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Adolescent Friend Similarity on Alcohol Abuse as a Function of Participation in Romantic Relationships: Sometimes a New Love Comes Between Old Friends

Dawn DeLay,

Arizona State University

Brett Laursen,

Florida Atlantic University

William M. Bukowski,

Concordia University

Margaret Kerr, and

Örebro University

Håkan Stattin

Örebro University

Abstract

This study tests the hypothesis that adolescents with romantic partners are less similar to their friend on rates of alcohol abuse than adolescents without romantic partners. Participants (662 girls, 574 boys) ranging in age from 12 to 19 years, nominated friends and romantic partners, and completed a measure of alcohol abuse. In hierarchical linear models, friends with romantic partners were less similar on rates of alcohol abuse than friends without romantic partners, especially if they were older and less accepted. Follow-up longitudinal analyses were conducted on a subsample (266 boys, 374 girls) of adolescents who reported friendships that were stable across two consecutive years. Associations between friend reports of alcohol abuse declined after adolescents became involved in a romantic relationship, to the point where they became more similar to their romantic partners than to their friends.

Keywords

Adolescence; Alcohol Abuse; Friendship; Romantic Relationships; Homophily

Homophily is a hallmark of adolescent friendships. Not coincidentally, most adolescents report friends to be among their most important relationships (Laursen & Williams, 1997). However, the initiation of romantic relationships may alter the nature and balance of close friendships, potentially changing the degree to which friends resemble one another by

reducing the influence that each holds over the other's behavior. Longitudinal research with adults suggests that alcohol consumption more closely resembles that of spouses than that of friends (Laub & Sampson, 2003; Rosenquist, Murabito, Fowler, & Christakis, 2010). Less is known about patterns of drinking similarity during the adolescent years, when most individuals first consume alcohol and first become involved in romantic relationships. Using a community sample of Swedish youth, the present study examines the degree to which concurrent friend similarity on alcohol abuse varies as a function of heterosexual romantic relationship participation. Longitudinal analyses with a subsample of participants illustrate changes in the degree to which friends resemble one another on rates of alcohol abuse after one member of the dyad becomes involved in a heterosexual romantic relationship.

Homophily describes similarity between members of a close relationship (Lazarsfeld & Merton, 1954). Adolescents tend to resemble friends and romantic partners in the extent to which they abuse alcohol (Kreager & Haynie, 2011; Popp, Laursen, Kerr, Stattin, & Burk, 2008). This similarity arises from two sources, selection and influence. Selection describes preexisting similarities that are the basis for the establishment of a relationship. Influence describes similarities that are the product of participation in the relationship. Adolescents select partners with similar drinking practices and then influence one another in a manner that increases these similarities. The latter is of particular concern because of worries that adolescents are vulnerable to peer pressure to engage in health risk behaviors, such as alcohol abuse. To better understand both the relative importance of different sources of peer (i.e., friends, romantic partners, and other agemates) pressure and potential individual differences in susceptibility to influence from peers, the present study compares adolescents with and without romantic partners on the degree to which they resemble their friends in rates of alcohol abuse.

Alcohol consumption in Western cultures typically begins sometime during the second decade of life. Most youth consume their first alcoholic beverage during middle adolescence, with a steady increase in consumption during the years that follow (Windle, 2003). Drinking to intoxication is a common form of alcohol abuse during adolescence. One study found that by age 15, 40% of adolescents report having been intoxicated at least once during the past month, a figure that rises dramatically for older adolescents (Johnston et al., 2003). The costs associated with adolescent alcohol abuse are considerable. Adolescents who frequently abuse alcohol are at risk for alcohol dependence as adults (McCambridge, McAlaney, & Rowe, 2011). The misuse of alcohol during adolescence has been tied to accidents (many fatal), depression, suicide, violence, and the spread of infectious diseases (Boden & Fergusson, 2011).

Peer influence is often invoked as a risk factor for adolescent alcohol abuse because consumption is usually confined to gatherings with agemates (Bot et al., 2004). Adolescents are thought to be particularly susceptible to peer influence. Heightened conformity may be a function of declining parent supervision and increasing exposure to agemates in unsupervised settings (Warr, 1993). The lack of a clear identity, coupled with individuation from parents, gives rise to uncertainty about how to behave in new circumstances, such as those where alcohol is available. However, conforming to valued peers may elevate the sense of self (Brechwald & Prinstein, 2011). Finally, adolescence is accompanied by

changes in the brain that are important to social information processing. These changes may increase attentiveness to the opinions of peers and motivations for risk-taking and engaging in activities that are reserved for adults, such as consuming alcohol (Nelson, Leibenluft, McClure, & Pine, 2005).

Most discussions of adolescent peer influence begin with friends. Few youth report romantic relationships during the early adolescent years, so (by default) friends are initially the most important and most influential peer relationship (Furman, Ho, & Low, 2007). As rates of romantic involvement increase, so does the importance of romantic relationships. Across the adolescent years, romantic relationships rival and eventually surpass friendships in terms of closeness (Laursen & Williams, 1997). Commensurate increases in romantic partner influence have been documented (Adams, Laursen, & Wilder, 2001). Friends are keenly aware of their changing fortunes. In one study, almost half of all middle school respondents reported feeling excluded when a friend began dating (Roth & Parker, 2001).

Several explanations have been advanced to explain the declining influence of friends vis-à-vis romantic partners. The first is perhaps the most obvious. Influence may be a product of exposure. Adolescents involved in romantic relationships tend to spend more time in the company of their romantic partners than in the company of their friends (Zimmer-Gembeck, 2002). Romantic partners may even act as gatekeepers, limiting the type and frequency of exchanges with friends (Rhule-Louie & McMahon, 2007). Reducing exposure or restricting access to friends may minimize the influence that friends have over alcohol consumption by constraining the settings and opportunities for social drinking. Finally, inexperience and anxiety about other-sex interactions may make adolescents compliant and eager to please romantic partners (Furman & Collins, 2008). As a consequence, adolescents may be inclined to conform to the wishes of a romantic partner and demonstrate independence from friends in social situations where alcohol is available.

