integrates components of social control (Hirschi 1969), social learning (Akers 1985; Bandura 1977), and differential association (Sutherland 1973) theories. The SDM stresses the importance of social bonds in shaping behavioral outcomes, but notes that whether bonding is protective or increases risk is contingent upon the behavioral norms of the person or socializing unit to which an individual is bonded. While bonding to socializing forces such as schools or families is usually protective, because these socializing units generally endorse and model prosocial behaviors, bonding to peers can have positive or negative effects depending on the behavior patterns of the peers (Catalano and Hawkins 1999; Foshee and Bauman 1992). With respect to substance use, some studies suggest that even bonds to parents can increase substance use among children when the parents themselves model substance use or abuse (Fleming et al. 1997; Foshee and Bauman 1992). Building upon the SDM framework, we hypothesize that better relationship quality, indicating a stronger bond to partner, may promote or deter substance use depending on the

level of substance use of the partner. In other words, we believe that partner's substance use moderates the effect of relationship quality.

Current Study

We examine prospective longitudinal data from adolescence into early adulthood from a community sample to address gaps in the research on the effects of romantic relationships on substance use. First, we examine associations between substance use and relationship statuses, including marriage, cohabitation, and noncohabiting dating relationships compared to being single. While we expect to see reductions in substance use associated with marriage, we have no definite hypotheses regarding the effects of cohabiting and noncohabiting dating relationships, noting that prior research is mixed with regard to cohabiting relationships and there are plausible theoretical reasons for thinking that dating relationships may either promote or deter substance use. Second, we examine whether the effects of relationships on substance use depend on partner use, relationship quality, and the interaction between these two variables, while controlling for status (i.e., married, cohabiting, or dating) and length of relationship. Based on the SDM, we hypothesize that partner substance use will moderate the effects of relationship quality. Whereas most of the research on contagion effects and the effects of relationship quality has focused only on married individuals (Rhule-Louie and McMahon 2007), we examine these effects among individuals involved in different types of romantic relationship.

As in the study by Crosnoe and Riegle-Crumb (2007), in our analyses we control for contextual factors, including educational status, residential status, parenthood, and employment. We investigate three types of substance use: heavy drinking, marijuana use, and cigarette use. While we expect results to be generally consistent across different substances, alcohol is the most social drug during this developmental time period and may be more strongly affected by changes in social relationships, while cigarette use is the most stable and may be the least affected (Bachman et al. 1997). Given prior research that has found differences in romantic relationship effects by gender (Horwitz et al. 1996; Leonard and Mudar 2003; Rhule-Louie and McMahon 2007), we also test for moderating effects of gender.

METHOD

Design and Sample

Data are from the Raising Healthy Children (RHC) project, a longitudinal study of social development as well as an experimental evaluation of an intervention to reduce drug use and other problem behaviors (Brown et al. 2005; Haggerty et al. 2006). Experimental condition did not have a statistically significant association with any of the primary variables in this study, and tests of interaction terms in the analysis models did not show evidence that associations among study variables differed by intervention condition. We therefore combined data from participants in both the intervention and control groups for the current study.

In 1993 and 1994, 1,040 students and their parents (76% of those eligible) from 10 suburban public elementary schools in a Pacific Northwest school district consented to participate. At recruitment, 52% were in first grade and 48% were in second grade. Prior to baseline data collection, parents provided written consent for their children's participation. After age 18, youth participants provided written consent for subsequent data collection. All procedures were approved by a University of Washington Institutional Review Board.

Surveys were completed annually every spring and at two additional fall time points in the two years after high school. Data for the current study were organized by the grade level of participants. We refer to time points as if participants progressed normally through high school, even though 18% of the sample had dropped out of school as of the 12th-grade time point. Most of the spring survey data was collected via in-person interviews and questionnaires. Most of the fall surveys were conducted either in person or via the Internet.1

In order to be included in the current study, participants had to have reported on their substance use during high school and have data from at least one of the post-high school time points. These criteria excluded 131 participants, leaving an analysis sample of 909. There were no statistically significant ($p < .05$) differences between the excluded and included participants with respect to gender, ethnicity, experimental condition, or low-income status of their family at the beginning of the project. Of the 909, between 843 (93%) and 857 (95%) had data at any given time point in the post-high school period. The sample was 54% male. The ethnic/racial composition was 81% White, 5% Hispanic, 7% Asian or Pacific Islander, 4% Black, and 3% Native American. Thirty percent of participants received free/reduced-price lunch in the first two years of the study. During the spring of the 12th-grade time point, the average age was 18.19 years (*s.d.* = 0.34).

Measures

Substance use was assessed at each of the four post-high school time points based on participant's report of frequency of use in the prior month. The seven-point response options for all substances were collapsed (due to sparse frequencies for some response categories) and modeled as ordered categorical variables in the primary analysis models. *Heavy drinking* in the post-high school period was defined as the frequency of drinking "4 or more alcoholic drinks in a row" for females and "5 or more" for males in the prior 30 days (Wechsler et al. 2000) and collapsed as: "none," "1 or 2 times," "3 to 5 times," and "6 or more times." Frequency of *marijuana use* in the past 30 days was represented with three categories: "none," "1 – 9 times," and "10 or more times." *Cigarette smoking* in the past 30 days was collapsed as: "none," "less than 6 cigarettes per day," and "6 or more cigarettes per day" (White et al. 2009).2 The three types of substance use were moderately positively associated with one another.3

At each post-high school time point, participants reported their marital status, their relationships with the people with whom they lived, and whether they had "a boyfriend or girlfriend." Based on this information, relationship status at each time point was divided into *married*, *cohabiting*, *dating*, and *single*. A *dating* relationship was defined as having a boyfriend or girlfriend, but not living with that person.