Shifts in the degree to which friends resemble one another are assumed to flow from alterations in friend influence. Romantic partners dilute cohesion between friends, which undermines the strength of friend influence. As cohesion declines, conformity pressures wane (Hartup, 1996). An adolescent disengaged from friends who hold identities that hinge on the presence or absence of alcohol abuse may have fewer opportunities to match the drinking behaviors of these friends and fewer motives to do so. Moreover, romantic partners expect behavioral congruence, which can further diminish friend alcohol abuse similarity. Romantic partners have strong motives to enhance convergence. Similarity promotes intimacy and increases relationship stability (Gonzaga, Campos, & Bradbury, 2007). Forced to choose between conflicting prescriptions in different relationships, adolescents may opt for conformity with romantic partners over conformity with friends on the grounds that relationships with friends are more resilient and more likely to withstand behavioral divergence than newly established romantic relationships (Furman & Wehner, 1997).

Empirical evidence demonstrates adolescents report rates of alcohol abuse that are more closely in line with those of romantic partners than with those of friends (Aikens et al., 2010; Kreager & Haynie, 2011). Although not directly tested, these findings imply that as friend influence declines with the onset of romantic relationships so too does similarity

between friends. The present study is a first step toward addressing this claim. Previous studies have not addressed changes in friend similarity in response to the acquisition of a romantic partner, an important step in ruling out the alternative explanation that differences in friend similarity are due to characteristics of those who do and do not have romantic partners. The present study is also unique in that it addresses moderators that heretofore have not been empirically considered as factors that alter the degree to which friendships are impacted by the onset of romantic relationships.

We hypothesized that adolescents with romantic partners would be less similar to friends in rates of alcohol abuse than adolescents without romantic partners. Similarity was operationalized in terms of mean level differences between friends: Small differences in rates of alcohol abuse represent high similarity. A unique multilevel model design will explore the association between friend alcohol abuse similarity and romantic relationship participation. Several potential moderators of this association will be considered. We selected moderators that represent factors known to affect the salience and relative importance of romantic relationships, on the assumption that friend influence (and the similarity it produces) is inversely related to the perceived significance of a romantic affiliation.

Age is the first potential moderator. Most young adolescents do not have a romantic partner. This changes gradually across the adolescent years, as more youth become romantically involved and romantic partners spend increasing amounts of time together (Furman & Simon, 2008). Age, maturity, and experience all prompt increasing interdependence within romantic relationships, as partners develop new forms of intimacy and assume roles and responsibilities previously assigned to friends (Laursen & Jensen-Campbell, 1999). The increasing significance of romantic relationships implies that the strength of the association between romantic relationship participation and friend similarity on alcohol abuse should increase with age. We hypothesized, therefore, that adolescents with romantic partners should be less similar to their friends in rates of alcohol abuse than adolescents without romantic partners, and that this difference should be greater among older than among younger adolescents.

Peer acceptance is the second potential moderator. Adolescents who perceive few social opportunities in the friendship group have little incentive to maintain close ties to these friends when provided with alternatives, such as a new romantic relationship (Petraitis, Flay, & Miller, 1995). Low accepted youth have the fewest social opportunities and the weakest ties to the friendship group and the most incentive to establish a romantic relationship (Collins, 2003). Finally, the lack of affiliation alternatives may make low accepted youth especially vulnerable to peer pressure (Laursen, Hafen, Kerr, & Stattin, 2012), suggesting that interpersonal difficulties increase the likelihood of behavioral similarity with whomever the child is closest. The tendency of youth with troubled friend relationships to seek the company of romantic partners implies that the strength of the association between romantic relationship participation and friend similarity on alcohol abuse should decrease with peer acceptance. We hypothesized, therefore, that adolescents with romantic partners should be less similar to their friends in rates of alcohol abuse than adolescents without romantic

partners, and that this difference should be greater among low accepted than among high accepted adolescents.

Gender is the third potential moderator. A case can be made for two divergent predictions. One view holds that girlfriends are more likely to be influenced by the drinking habits of boyfriends than the reverse because decisions about participation in alcohol related activities and the settings in which drinking occurs are typically driven by males (Senchak, Leonard, & Greene, 1998). This implies that the strength of association between romantic relationship participation and friend similarity on alcohol abuse should vary by gender and that differences in friend similarity between those with and without romantic partners should be greater for adolescent girls than for adolescent boys. An alternative view holds that boyfriends are more likely to be influenced by the drinking habits of girlfriends than the reverse because adolescent boys involved in romantic relationships often become isolated from friends and dependent on romantic partners for guidance and emotional support, whereas adolescent girls tend to maintain ties with friends (Rose, Smith, Glick, & Schwartz-Mette, 2012). This implies that differences in friend similarity between those with and without romantic partners should be greater for adolescent boys than for adolescent girls. Given these conflicting arguments, we did not advance a hypothesis about gender as a moderator of differences in friend similarity.

Cross-sectional data are limited in terms of their ability to offer insight into developmental change. Therefore, unique to the present investigation is a series of follow-up analyses with longitudinal data designed to examine changes in adolescent friend similarity on alcohol abuse after one member of the friend dyad becomes involved in a romantic relationship. Previous studies describing the relative influence of friends and romantic partners on alcohol abuse (e.g., Aikins et al. 2010; van der Zwaluw, Scholte, Vermulst, Buitelaar, Verkes, & Engels, 2009) were silent on the question of whether adolescents become less similar to friends and more similar to romantic partners with the onset of new romantic relationships. To answer this question, we identified a subsample of adolescents who retained the same friend across two consecutive years. None were involved in romantic relationships at the first time point. Some reported romantic partners at the second time point. We used this subsample to address two sets of hypotheses about the degree to which participation in a new romantic relationship alters friend similarity on alcohol abuse. First, we predicted that among adolescents who gained a romantic partner, friend similarity on alcohol abuse would decline after the initiation of the romantic relationship. As a consequence, friends with romantic partners should be less similar than friends without romantic partners after the onset of the romantic relationship but not before. Second, we predicted that among adolescents who gained a romantic partner, romantic partner similarity on alcohol abuse would increase after the initiation of the romantic relationship. As a consequence, adolescents should be more similar to their friends than to their romantic partners before becoming romantically involved, but they should be more similar to their romantic partners than to their friends after the onset of the romantic relationship.