Participants who reported that they had a spouse, were cohabiting, or had a boyfriend or girlfriend were asked about their partner and their relationship with their partner. They also reported on frequency of partner *heavy drinking* (how often drunk), *marijuana use*, and *cigarette use* in the past month, which ranged from 1 (never) to 5 (very often).

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[1]During the early years of high school, interview questions were read aloud by an interviewer while the respondents marked their answers on an answer sheet. Subsequent spring surveys were administered one-on-one using laptop computers. For sensitive questions (e.g., substance use), participants completed questions in a self-administered mode. For the fall post-high school surveys, about half of the sample completed the survey over the Internet and half were interviewed in person using similar procedures as the spring surveys. Analyses of those randomly assigned to administration mode in the first fall survey indicated few statistically significant differences in responses to sensitive questions between modes of administration (McMorris et al. 2009). At all four post-high school time points, less than 4% completed surveys by phone or mail.

[2]We were missing data on cigarette smoking at the first post-high school time point (F1) for the older cohort due to the smoking item being omitted from that survey.

[3]Averaged across the four time points, the correlations (Spearman's rho) between heavy drinking and marijuana use and cigarette smoking were r = .41 and r = .32, respectively, while the correlation between marijuana use and cigarette smoking was r = .43.

Relationship quality was based on items: "How much do you enjoy spending time with your boyfriend/girlfriend/spouse?", "How much support does your boyfriend/girlfriend/spouse give when you need it?", and "Overall, how satisfied are you in your relationship with your boyfriend/girlfriend/spouse?" The first two items offered response options ranging from 1 (none) to 5 (a lot); the third item's response options also ranged from 1 (very satisfied) to 5 (very unsatisfied). The score on the measure was the mean across the three items, with the third item reversed coded (mean Cronbach's alpha = .60 across time points). The measure covers three dimensions of relationship quality (support, enjoyment, and satisfaction).4 Based on Capaldi and colleagues (2008), we also included *length of relationship*, using an item for which respondents were given five response options ranging from 1 (less than one month) to 5 (more than a year).

The measures of adolescent substance use were based on participants' self-report of substance use in the annual spring surveys from Grades 9 through 12. At each time point, scores for frequency of *heavy drinking* (> 5 drinks in a row), *marijuana use*, and *cigarette use* were computed by combining information from answers about past-year and past-month use, with scores for each type of substance use ranging from 0 (none in past year) to 5 (20 or more times within the past month for heavy drinking and marijuana use; two packs or more per day within the past month for cigarette use). For each type of substance use, scores were averaged across the four years of data.

Gender, coded 1 for male and 0 for female, was included as a covariate in the primary analysis models, as well as being tested as a potential moderator of romantic relationship effects on substance use. We also included controls for life circumstances at each post-high school time point. Educational status was represented with two dummy variables for whether the participant was currently enrolled in a *four-year college* or a *two-year college*, with the reference category being not in college. Binary variables (coded 0 or 1) were used to represent whether the participants currently *live with parents*, *live with a child* of their own, and were *employed*. Finally, the time point itself (coded −3, −1, 1, 3) was included as a control variable. This adjusts for age-related trends in substance use that might confound associations between substance use and romantic relationships, since the proportion of the sample that was in married or cohabiting relationships increased with age.

Analysis

Primary research questions were addressed with multilevel models estimated with HLM 6.0 (Raudenbush et al. 2004) in which post-high school time points were nested within individuals. Up to four time points of post-high school data were possible for each individual. The multilevel modeling strategy can accommodate varying numbers and spacing of time points across individuals using maximum likelihood estimation, so that data on individuals with less than four time points of data were used in the analysis (Raudenbush et al. 2004) with the assumption that data were missing at random (Little and Rubin 1987). In the primary analysis models, participants' substance use in the post-high school period was modeled as ordered categorical. A cumulative probability model for ordinal data was used in which a latent response variable represents the likelihood of increasing across thresholds from categories of less to more substance use (Raudenbush and Bryk 2002).

[4]Due to concern over the low internal consistency of the relationship quality measure and that it covers distinct dimensions of relationship quality, we ran additional analyses using each of the three component items separately. The pattern of results was consistent across the items. With respect to the key finding for interactions between relationship quality and partner substance use, all results were in the same direction and in only one case did the interaction term not achieve statistical significance at the $p < .05$ level using a single item where it was significant using the composite measure.

In the multilevel models, gender and adolescent substance use were treated as individual-level (Level 2) variables, while all other variables were time varying (Level 1). Dependency of time points within individuals was accounted for by having the intercept of the Level 1 equation vary randomly across individuals. While random effects were tested for time and other Level 1 variables, none had variation significantly greater than zero and, in the models presented here, all effects of other Level 1 variables were treated as nonrandomly varying across individuals.

After preliminary descriptive analyses, four sets of models were run. The first set assessed "selection effects," examining the extent to which relationship status was predicted by adolescent substance use, controlling for gender and other time-varying life circumstance variables. In these models, status was treated as a multinomial categorical outcome and all sets of contrasts between pairs of relationship statuses were assessed. The second set of models assessed effects of relationship status on substance use, using a dummy variable coding of relationship status in which *single* was treated as the reference category. These models were run without controls for adolescent use and were then adjusted for use of the given type of substance during adolescence. Both gender and adolescent substance use were mean centered. We also tested whether including gender-by-status interaction terms significantly increased model fit, using the HLM optional hypothesis testing utility (Raudenbush et al. 2004).

The third and fourth sets of analyses used data only from time points at which participants reported that they were in some type of romantic relationship. The number of participants in relationships ranged from 419 to 454 across time points (see Table 1), and there were 248 individuals who were not in a relationship at any time point. For these models, relationship status was represented with two dummy variables for *married* and *cohabiting*, with *dating* being the reference category. The third set of analyses addressed "assortative mating," the extent to which adolescent use predicted partner use for each type of substance use, again controlling for life circumstances as well as relationship status. The fourth set of analyses examined the effects of partner substance use and relationship quality, first, as main effects, and second, as a possible interaction. Both partner substance use and relationship quality were grand mean centered, and the interaction term was based on the product of the two centered variables. As with models assessing relationship status effects, we tested whether associations differed for men and women.

RESULTS

Table 1 shows the frequencies of reported substance use, relationship status, and other time-varying measures at the early adult time points. Substance use frequencies changed little across time points during this time period. Approximately half the sample was not in a romantic relationship at any given time point, with a slight decline across the two years. There were increases in the percentages who were in cohabiting relationships and married across the two years, but being in a noncohabiting dating relationship was the most common status at all time points. Only a small portion was married (2% to 4% over time). About half the sample was in college at any time point, over half still lived with their parents in the first year post high school, dipping to slightly less than half in the subsequent year, and an increasing majority was employed. An increasing, but small percentage were parents. While there was overlap among these different circumstances and relationship status, it was not complete. Early marriage was more common among females, but of the 44 who reported being married at least at one time point, 9 were male.

Selection: Adolescent Substance Use Predicting Relationship Status

For all three types of substance use, those who were single reported the least use during adolescence and those cohabiting reported the most (see Table 2). Contrasts between single and both dating and cohabiting participants were statistically significant ($p < .05$, indicated by superscript in Table 2) for each type of adolescent substance use, but not significant for the contrasts between single participants and the small number of married participants. For adolescent marijuana use and smoking, but not for heavy drinking, those in cohabiting relationships reported more use than those in dating relationships.

Relationship Status and Substance Use Before and After Controlling for Selection

Table 3 shows the results of models predicting substance use by relationship status. The model coefficients are in logit units that can be interpreted in terms of direction and statistical significance and in the relative magnitude of effects for dichotomous variables within a given model. Prior to adjusting for heavy drinking in adolescence, cohabiting and marriage were associated with less heavy alcohol use compared to being single. After adjusting for adolescent use, being in a dating relationship was also significantly negatively associated with heavy drinking compared to being single. The coefficients for the relationship status effects on heavy drinking showed that the strongest protective effect was for marriage, the next strongest for cohabiting, and the weakest for dating relationships. The results with respect to relationship statuses were similar for marijuana use. Marriage and cohabiting were negatively associated with marijuana use compared to being single before and after adjusting for selection effects, while a dating relationship was significantly associated with lower marijuana use than being single after adjusting for adolescent marijuana use. Estimates for the models for cigarette use, on the other hand, showed fewer significant associations with relationship status. Only after controlling for adolescent smoking was there a negative and statistically significant association between marriage and smoking.

For each type of substance use, adding gender-by-relationship-status interactions did not improve model fit ($\Delta\chi^2$ (Δ *df*) = 3.79 (3), $p > .05$ for heavy drinking; $\Delta\chi^2$ (Δ *df*) = 7.10 (3), $p > .05$ for marijuana use; and $\Delta\chi^2$ (Δ *df*) = 3.13 (3), $p > .05$ for cigarette use). Thus, the associations between relationship status and substance use were similar for men and women.

Assortative Mating: Adolescent Substance Use Predicting Partner Use

Adolescent substance use was positively associated with partner substance use across substances. The overall average Pearson's correlation across the four early adult time points was $r = .22$ between adolescent heavy drinking and partner heavy drinking, $r = .36$ between adolescent marijuana use and partner marijuana use, and $r = .41$ between adolescent cigarette use and partner cigarette use. Tested with multilevel models in which partner use at a given time point was treated as the dependent variable and adjusting for gender and life circumstances, each of these associations between adolescent use and partner use was positive and statistically significant (coefficient = 0.28, se = 0.04, $p < .001$ for alcohol use; coefficient = 0.34, se = 0.04, $p < .001$ for marijuana use; coefficient = 0.58, se = 0.06, $p < .001$ for cigarette use).

Estimated Effects of Partner Substance Use, Relationship Quality, and Length in Relationship

Estimates for models assessing the associations between substance use and relationship characteristics are shown in Table 4. While associations between partner use and participant use were reduced after adjusting for adolescent use, thus adjusting for the assortative mating process, there were positive and significant associations found between partner use and

participant use for each of the three types of substance use. Main effects for relationship quality were nonsignificant for heavy drinking and marijuana use, while better relationship quality had a significant negative unique association with cigarette smoking. Some support was found for the hypothesis derived from the SDM that the relationship between substance use and relationship quality is moderated by partner substance use. Interaction terms between relationship quality and partner use were statistically significant for heavy drinking and marijuana use. Both of these interactions indicate that better relationship quality was related to less substance use when the partner was a nonuser, but that the association was in the opposite direction when the partner had high levels of use (see Figure 1 and Figure 2). The interaction term between better relationship quality and partner cigarette smoking was not statistically significant. Marriage, compared to being in a dating relationship, was related to significantly less heavy drinking, marijuana use, and cigarette smoking. Length of relationship had a negative association with each type of substance use.