Method

Participants

A sample of 1,236 participants was drawn from the *10 to 18 Project*, a longitudinal study of all students attending secondary school (7th–9th grade) and high school (10th–12th grade) in a small city in Sweden. The final sample included 662 girls and 574 boys in the 7th through 11th grade (range = 12 to 19 years, $M = 14.86$, $SD = 1.45$). Of these, 74.4% ($n = 820$) lived with both biological parents, 14.7 % ($n=160$) lived with one biological parent and one step-parent or romantic partner, and 9.8% ($n=107$) lived with a single biological parent. Information on parental employment was available for 705 mothers and 667 fathers; 92.8% ($n = 654$) of mothers and 96.0% ($n=640$) of fathers were employed. Of all study participants, 64.5% of parents completed high school or vocational school, 32.8% of parents completed a university degree, and 5.2% of parents did not complete high school. Ethnic Swedes comprised 93.4% ($n = 1154$) of the sample.

Instruments

Participants identified up to 4 important peers, defined as “someone you talk with, hang out with, and do things with.” Participants rank ordered important peers and labeled each a friend, romantic partner, or sibling. Important peers could be older or younger, boys or girls, from the same school or a different school, but they could not be adults. *Friendships* were identified from same-gender important peer nominations labeled friends ($M = 2.35$, $SD = 1.00$). The 1,236 participants made 2,900 friend nominations. Of this total, 780 participants made 1,304 important peer nominations labeled friends that were reciprocated. To account for the reciprocity of the relationships, for each participant, we calculated the *proportion of friend nominations that were reciprocated* ($M = 0.39$, $SD = 0.35$). *Romantic relationships* were identified from other-gender important peer nominations labeled romantic partners ($M = 0.11$, $SD = 0.32$). Participants made 141 romantic partner nominations. Sample size constraints precluded separate consideration of the 4 other-gender friend and the 3 same-gender romantic partner nominations, so they were excluded from the analyses.

Participants also nominated up to 10 peers that they spent time with in school and up to 10 peers that they spent time with out of school. *Peer acceptance* represents the sum of all important peer and peer affiliate nominations received ($M = 4.53$, $SD = 2.53$). This measure of peer acceptance is akin to the widely used affiliate nomination procedure (Bukowski & Hoza, 1989), which yields similar results to the preference nomination procedure (Terry & Coie, 1991). The correlation between peer acceptance scores based on important peer nominations only and those that also included peer affiliates was high ($r=.96$). Analyses are based on the latter because it more closely resembles unlimited nomination procedures, which are recommended for most sociometric categories (Cillessen, Jiang, West, & Laszkowski, 2005).

Participants completed a problem behavior inventory with documented validity among Swedish youth (Magnusson et al., 1975). *Alcohol abuse* was measured with a self-report 3-item scale (Laursen et al., 2012) referring to problem alcohol consumption during the past month or year (During the past year, have you drank so much beer, liquor, or wine that you

got drunk? During the past month, have you drank alcohol with your most important peers until you got drunk? During the past month, have you drank during your free time until you got drunk?). Items were scored on a 1 (*no, it has not happened*) to 3 (*several times*) scale ($\alpha = .86$). In general, adolescent self-reports of subjective levels of problem drinking have demonstrated validity (Smith, McCarthy, & Goldman, 1987). In a previous study, items from the present scale administered to 14-16 year old Swedish youth were tied to objective concurrent measures of problem drinking (Magnusson et al., 1975) and to prospective measures of problem drinking at ages 18 to 24 as indicated by police records for public drunkenness and driving under the influence, as well as public health records for the diagnosis and treatment of alcohol abuse (Andersson & Magnusson, 1988). The one-year test-retest reliability of the alcohol abuse scale was .72. Means for the cross-sections sample are reported in Table 1. Reports from the longitudinal sample indicated that alcohol abuse increased from one year to the next (Time 1 $M=1.49$, $SD=0.69$; Time 2 $M=1.68$, $SD=0.74$; $d=0.27$). Scores did not differ for target adolescents, friends, and romantic partners. On average, endorsement of at least one alcohol abuse item increased for target adolescents from 60% at Time 1 to 71% at Time 2, increased for friends from 49% at Time 1 to 76% at Time 2, and increased for romantic partners from 40% at Time 1 to 67% at Time 2.

Friend alcohol abuse similarity represents the absolute difference between a nominator's alcohol abuse score and that of a friend nominated as an important peer ($M = 0.53$, $SD = 0.61$). For ease of interpretation, difference scores were multiplied by -1. Thus, as friend alcohol abuse similarity scores increase (i.e., approach 0), similarity between friends on alcohol abuse increases (i.e., differences between friends get smaller).

Procedure

Students were recruited in classrooms during school hours. They were informed that participation was voluntary and confidential. Parents were informed about the study through community and school meetings, and through the mail. Parents received a postage-paid card to return if they did not wish to have their child participate in the study and approximately 1% did so. Both parents and students were informed that they were free to end participation at any time. The local university's human subjects review board approved the study.

Data for the multilevel model were drawn from the first wave of the project, when a total of 1,842 secondary and high school students completed instruments. Twelfth graders ($n = 226$) were omitted because of the large proportion (12.3%) nominating older friends who were not study participants; another 24 students (1.3%) in other grades were omitted for the same reason. An additional 310 students (16.8%) were removed because they made no friend nominations. Of those without friends, most failed to label their nominations, so we could not determine whether the individual nominated was a friend, romantic partner, or family member. The 46 participants without alcohol abuse data were also omitted from the analyses; supplemental analyses using missing values provided by the EM (Expectation-Maximization) algorithm yielded identical results. There were no differences on any demographic or study variable between the total sample and those included in the present study. Little's MCAR test (Little, 1988) indicated that data were missing completely at random, $\chi^2(2846) = 2954.25$, $p > .05$.

Longitudinal data were collected at five annual intervals. To identify stable friendships for longitudinal analyses, we examined important peer nominations from all five waves. Attrition among 7th-12th graders across two consecutive years ranged from 17.1% to 19.2% ($M=18.53\%$). From the 894 7th-12th graders with two consecutive years of nomination data, we identified 724 students (300 boys and 424 girls) in 362 stable same-gender mutual friend dyads (reciprocally nominated important peers labeled friends at two consecutive time points). This total does not include 2 stable other-gender friend dyads. The longitudinal analyses focus on the 285 same-gender stable friend dyads in which neither friend participated in a romantic relationship at either time point and the 35 same-gender stable friend dyads in which neither friend had a romantic partner at the first time point but at least one friend had a romantic partner at the second time point. The 22 dyads in which at least one friend had a romantic partner at both time points and the 20 dyads in which at least one friend had a romantic partner at the first but not the second time point were excluded from longitudinal analyses. There were no differences between the complete multilevel model sample and the longitudinal follow-up subsample on any demographic or study variables.