Tests of gender differences in the effects of length of relationship, relationship quality, partner substance use, and the interaction between relationship quality and partner substance use indicated no differential effects of relationship characteristics by gender. Adding the four interaction terms to the model did not result in a significant improvement in model fit ($\Delta\chi^2$ (Δ *df*) = 5.14 (4), $p > .05$ for heavy drinking; $\Delta\chi^2$ (Δ *df*) = 5.76 (4), $p > .05$ for marijuana use; and $\Delta\chi^2$ (Δ *df*) = 5.90 (4), $p > .05$ for cigarette use).

DISCUSSION

The first goal of this study was to assess whether romantic relationships of different types are protective with respect to substance use. In contrast to prior studies, we focused on the immediate post-high school period and treated dating, noncohabiting relationships as a discrete relationship status. We found that all three types of relationships were protective for heavy drinking and marijuana use relative to being single, while cigarette smoking was lower only for married compared to single individuals.

Although early marriage was associated with relatively high levels of prior substance use in adolescence, marriage had the strongest negative association with substance use compared to the three other relationship statuses, and was the only status to have a significant negative association with cigarette use. Although our models adjusted for parenthood, this finding may be partly attributable to females curbing substance use due to actual or planned pregnancy. The finding of a strong marriage effect corroborates prior studies of substance use in older samples (Bachman et al. 1997; Burton et al. 1996; Chilcoat and Breslau 1996; Curran et al. 1998; Horwitz et al. 1996; Labouvie 1996; Leonard and Das Eiden 1999), and, along with the findings regarding relationship length, point to a negative association between relationship seriousness and substance use. More generally, the findings corroborate research on the health benefits of social support, control, and integration that accompany marriage (Ross 1995; Sampson and Laub 1993; Umberson 1987).

In contrast to studies that have found cohabiting relationships to be associated with elevated levels of substance use (e.g., Bachman et al. 1997; Horwitz and White 1998), we found cohabiting relationships to be protective compared to being single. Although those in a cohabiting relationship had higher levels of adolescent substance use than those who were single or in dating relationships, as has been found previously (e.g., Bachman et al. 1997; Horwitz and White 1998), in early adulthood cohabiting was associated with less heavy drinking and less marijuana use than being single. Adjusting for prior use suggested even stronger protective effects compared to being single. The difference between our findings and prior studies may reflect a historical change as cohabitation has become more common. Findings from data collected in 2001 and 2002 on a nationally representative sample

indicated no difference between cohabiters and single young adults in terms of alcohol use (Crosnoe and Riegle-Crumb 2007). The difference in findings between our study and other studies may also be due to our focus on ages 19–20. In our sample, being in a cohabiting relationship seems to carry some of the same protective effects of marriage and may be a sign of early adoption of adult responsibilities and less freedom to use alcohol and marijuana, rather than a sign of unconventional beliefs. We lacked data on whether youth in cohabitating relationships were engaged to be married. If we pulled those who were engaged out of this category, we might have seen weaker protective effects.

To our knowledge, no prior study has reported on the effects of having a boyfriend or girlfriend, but not living with the partner, on substance use in young adulthood. These participants were heavier substance users in high school than those who were not in romantic relationships in young adulthood. Controlling for this adolescent difference revealed that dating relationships were associated with less heavy drinking and marijuana use compared to single status. This finding supports the perspective that relationship statuses can be placed on a continuum of seriousness (Ross 1995), and even dating relationships activate mechanisms of support and control, although to a lesser extent than more serious relationship statuses of cohabitation or marriage. Individuals not involved in any kind of romantic relationship were at greatest risk for frequent substance use, even though they tended to use less during high school. For these individuals, the new freedoms of early adulthood and lack of social control from a partner posed the greatest risks in terms of escalation of substance use.

The second goal of this study was to examine characteristics of relationships that may regulate risky behavior and to test a hypothesis derived from the SDM that the association between relationship quality and substance use is moderated by partner substance use. Main effects of partner substance use found across the three substances, even after adjusting for assortative mating processes, are evidence of contagion effects consistent with findings from prior studies (Leonard and Homish 2005; Rhule-Louie and McMahon 2007). We found no overall associations between relationship quality and either heavy drinking or marijuana use, although we did find a negative association between better relationship quality and cigarette smoking. However, we found evidence that better relationship quality was protective against heavy drinking and marijuana use when the romantic partner was engaging in no, or lower levels of substance use. These latter findings are consistent with the SDM hypothesis that the influence of social bonds depends on the behavior of the socializing unit to which an individual is bonded (Catalano and Hawkins 1996). Some prior studies on heavy alcohol use and marital quality have emphasized the effect of heavy drinking on marital quality rather than the reverse effect. In adjusting for assortative mating processes, our study provides some evidence that the reverse may be true, that is, that relationship quality may influence drinking behavior. Further longitudinal research that takes into account temporal ordering of these variables is required to determine if the association is reciprocal (Kearns-Bodkin and Leonard 2005).

Although findings were similar for heavy drinking and marijuana use, there were fewer significant predictors of smoking with respect to relationship status and the hypothesized interaction between relationship quality and partner substance use was not significant for smoking. Similarly, Bachman and colleagues (1997) found that smoking was less affected by roles and statuses than alcohol or marijuana use, likely due to the higher stability of smoking across time.5 Smoking is also a less social drug, and legal at this age, which also might account for differences between cigarettes and the other two substances.

[5]This stability is seen in our data: the average correlation (Spearman's rho) between adolescent and post-high school substance use was r = .45 for heavy drinking, r = .55 for marijuana, and r = .67 for cigarettes.