Plan of Analysis

Nominator refers to the adolescent who was the source of the friendship or romantic partner nomination. *Nominated friend* refers to the recipient of the friendship nomination. *Nominated romantic partner* refers to the recipient of the romantic partner nomination.

We first describe our analyses of primary interest. These analyses are designed to (a) predict friend alcohol abuse similarity from concurrent romantic relationship participation and (b) identify individual characteristics that moderate this association. The multilevel model included all 1,236 adolescents who both nominated friends and completed alcohol abuse questionnaires during wave 1 of data collection. As indicated above, 45.0% of the important peer friend nominations were reciprocated and 55.0% were not. Level 1 analyses address the hypothesis that adolescents with romantic partners are less similar to nominated friends in rates of alcohol abuse than adolescents without romantic partners. Level 2 analyses address the hypothesis that individual characteristics known to affect the salience and relative importance of romantic relationships (i.e., age, acceptance, and gender) moderate the association between participation in a romantic relationship and similarity to nominated friends on alcohol abuse.

We then describe our longitudinal follow-up analyses. Cross-sectional analyses are limited in their ability to identify change, leaving open the possibility that differences in friend similarity arise because of differences in the characteristics of those with and without romantic partners, and not because of changes in the friendship that take place after a romantic relationship is initiated. The longitudinal analyses will identify changes in correlations between stable reciprocated friends on alcohol abuse, comparing a subsample of participants in which one member of the friend dyad became involved in a romantic relationship ($n=35$ reciprocated friend dyads) to a subsample in which neither friend became involved in a romantic relationship ($n=285$ reciprocated friend dyads).

Multilevel Model Analyses—Hierarchical linear modeling analyses with HLM 6 (Raudenbush, Bryk, Cheong, Congdon, & du Toit, 2004) were conducted in which each adolescent served as both nominator and nominated friend. Analyses estimated the degree to which romantic relationship participation by the nominated friend predicted concurrent friend alcohol abuse similarity. The Level 1 file described romantic relationship participation of the nominated friend and friend alcohol abuse similarity. In the Level 1 file, each nominator was paired with each nominated friend on a separate line of data. The Level 2 file described characteristics of each nominator (i.e., alcohol abuse, gender, grade in school, peer acceptance, proportion of friendship nominations that were reciprocated) on a separate line of data. A two-level hierarchical linear model was fit to the data. Models are specified in the Appendix.

Unconditional model—The unconditional model provided estimates of the between- and within-individual variance in friend alcohol abuse similarity scores, a necessary first step to ensure that there was sufficient variance for subsequent models. The dependent variable in the unconditional model was friend alcohol abuse similarity.

Level 1 model: A Level 1 random effects model determined the association between nominated friend romantic relationship participation (the predictor variable) and friend alcohol abuse similarity (the dependent variable). In this analysis, the coefficient of the slope of the association between the predictor variable and the outcome variable describes the extent to which variations in romantic relationship participation of the nominated friend account for variation in friend alcohol abuse similarity. We used a random effects model so that associations between nominated friend romantic partner participation and friend alcohol abuse similarity could vary between individuals (as opposed to fixing the association to be equal across participants). This analysis tested the hypothesis that adolescents who participated in a romantic relationship would report lower levels of alcohol abuse similarity than adolescents who did not participate in a romantic relationship. Support for this prediction comes in the form of a statistically significant negative association between nominated friend romantic relationship participation and friend alcohol abuse similarity.

Level 2 model: A Level 2 model determined the whether the association between nominated friend romantic relationship participation and friend alcohol abuse similarity varied as a function of nominator characteristics. The predictor variables in the Level 2 model were nominator characteristics (i.e., grade in school, peer acceptance, and gender); the dependent variable was the Level 1 association between nominated friend romantic relationship participation and friend alcohol abuse similarity. In the Level 2 model, nominator alcohol abuse was entered as a control variable predicting to the Level 2 intercept for friend alcohol abuse similarity. We could not include reciprocity as a Level 2 predictor, because some participants had both reciprocated and unreciprocated friend nominations. Nor could we limit Level 1 analyses to those with reciprocated friend nominations; the model would not converge because of limited variance. Therefore, to address the potential contribution of friend reciprocity to the results, we included the proportion of the nominator's friend nominations that were reciprocated as a control variable. Finally, the nominator's romantic relationship participation was entered into the model to determine whether differences in

friend alcohol abuse similarity associated with participation in a romantic relationship were amplified when both friends participated in romantic relationships. Each model included a random intercept and slope. Participant characteristics were centered around the grand mean.

The Level 2 model tested the hypothesis that characteristics of nominators moderated the association between nominated friend romantic relationship participation and friend alcohol abuse similarity. Support for the predictions come in the form of statistically significant associations between predictor variables (i.e., characteristics of nominators) and the Level 1 association between nominated friend romantic relationship participation and friend alcohol abuse similarity. There were no statistically significant interactions between Level 2 predictors, so interaction terms were omitted from the final model.

Longitudinal Follow-up Analyses—Two path analyses using Mplus 6.1 (Muthén & Muthén, 1998-2011) were conducted to examine changes in friend similarity on alcohol abuse after one member of the friendship dyad became involved in a romantic relationship. A subsample of participants from the multilevel modeling analyses was selected for inclusion in the path analysis longitudinal follow-up. All participants in the longitudinal follow-up analyses were involved in the same stable reciprocated friendship across two consecutive years.

The first path analysis involved two groups of stable friends: (1) neither friend was involved in a romantic relationship at Time 1, but one friend (the nominator) was involved in a romantic relationship at Time 2 and the other friend (the nominated) was not ($n = 35$ dyads), and (2) neither friend was involved in a romantic relationship at Time 1 or Time 2 ($n = 285$ dyads). In the latter group, one friend in each dyad was randomly assigned to be the nominator and the other was assigned to be the nominated friend. The multiple group path analysis included two measures of similarity: (a) correlations between nominator reports of alcohol abuse and nominated friend reports of alcohol abuse at Time 1, and (b) correlations between nominator reports of alcohol abuse and nominated friend reports of alcohol abuse at Time 2. The model also included the over-time stability paths for nominator reports of alcohol abuse and nominated friend reports of alcohol abuse.

Two sets of multiple group contrasts were conducted. The first contrasts were designed to test the hypothesis that similarity on alcohol abuse would decline for friends who acquired a romantic partner but not for friends who remained single. To this end, alcohol abuse correlations at Time 1 were compared with those at Time 2, separately for friends in which one member of the friend dyad gained a romantic partner and for friends in which neither member of the friend dyad gained a romantic partner. The second contrasts were designed to test the hypothesis that friends with romantic partners would be less similar than friends without romantic partners, after the onset of the romantic relationship but not before. To this end, alcohol abuse correlations for friends in which one member of the friend dyad gained a romantic relationship were compared with those of friends in which neither member of the friend dyad gained a romantic relationship, separately at Time 1 and at Time 2.

The second path analysis focused on the 35 adolescents with stable friends neither of whom nominated a romantic partner at Time 1 but one friend (the nominator) was involved in a

romantic relationship at Time 2 and the other friend (the nominated friend) was not involved in a romantic relationship at Time 2. In addition to reports from the nominator and the nominated friend, the model also includes reports from the adolescent who was nominated by the nominator as a romantic partner at Time 2 (the nominated romantic partner). The path analysis included six measures of similarity: (a) correlations between nominator reports of alcohol abuse and nominated friend reports of alcohol abuse at Time 1, (b) correlations between nominator reports of alcohol abuse and nominated romantic partner reports of alcohol abuse at Time 1 (before the initiation of the romantic relationship), (c) correlations between nominated friend reports of alcohol abuse and nominated romantic partner reports of alcohol abuse at Time 1, (d) correlations between nominator reports of alcohol abuse and nominated friend reports of alcohol abuse at Time 2, (e) correlations between nominator reports of alcohol abuse and nominated romantic partner reports of alcohol abuse at Time 2 (after the initiation of the romantic relationship), and (f) correlations between nominated friend reports of alcohol abuse and nominated romantic partner reports of alcohol abuse at Time 2. The model also included the over-time stability paths for nominator reports of alcohol abuse, nominated friend reports of alcohol abuse, and nominated romantic partner reports of alcohol abuse.

Two sets of multiple group contrasts were conducted. The first contrasts were designed to test the hypothesis that romantic partner similarity on alcohol abuse would increase after the initiation of the romantic relationship. To this end, alcohol abuse correlations at Time 1 were compared with those at Time 2, separately within nominator and nominated romantic partner relationships, and within nominator and nominated friend relationships. The second contrasts were designed to test the hypothesis that adolescents would be more similar to friends than to prospective romantic partners before the onset of the romantic relationship, but more similar to romantic partners than to friends after the initiation of the romantic relationship. To this end, alcohol abuse correlations between nominators and nominated friends were contrasted with alcohol abuse correlations between nominators and nominated romantic partners, separately at Time 1 (before the initiation of the romantic relationship) and at Time 2 (after the initiation of the romantic relationship).

Results

Table 1 summarizes intercorrelations, means, and standard deviations for key variables. The results indicate that alcohol abuse was positively associated with grade in school and peer acceptance, but not gender.

Multilevel Model Analyses

Unconditional Model—The unconditional model determined whether levels of friend alcohol abuse similarity differed across nominators. The model was estimated to confirm that there was sufficient between- and within-individual variance to proceed with the analyses. The intercept was statistically significant (coefficient effect = -0.5644 , $SE = 0.0076$, $t = -74.03$, $p < .001$), and the test of randomness revealed individual differences (i.e., differences between friends nested within nominators) in friend alcohol abuse similarity ($T =$

0.2789, $E^2 = 0.5281$, $\chi^2 = 8344.40$, $p < .001$). The results indicate that there was adequate variance for the Level 1 and Level 2 models.

Level 1 Model—The Level 1 random effects model determined whether nominated friend romantic relationship participation predicted friend alcohol abuse similarity. The model tested the hypothesis that adolescents who participated in a romantic relationship would report lower levels of alcohol abuse similarity than adolescents who did not participate in a romantic relationship. Statistically significant results indicated that friends were less similar on alcohol abuse when the nominated friend participated in a romantic relationship than when the nominated friend did not (coefficient effect = -0.1287, $SE = 0.0210$, $t = -6.12$, $p < .01$). Pseudo r squared estimates (Kreft & De Leeuw, 1998; Singer, 1998) revealed that nominated friend romantic relationship participation accounted for 8% of the total variance in friend alcohol abuse similarity.

Level 2 Model—The Level 2 model determined whether nominator characteristics predicted the association between nominated friend romantic relationship participation and friend alcohol abuse similarity. The model tested the hypothesis that characteristics of nominators would moderate the association between nominated friend romantic relationship participation and friend alcohol abuse similarity. Table 2 summarizes the results.

The tendency for friends without romantic partners to be more similar on alcohol abuse than friends with romantic partners differed as a function of the nominator's grade in school and level of peer acceptance. Older adolescents involved in a romantic relationship were less similar to friends on alcohol abuse than younger adolescents. Lower accepted adolescents involved in a romantic relationship were less similar to friends on alcohol abuse than higher accepted youth. Nominator gender, nominator participation in a romantic relationship, and the proportion of the nominator's friend nominations that were reciprocated did not predict the association between nominated friend romantic relationship participation and friend alcohol abuse similarity. Boys and girls did not differ on the tendency for friends without romantic partners to be more similar on alcohol abuse than friends with romantic partners. Neither were there differences if one or both friends had romantic partners.

Nominator alcohol abuse and the proportion of the nominator's friends that were reciprocated were included in the model as control variables. Nominator alcohol abuse was negatively associated with the intercept of friend alcohol abuse similarity, indicating that the more the nominator drank, the more friends differed on alcohol abuse. The effect of proportion of the nominator's friends that were reciprocated was not statistically significant.

Longitudinal Follow-up Analyses

Two longitudinal follow-up path analyses were conducted to examine changes in friend similarity on alcohol abuse after one member of the friend dyad became involved in a romantic relationship. Similarity was operationalized as concurrent correlations between reports of alcohol abuse.

Figure 1 summarizes the results of the multiple group path analyses with two groups of stable friends: (1) neither friend was involved in a romantic relationship at Time 1, but one

friend was involved in a romantic relationship at Time 2 ($n = 35$ dyads), and (2) neither friend was involved in a romantic relationship at Time 1 or Time 2 ($n = 285$ dyads).