Some prior studies have found evidence that effects of romantic relationship status and qualities of these relationships may differ by gender (Rhule-Louie and McMahon 2007). Our tests of interactions between gender and relationship status and characteristics found no significant gender differences. This might be due to the young age of the sample or the limited power to test for differential effects of marriage due to the small number people, particularly males, in this status.

There are additional limitations to our study. The meaning of relationship statuses changes rapidly and may vary by country, region, or ethnicity. Our sample was from one geographic region and was over 80% White and results may not generalize to other samples. Our measure of relationship quality was less extensive than measures of relationship quality used in some other studies (e.g., Capaldi et al. 2008; Kearns-Bodkin and Leonard 2005). Nonetheless, the measure covered key components of relationship quality and was significantly related to substance use when the moderating influence of partner use was considered. In addition, results were consistent across the three component items (see Note 4).

Despite these limitations, the findings point to romantic relationships as an important mechanism regulating substance use patterns during early adulthood. Our new finding regarding dating relationships indicates that simply having a boyfriend or girlfriend during this age period is associated with less heavy drinking and marijuana use relative to peers not in relationships. This suggests that protective mechanisms are generally present in all types of romantic relationships in early adulthood, although stronger for more “serious” relationships. We also found that, across different relationship statuses, partner use is important and moderates the associations between relationship quality and both heavy drinking and marijuana use. More supportive, enjoyable, and satisfying relationships were related to less use only in situations in which the intimate partner was not substantially involved in substance use. These findings show how bonding, adopting the behavior patterns of a partner, and the interaction between these two processes influence substance use in early adulthood.

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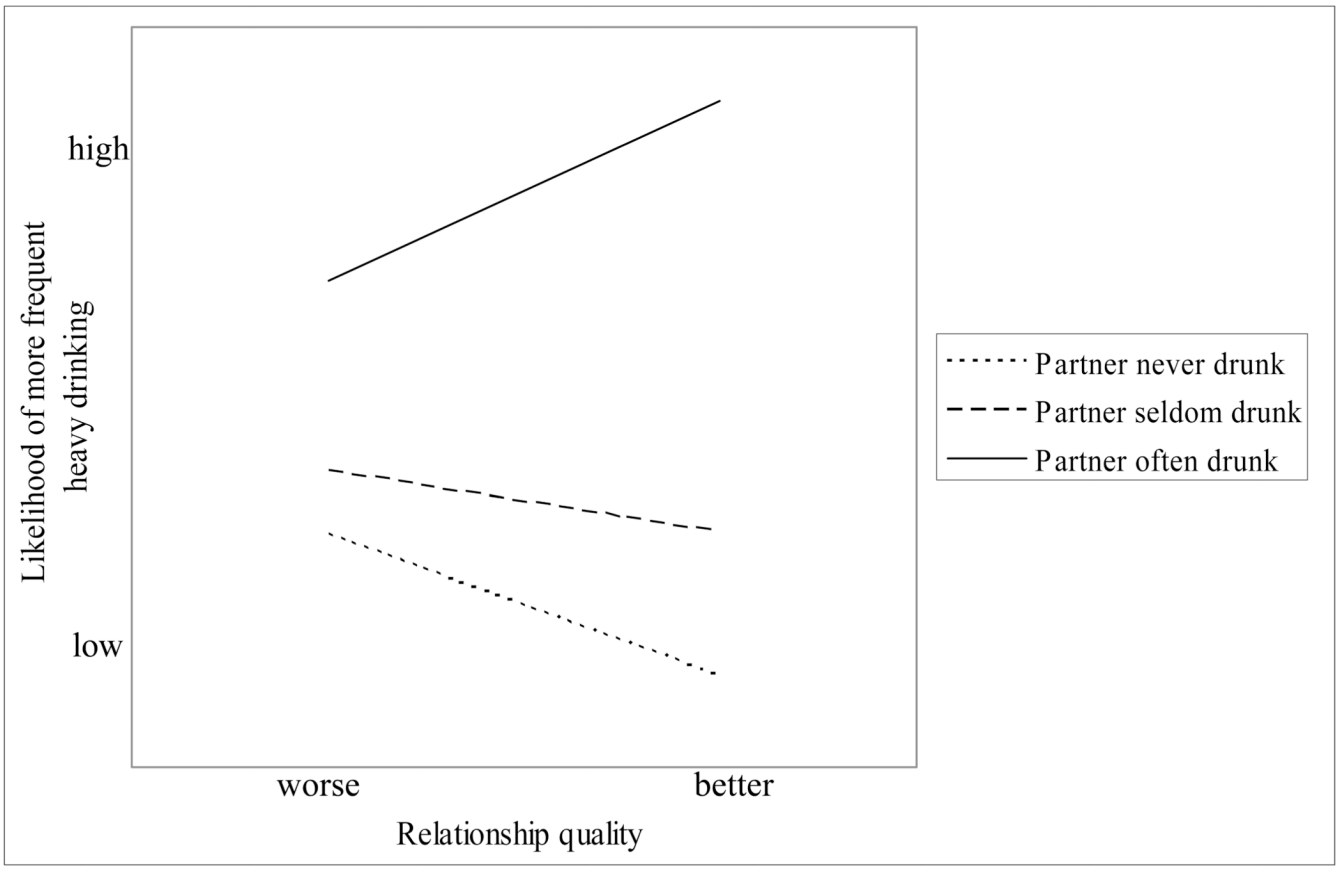