Scaled chi-square contrasts tested the hypothesis that similarity on alcohol abuse would decline for friends who acquired a romantic partner but not for friends who remained single. The results revealed statistically significant declines from Time 1 to Time 2 in the correlation between nominator reports of alcohol abuse and nominated friend reports of alcohol abuse for friends who initiated a romantic relationship, $\chi^2(1)=5.36, p=.02$. In contrast, there were no statistically significant differences between Time 1 alcohol abuse correlations and Time 2 alcohol abuse correlations for friends who did not become involved in a romantic relationship, $\chi^2(1)=0.88, p=.35$. Thus, friends who gained a romantic partner became less similar on alcohol abuse after the onset of the romantic relationship, whereas there were no changes in similarity on alcohol abuse across the same time period for friends who did not initiate romantic relationships.

Scaled chi-square contrasts also tested the hypothesis that friends with romantic partners would be less similar than friends without romantic partners after the onset of the romantic relationship, but not before. The results revealed no statistically significant differences in the Time 1 alcohol abuse correlations of friends in which one member of the dyad would later become involved in a romantic relationship and friends in which neither member of the dyad would later become involved in a romantic relationship, $\chi^2(1) = 0.04, p = .85$. There were statistically significant differences, however, in Time 2 alcohol abuse correlations, $\chi^2(1) = 6.41, p = .01$. Thus, friends who did and did not become involved with romantic partners resembled one another before the onset of romantic relationships, but afterwards friends who became involved in romantic relationships were less similar than friends who did not initiate romantic relationships.

Figure 2 summarizes the results of the path analysis that focused on the 35 adolescents, neither of whom nominated a romantic partner at Time 1, but one member of the friend dyad reported a romantic relationship at Time 2.

Scaled chi-square contrasts tested the hypothesis that romantic partner similarity on alcohol abuse would increase after the initiation of the romantic relationship, in conjunction with a decline in friend similarity on alcohol abuse. Over-time changes in romantic partner alcohol abuse correlations did not reach conventional levels of statistical significance, $\chi^2(1) = 1.09, p = .29$. Consistent with findings from the first set of follow-up analyses, there were statistically significant declines from Time 1 and Time 2 in friend alcohol abuse correlations, $\chi^2(1) = 5.36, p = .02$. Thus, decreases in friend similarity on alcohol abuse that coincided with the onset of romantic relationship participation were not matched by concomitant increases in romantic partner similarity.

Scaled chi-square contrasts also tested the hypothesis that adolescents would be more similar on alcohol abuse to friends than to prospective romantic partners prior to the onset of the romantic relationship, but more similar to romantic partners than to friends after the initiation of the romantic relationship. The results revealed alcohol abuse correlations between friends that were marginally higher than those between romantic partners at Time

1, $\chi^2(1) = 2.57, p = .10$. At Time 2, alcohol abuse correlations between romantic partners were significantly higher than those between friends, $\chi^2(1) = 3.85, p = .05$. Before the onset of the romantic relationship, adolescents were marginally more similar to their friends than to their prospective romantic partners, but afterwards adolescents were more similar to their romantic partners than to their friends.

Discussion

Alcohol abuse increased across the adolescent years, for those who were and for those who were not involved in a romantic relationship. This suggests that participation in a romantic relationship does not elevate the risk of alcohol abuse beyond that involved in participation in friendships. Instead, the initiation of a romantic relationship appears to alter the relative balance of power between relationships. Thus, participation in a friendship or a romantic relationship can be a risk for escalating behavior problems or a buffer that dampens the rate of increase, depending on the characteristics of the relationship partner (Hafen, Laursen, & DeLay, 2012).

Our analyses do not specifically address influence, so we can only speculate as to why friend similarity declines with the onset of a romantic relationship. Adolescent friends without romantic partners were more apt to resemble one another in rates of alcohol abuse than adolescent friends with romantic partners. These findings cannot be ascribed to similarity in the selection of friends or in the characteristics of those who do and do not acquire romantic partners, because results from the longitudinal follow-up analyses indicate that friends who gained a romantic partner were initially indistinguishable from friends who remained single. Dissimilarity arose only after one member of the friendship dyad became involved in a romantic relationship. To the best of our knowledge, this is the first study to use longitudinal data to demonstrate changes in friend similarity that follow from the initiation of a romantic relationship. We view this as a necessary (but not sufficient) step in the demonstration of a causal sequence of events.

What accounts for the fact that friend alcohol abuse similarity declines after a romantic relationship is established? Perhaps behaviors with friends and attitudes toward friendship may be subtly revised with the onset of dating. Participation in a serious romantic relationship typically involves a reordering of relationship priorities (Laursen & Bukowski, 1997). As such, the perceived functions of friendship may be irrevocably redefined so that provisions that were once fulfilled by friends come to be reserved for romantic partners, even among those who are between romantic relationships. Relationship interdependence with friends may also decline as youth come to prefer the benefits of romantic relationships. One consequence may be that romantic relationships release adolescents from some of the conformity demands held by same-gender friends. Romantic relationships may also limit exposure to otherwise influential friends. Findings that friend alcohol abuse similarity declines with participation in romantic relationship lend support to the notion that peer groups subtly change during adolescence such that youth with romantic partners spend more time with other couples in networks that do not necessarily include their closest friends (Furman & Collins, 2008).

Prospective romantic partners were moderately correlated on rates of alcohol abuse before the start of the relationship. Romantic partner correlations appeared to increase after the romantic relationship was established, but changes did not reach conventional levels of statistical significance. The lack of firm evidence for increased similarity could be an artifact of the small sample; our power to detect even moderate-sized statistically significant differences between correlated paths was low. It is worth noting, however, that others have failed to find clear evidence of romantic partner influence over adolescent alcohol abuse (Aikins et al., 2010; Kreager & Haynie, 2011; van der Zwaluw et al., 2009). The absence of statistically significant increases in romantic partner similarity does not, however, suggest that romantic partners are inconsequential to adolescent alcohol abuse. Manifestations of influence may be reflected in changes in behavior that increase similarity or by conformity pressures that maintain similarity. Seen in this light, the present findings suggest that romantic partners may play a critical role in adolescent drinking. Even in the absence of statistically significant increases in romantic partner similarity in the longitudinal follow-up analyses, it was nevertheless the case that adolescents were initially more similar to their friends, but were ultimately more similar to their romantic partners.

Age amplified differences between friends with romantic partners and friends without romantic partners such that older adolescents who also had a romantic partner were more dissimilar to their friends on alcohol abuse than younger adolescents with a romantic partner. Several factors may account for this developmental trend. The relevance of a friend may dissipate in direct proportion to the strength of a romantic relationship. Older adolescents are more apt to be involved in serious, long-term romantic relationships than younger adolescents (Furman & Collins, 2008). The romantic relationships identified by younger adolescents may not pose the same threat to friend commonality as the romantic relationships of older adolescents, in part because the former are not accorded the same significance as the latter. Age differences in friend similarity may also reflect the practicalities of alcohol consumption. It is not difficult to imagine that many high school students spend leisure time with friends consuming alcohol while their counterparts are otherwise engaged with romantic partners. Younger adolescents have a more difficult time acquiring alcohol, so those spending leisure time with romantic partners may continue to resemble their friends on levels of alcohol abuse because there are few opportunities to drink to excess in either relationship context.

Lower accepted peers in romantic relationships were less apt to resemble friends on rates of alcohol abuse than were higher accepted peers. Social control theory postulates that adolescents who perceive a discrepancy between their aspirations (e.g. high peer acceptance) and their perceived opportunities (e.g., few options for friend) may not be committed to the friendship network (Petratis, Flay, & Miller, 1995). Acceptance can be interpreted as a measure of centrality, which represents the child's position in the network (Gest, Graham-Bermann, & Hartup, 2002). Among those involved in romantic relationships, relative disengagement from the network corresponded with relative dissimilarity to friends, perhaps because of tenuous ties between low accepted youth and their friends. More poignantly, low acceptance may also signal a lack of intimacy with friends. Lacking strong connections to the friendship network, low accepted adolescents may devote most of their time and emotional energy to romantic partners, closing off avenues of friend contact. Finally, to the

extent that similarity is a product of influence, heightened similarity to friends among low accepted youth may signal heightened susceptibility to friend influence, which may stem from attributes that correspond with low acceptance, such as poor self-worth, social immaturity, or impulsive behavior (Asher & McDonald, 2009).

Gender did not moderate the association between romantic relationship participation and friend alcohol abuse similarity. Gender differences in levels of alcohol consumption typically do not emerge until late adolescence (Schulte, Ramo, & Brown, 2009); gender differences in alcohol abuse similarities may follow suit. We did not find boyfriends more similar to their friends than girlfriends. During young adulthood, boyfriends appear to shape the rate and frequency of alcohol consumption of girlfriends in settings such as bars and parties (Engels & Knibbe, 2000). Nevertheless adolescents, especially young adolescents, must drink surreptitiously, often in private settings with fewer onlookers. Drinking in couples may eliminate some of the conformity pressure exerted by crowds of boisterous peers. Neither did we find that girlfriends were more similar to their friends than boyfriends, suggesting that the gender differences that adolescents report in relative relationship intimacy (Hartup & Stevens, 1997) do not directly translate into gender differences in correspondent patterns of alcohol abuse. Of course, null findings must be interpreted with caution, particularly in light of the relatively small number of romantic relationships that were identified in the present study.

The present study informs efforts aimed at targeting adolescent alcohol abuse prevention, suggesting that the friends make differing contributions to alcohol consumption for adolescents who are and who are not participating in a romantic relationship. Because friends are known to be particularly influential over adolescent drinking (e.g., Hafen et al., 2011; Kiuru et al, 2010), these relationships are frequent targets of alcohol abuse intervention efforts (e.g., Hawkins, Catalano, Miller, 1992). Nevertheless, findings from the present study imply that friend influence over adolescent drinking may dissipate in the presence of a romantic partner. The current findings suggest that one of the first questions clinicians should ask youth who have a drinking problem is “*Are you involved in a romantic relationship?*” Without this information, intervention and prevention efforts may be misdirected toward relationships that are of marginal significance.

Several reservations should be noted. Participants were drawn from a small community in central Sweden. Although they were representative of the population from which they were drawn, it will be up to future scholars to determine the extent to which the findings from this sample generalize to adolescents living in other settings, particularly those in communities that are more diverse, urban, and transient, and to communities where the legal age of drinking is not 18. An adolescent was classified as participating in a romantic relationship only if the romantic partner was identified as one of his or her four closest peer relationships. We know from questions added to later waves of the study that nominated romantic partners were seen every day or nearly every day, a rate higher than that of romantic interests who were not nominated as important peers. This is not inappropriate. Many studies of adolescent romantic relationships include qualifications designed to eliminate the ephemeral, such as a requirement that the relationship last at least one month (Collins, Welsh, & Furman, 2009). Rates of participation in romantic relationships were

relatively low in the present study, but similar reports drawn from community samples (e.g., Aikins et al., 2010; Kreager & Haynie, 2011) indicate that adolescents with romantic partners represent a comparable proportion of the total study participants, particularly when 12th graders are excluded from consideration, as was the case in the present study. Some may be concerned about the relatively small number of participants included in our longitudinal follow-up analyses. Troubles arising from modest samples typically take the form of low statistical power and unrepresentative cases. Neither appears to be a threat to our findings: Replication of the cross-sectional group differences with data from the longitudinal sample suggests that the latter is representative of the community sample from which it was drawn. Statistically significant changes in friend similarity over time and statistically differences between friends and romantic partners within each time point suggest that statistical power is not a threat to the results. Our data do not permit us to make conclusions about variations in romantic relationship participation. We suspect that adolescents who date tentatively or dabble infrequently in romantic relationships may be more similar to their friends than those inclined toward sustained romantic relationships.

Other limitations merit consideration. Friend alcohol abuse similarity was operationalized somewhat differently in the multilevel model (i.e., as a difference score) and in the longitudinal path analysis model (as a correlation). As a consequence, it can be difficult to compare the magnitude of effects across analyses, particularly given the attendant differences in sample size. The samples were somewhat different too. The longitudinal analyses were restricted to adolescents in reciprocated friend dyads, whereas the cross-sectional multilevel model analyses included adolescents in reciprocated and unreciprocated friendships. Although we were able to account for the proportion of friendships that were reciprocated in the multilevel model analyses, we could not exclude unilateral friendships because the model would not converge. Alcohol abuse was measured via adolescent self-report. Although self-reports of problem drinking have been demonstrated to be valid (Smith, McCarthy, & Goldman, 1987) and the present alcohol abuse scale, in particular, has been tied to police records of problem drinking (Andersson & Magnusson, 1988), reliance on a self-report of alcohol abuse may be less reliable than an objective measure of alcohol consumption. Finally, sample size limitations precluded an examination of additional moderators in the longitudinal analyses.