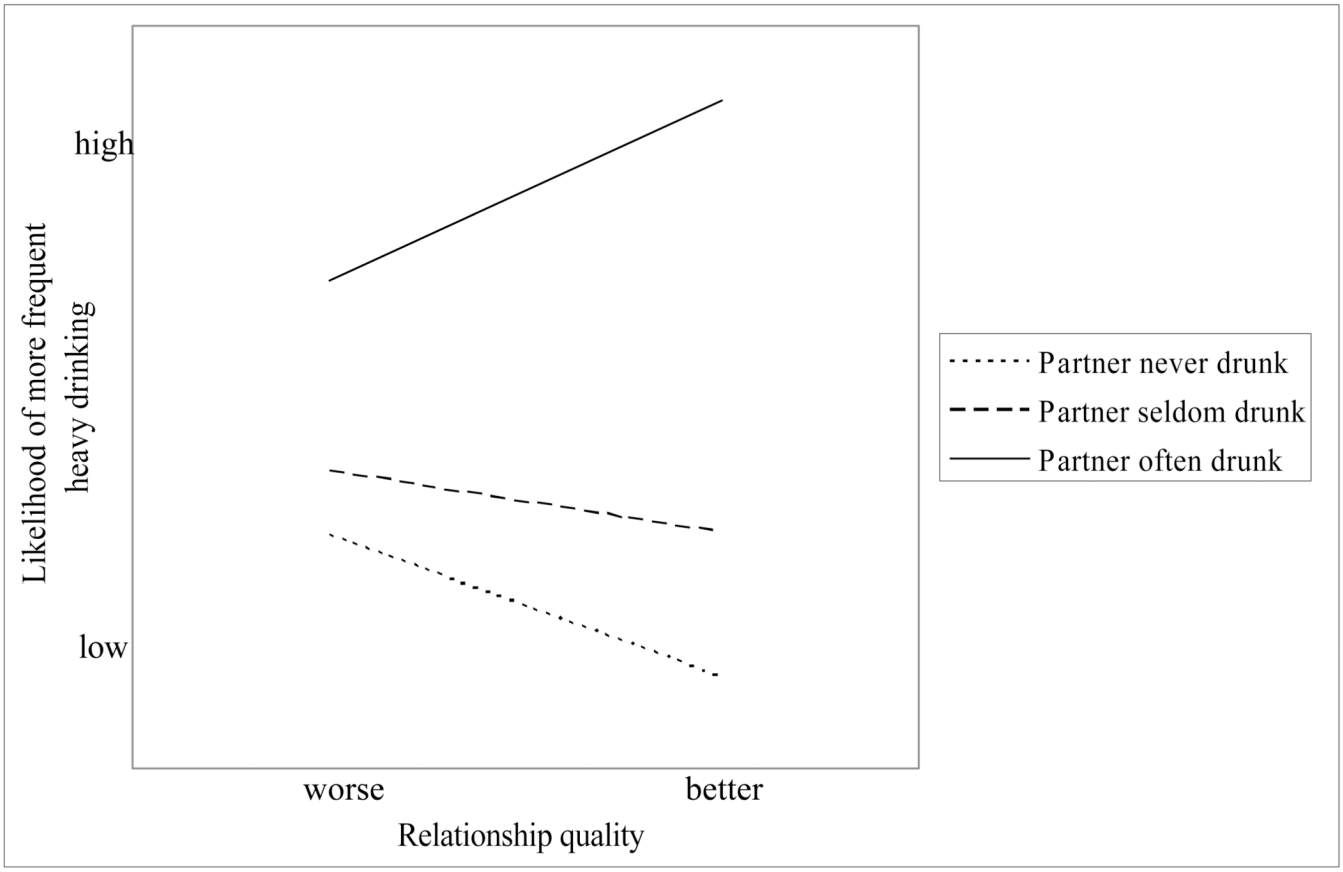

Figure 1.
The associations between relationship quality and heavy drinking by three levels of partner drinking. The Y-axis is the likelihood of higher frequency of heavy drinking based on the latent response variable for heavy drinking modeled as an ordinal variable, with higher values representing greater likelihood of more frequent heavy alcohol use.