The present study is unique in that it is the first to identify concurrent differences in adolescent alcohol abuse similarity between those who have romantic partners and those who do not, and it is the first to rule out the possibility that these differences are antecedent to the establishment of a romantic relationship. The study falls short, however, in definitely demonstrating changes in the relative influence of friends and romantic partners. Similarity and influence are not synonymous. Because we did not specifically test influence pathways in the analyses, the findings only imply, but do not prove, changes in relative relationship influence. Increased similarity is assumed to be a product of heightened influence, just as decreased similarity is assumed to be a product of diminished influence, but we cannot rule out the possibility that influence is wielded in ways that do not foster similarity. The matter can best be addressed empirically with a sample of youth who both (a) maintain the same friendship across three consecutive measurements points and (b) are not involved in a romantic relationship at the first measurement point but who acquire a romantic partner at

the second measurement point and retain the same romantic partner at the third measurement point. Cross-lagged dyadic analyses can be used to assess the degree to which friends and romantic partners influence the individual's alcohol consumption during the establishment and maintenance of a new romantic relationship (see Popp et al., 2008, for a similar design that compares stable and unstable friendships).

Much attention is given to the role friends' play in the acquisition and reinforcement of health-risk behaviors. Adolescents rarely drink alone, so concerns over peer pressure to experiment with and abuse alcohol are well placed. Often overlooked, however, is the fact that initial involvement in romantic relationships tends to coincide with initial exposure to alcohol. We know that influence is typically allocated according to closeness (Brown, 1999) and that the relative closeness and influence of friends is altered by participation in romantic relationships (Laursen & Williams, 1997). Findings that adolescents with romantic partners are less similar to their friends on alcohol abuse than adolescents without romantic partners and findings that friend similarity on alcohol abuse declines with the onset of a romantic relationship underscore the changing nature of friendship across the course of adolescence. Older adolescents with romantic partners were more dissimilar to friends than were younger adolescents, a stark reminder that the peer social world is gradually restructured to reflect the declining importance of same-sex friends and the growing importance of long-term romantic affiliations during adolescence.

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Appendix

Level 1 model

Association Between Friend alcohol abuse similarity and Target Romantic Relationship Participation

Friend alcohol abuse similarity (absolute difference between nominator and target on alcohol abuse) = $\beta_0(\text{intercept}) + \beta_1(\text{target romantic relationship participation}) + r$

Level 2 model

Association Between Friend alcohol abuse similarity and Target Romantic Relationship Participation Predicted by Characteristics of Nominators

Level 1

Friend alcohol abuse similarity (absolute difference between nominator and target on alcohol abuse) = $\beta_0(\text{intercept}) + \beta_1(\text{target romantic relationship participation}) + r$

Level 2

$\beta_0 = \gamma_{00}(\text{intercept}) + \gamma_{01}(\text{nominator alcohol abuse}) + \mu_0$

$\beta_1 = \gamma_{10}(\text{intercept}) + \gamma_{11}(\text{nominator grade in school}) + \gamma_{12}(\text{nominator peer acceptance}) + \gamma_{13}(\text{nominator gender}) + \gamma_{14}(\text{nominator romantic relationship participation}) + \gamma_{15} + (\text{proportion of nominator's friend nominations that were reciprocated}) + \mu_1$

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Figure 1.

Associations between stable friends on alcohol abuse among dyads in which one friend or neither friend participated in a romantic relationship.

Note. Standardized beta weights presented.

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

Figure 2.

Associations between stable friends and romantic partners on alcohol abuse among dyads in which one friend participated in a romantic relationship.

Note. $N = 35$ friend and romantic partner dyads (35 nominators with their nominated stable friends and nominated Time 2 romantic partners). Standardized beta weights are reported.

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

Table 1
Intercorrelations, Means, and Standard Deviations for Hierarchical Linear Model Variables

Variable	1	2	3	4	M	SD
1. Alcohol Abuse	—				1.70	0.76
2. Grade in School	.49**	—			8.82	1.39
3. Peer Acceptance	.19**	-.04	—		4.53	4.54
4. Gender	.05	.02	.11**	—	1.50	0.50

Note. N = 1236 adolescents. Alcohol abuse: 1 (no) to 3 (several times). Grade in school: 7 to 11. Peer acceptance: range = 0 to 14. Gender: 1 (boy), 2 (girl).

*
p < .05,

**
p < .01.

Table 2
Hierarchical Linear Model Predicting Similarity Between Friends on Alcohol Abuse as a
Function of Nominated Friend Romantic Relationship Participation

Variable	Effect	SE	t
Intercept of Friend Alcohol Abuse Similarity	-.5644	.0076	-74.03**
Nominator Alcohol Abuse	-.6677	.0128	-52.29**
Slope of Friend Alcohol Abuse Similarity by Nominated Friend Romantic Relationship Participation	-.1287	.0210	-6.12**
Nominator Grade in School	-.0448	.0143	-3.15**
Nominator Peer Acceptance	.0186	.0086	2.16*
Nominator Gender	-.0501	.0379	-1.32
Nominator Romantic Relationship Participation	-.0074	.0662	0.11
Proportion of Nominator's Friend Nominations that were Reciprocated	.0401	.0614	0.66

Note. $N = 1236$ adolescents in 2900 friendships. Friend alcohol abuse similarity: range = -2 (*one friend has drunk to intoxication several times and the other friends has not*) to 0 (*friends report the same amount of drinking to intoxication*). Nominator alcohol abuse: 1 (*no*) to 3 (*several times*). Nominated friend romantic relationship participation: 0 (*no*), 1 (*yes*). Nominator grade in school: 7 to 11. Nominator peer acceptance: range = 0 to 14. Nominator gender: 1 (*boy*), 2 (*girl*). Nominator friend romantic relationship participation: 0 (*no*), 1 (*yes*).

*
 $p < .05$,

**
 $p < .01$.