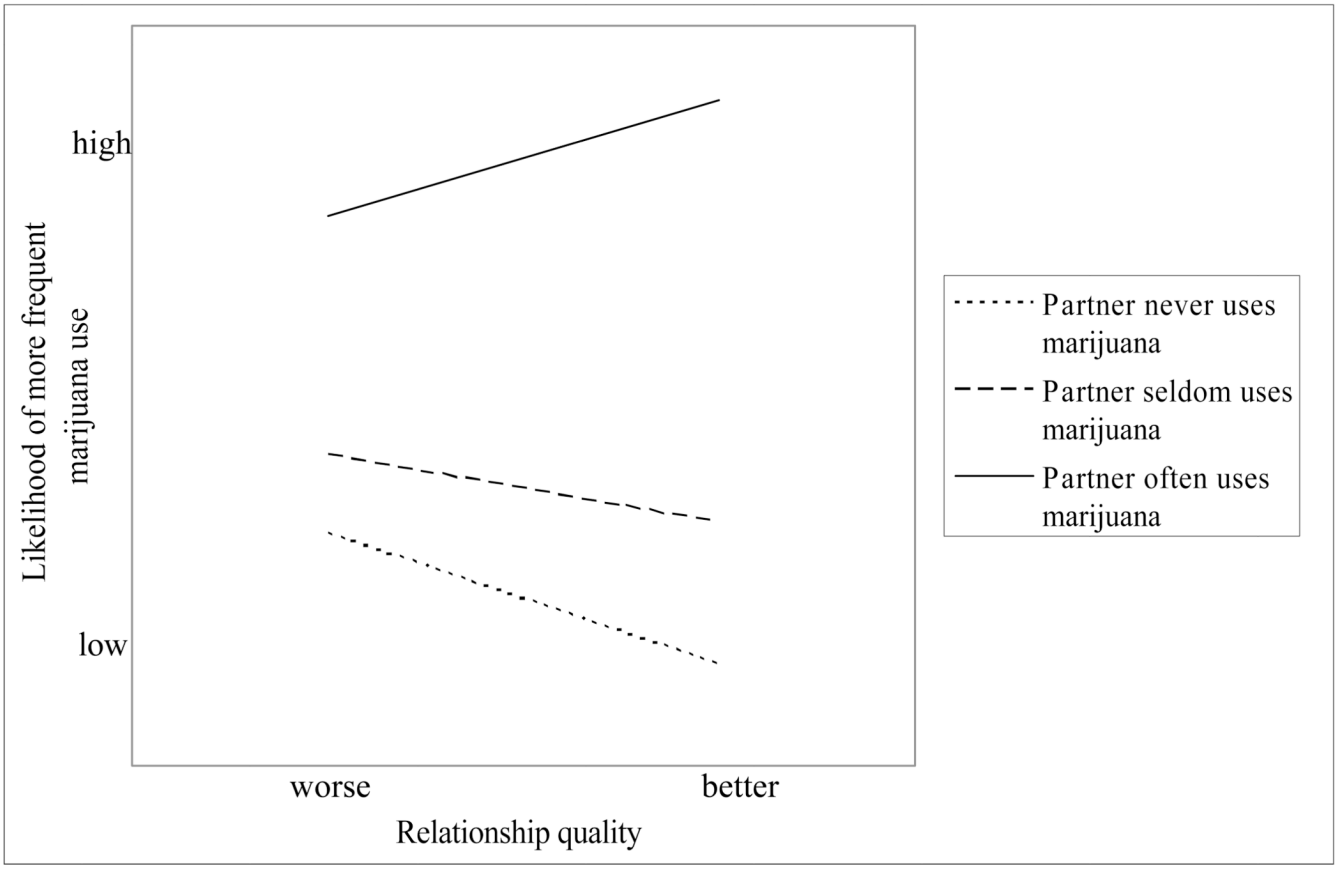

Figure 2.
The associations between relationship quality and marijuana use by three levels of partner marijuana use. The Y-axis is the likelihood of higher frequency of marijuana use based on the latent response for frequency of marijuana use modeled as an ordinal variable, with higher values representing greater likelihood of more frequent marijuana use.

TABLE 1

Frequencies of Substance Use, Relationship Status and Other Life Circumstances at the Four Post-High School Time Points

	F1	S1	F2	S2
	n = 857	n = 851	n = 853	n = 843
	n (%)	n (%)	n (%)	n (%)
Heavy drinking				
None	492 (57)	519 (57)	485 (53)	524 (58)
1 – 2 times	148 (17)	162 (18)	175 (19)	166 (18)
3 – 5 times	98 (11)	104 (12)	109 (12)	101 (11)
6 or more times	124 (14)	119 (13)	139 (15)	117 (13)
Marijuana use				
None	602 (70)	646 (71)	630 (69)	635 (70)
1 – 9 times	167 (19)	142 (16)	168 (19)	149 (16)
10 or more times	94 (11)	118 (13)	112 (12)	124 (14)
Cigarette smoking[a]				
None	285 (65)	536 (63)	529 (62)	527 (63)
< 6 per day	82 (19)	162 (19)	166 (19)	148 (18)
> 5 per day	72 (16)	155 (18)	163 (19)	167 (20)
Relationship status				
Single	438 (51)	433 (51)	415 (49)	389 (46)
Dating	324 (38)	311 (37)	290 (34)	283 (34)
Cohabiting	82 (10)	89 (11)	114 (13)	139 (17)
Married	13 (2)	18 (2)	34 (4)	32 (4)
College status				
Not in college	479 (55)	488 (57)	511 (59)	517 (61)
Four-year	176 (21)	175 (21)	173 (21)	176 (21)
Two-year	202 (24)	188 (22)	169 (20)	150 (18)
Live with parent	510 (60)	508 (60)	410 (48)	402 (48)
Live with child	11 (1)	26 (3)	30 (4)	37 (4)
Employed	526 (61)	576 (68)	618 (73)	645 (77)

[a] Frequency of cigarette use in the fall of the first post-high school year was not available for the older cohort in the sample.

Note: F1 = fall of first post-high school year; S1 = spring of first post-high school year; F2 = fall of second post-high school year; S2 = spring of second post-high school year.

Table 2

Mean of Adolescent Substance Use by Relationships Status

	Not in a relationship	Dating relationship	Cohabiting	Married
	n = 1656†	n = 1196†	N = 420†	N = 97†
Adolescent use	**m (sd)**	**m (sd)**	**m (sd)**	**m (sd)**
Heavy drinking	0.60 (0.87)[a,b,c]	0.75 (0.92)[a]	0.95 (0.98)[b]	0.75 (0.95)[c]
Marijuana use	0.77 (1.18)[a,b,c]	0.86 (1.17)[a,d]	1.28 (1.32)[b,d]	1.00 (1.14)[c]
Cigarette smoking	0.51 (0.85)[a,b,c]	0.61 (0.87)[a,d]	1.07 (1.12)[b,d]	0.84 (1.00)[c]

†There are up to four time points for each individual in the sample; the sample size for each relationship status refers to total number of time points at which this status was reported.

Note: Within each row, means with the same superscript are significantly different from one another ($p < .05$) based on results from multilevel models that adjust for dependency of time points within individuals and control for educational, residential, parenthood, and employment status.

Table 3

Post-high School Substance Use Predicted by Romantic Relationship Status (n = 909)

	Heavy drinking		Marijuana use		Cigarette smoking	
	Main effects of status Coef. (SE)	Adjusting for prior use Coef. (SE)	Main effects of status Coef. (SE)	Adjusting for prior use Coef. (SE)	Main effects of status Coef. (SE)	Adjusting for prior use Coef. (SE)
Intercept	2.18* (0.16)	1.56* (0.16)	2.11* (0.19)	1.50* (0.18)	−2.02* (0.19)	−2.46* (0.19)
Male	0.18 (0.15)	0.05 (0.13)	0.47* (0.17)	0.23 (0.16)	0.25 (0.20)	0.50* (0.17)
Adolescent use		1.31* (0.08)		1.32* (0.07)		2.38* (0.13)
Time	0.00 (0.02)	0.01 (0.02)	0.00 (0.02)	0.01 (0.02)	0.02 (0.02)	0.04 (0.03)
Married	−0.95* (0.37)	−1.19* (0.41)	−1.32* (0.44)	−1.86* (0.47)	−0.55 (0.50)	−1.19* (0.51)
Cohabiting	−0.53* (0.17)	−0.69* (0.17)	−0.39* (0.18)	−0.65* (0.19)	0.08 (0.20)	−0.29 (0.21)
Dating	−0.12 (0.11)	−0.21* (0.10)	−0.21 (0.11)	−0.33* (0.12)	0.05 (0.12)	−0.07 (0.13)
Four-year college	−0.21 (0.17)	0.40* (0.16)	−1.02* (0.19)	−0.15 (0.19)	−1.97* (0.23)	−0.99* (0.21)
Two-year college	−0.22 (0.14)	−0.04 (0.12)	−0.50* (0.15)	−0.17 (0.15)	−0.71* (0.16)	−0.41* (0.16)
Live with parent	−0.51* (0.11)	−0.42* (0.11)	−0.49* (0.13)	−0.43* (0.13)	−0.47* (0.13)	−0.34* (0.14)
Live with child	−0.88* (0.34)	−1.13* (0.35)	−0.37 (0.46)	−0.72 (0.43)	−0.31 (0.36)	−0.32 (0.41)
Employed	0.08 (0.11)	0.15 (0.10)	−0.06 (0.11)	0.05 (0.12)	−0.11 (0.12)	−0.02 (0.13)

* $p < .05$.

Note: Coef. = coefficient

Table 4

Post-high School Use Predicted by Relationship Characteristics Among Those in Relationships (n = 621)

	Heavy drinking		Marijuana use		Cigarette smoking	
	Main effects	Main effects and interaction	Main effects	Main effects and interaction	Main effects	Main effects and interaction
	Coef. (SE)	Coef. (SE)	Coef. (SE)	Coef. (SE)	Coef. (SE)	Coef. (SE)
Intercept	−1.94* (0.23)	−1.95* (0.23)	−2.14* (0.25)	−2.13* (0.26)	−2.44* (0.26)	−2.44* (0.26)
Male	0.39* (0.16)	0.38* (0.16)	0.51* (0.19)	0.52* (0.19)	0.77* (0.22)	0.76* (0.22)
Adolescent use	0.97* (0.09)	0.96* (0.09)	1.03* (0.08)	1.03* (0.08)	1.98* (0.15)	1.98* (0.15)
Time	0.01 (0.03)	0.00 (0.03)	0.02 (0.03)	0.02 (0.03)	0.02 (0.03)	0.02 (0.03)
Married	−0.85* (0.38)	−0.80* (0.39)	−1.40* (0.48)	−1.41* (0.46)	−1.12* (0.43)	−1.10* (0.43)
Cohabiting	−0.22 (0.17)	−0.23 (0.17)	−0.20 (0.20)	−0.18 (0.21)	−0.13 (0.22)	−0.13 (0.22)
Time in relationship	−0.11* (0.05)	−0.10 (0.05)	−0.17* (0.06)	−0.17* (0.06)	−0.17* (0.07)	−0.17* (0.07)
Four-year college	0.47* (0.20)	0.47* (0.20)	0.04 (0.26)	0.05 (0.26)	−0.55* (0.27)	−0.54* (0.27)
Two-year college	0.03 (0.18)	0.01 (0.18)	−0.15 (0.22)	−0.18 (0.22)	−0.31 (0.21)	−0.32 (0.22)
Live with parent	−0.13 (0.15)	−0.10 (0.15)	−0.21 (0.19)	−0.20 (0.19)	−0.25 (0.19)	−0.24 (0.19)
Live with child	−1.10* (0.40)	−1.08* (0.39)	−0.54 (0.47)	−0.44 (0.46)	−0.51 (0.46)	−0.51 (0.45)
Employed	−0.01 (0.18)	−0.02 (0.15)	0.06 (0.16)	0.04 (0.16)	−0.03 (0.18)	−0.04 (0.18)
Relationship quality[a]	−0.08 (0.11)	−0.20 (0.11)	−0.20 (0.13)	−0.31* (0.13)	−0.39* (0.13)	−0.41* (0.14)
Partner use	0.74* (0.06)	0.77* (0.06)	0.78* (0.07)	0.82* (0.07)	0.52* (0.06)	0.52* (0.06)
Relationship quality[a] X partner use		0.30* (0.08)		0.23* (0.08)		0.05 (0.07)

[a] A higher score on the relationship quality measure indicates better relationship quality.

* $p < .05$.

Note: Coef. = coefficient