

## Do Parents Still Matter? Parent and Peer Influences on Alcohol Involvement Among Recent High School Graduates

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This study investigated the influences of peer and parent variables on alcohol use and problems in a sample of late adolescents in the summer immediately prior to entry into college. Participants ( $N = 556$ ) completed a mail survey assessing peer influences (alcohol offers, social modeling, perceived norms), parental behaviors (nurturance, monitoring), and attitudes and values (disapproval for heavy drinking, permissiveness for drinking), and alcohol use and alcohol-related consequences. Hierarchical regression analyses indicated significant associations between both peer and parental influences and alcohol involvement, and showed that parental influences moderated peer-influence–drinking behavior, such that higher levels of perceived parental involvement were associated with weaker relations between peer influences and alcohol use and problems. These findings suggest that parents continue to exert an influential role in late adolescent drinking behavior.

For over a generation, researchers have known that youths typically begin to use alcohol long before they enter college; that heavy alcohol use, for most students, is initiated prior to university matriculation; and that levels of use and problems typically increase as individuals enter the college environment (Baer, Kivlahan, & Marlatt, 1995; Straus & Bacon, 1953). Thus, the period between high school graduation and university matriculation, when individuals have achieved one critical developmental milestone and are poised to embark on another, is an important developmental juncture with respect to alcohol use and abuse. Accordingly, the identification of risk and protective factors that may influence abusive drinking during this period can inform the refinement of preventive interventions to help late adolescents prepare for and to effectively manage drinking decisions that they may face in new environments.

In examining risk and protective factors, many have looked to the contribution of social influences in the initiation and perpetuation of drinking behavior among adolescents (Jacob & Leonard, 1994). Among early adolescents, a substantial body of literature has examined relations between various forms of parental influences, whereas among older adolescents (especially college students) the focus has predominantly been on same-aged peer influences (Baer & Carney, 1993; Baer, Stacy, & Larimer, 1991; Borsari & Carey, 2001).

Yet, both theory and empirical data suggest that although peer influences purportedly gain ascendancy in some domains (e.g., alcohol use; Kandel & Andrews, 1987), parental influences continue to be important in others (e.g., values, major decisions such as college selection; Galotti & Mark, 1994), even as young adolescents move into late adolescence. Indeed, the recent publication of a book by Harris (1998) questioning the relative importance of parents versus peers with respect to adolescent development sparked spirited media debate. According to developmental theory, late adolescence is characterized by the emergence of an independent sense of identity and an evolving conceptualization of role relationships that is a normal aspect of the socialization process. In childhood and early adolescence, much of an individual's socialization occurs within the context of the family environment. At each developmental stage, youths are confronted with a host of new roles and freedoms (Schulenberg, O'Malley, Bachman, Wadsworth, & Johnston, 1996). As young adolescents begin to assert their own independence from the family, additional extra-familial socialization influences become more incorporated into their sense of identity. This process has been conceptualized as a shifting of the relative importance of parental versus peer influences during adolescence, with peer influences becoming increasingly more influential over the course of adolescence as the salience of parental influences purportedly recedes (Kandel & Andrews, 1987; Windle, 2000; Wood, Vinson, & Sher, 2001). Yet, a substantial body of literature suggests that, rather than being supplanted by peer influences, parental factors affect alcohol use and attitudes even among those in late adolescence (e.g., Duncan, Duncan, & Hops, 1994; Reifman, Barnes, Dintcheff, Farrell, & Uhteg, 1998; Windle, 2000). Indeed, there is some evidence suggesting that familial influences may increase and play a particularly salient protective role during late adolescence (Duncan et al., 1994).

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As such, the socialization process may be viewed, in part, as an interplay among familial and peer influences. Through this interactive process, overt learning occurs through social reinforcement and punishment, and implicit learning develops through behavioral interaction and attitudinal and value inculcation from both family members and relevant peers (Kandel & Andrews, 1987).

### Peer Influences on Drinking

Peer influences are a powerful determinant of late adolescent drinking behavior (Borsari & Carey, 2001; Jacob & Leonard, 1994; Morgan & Grube, 1991). Two distinct types of social influences, "active" and "passive," have been observed to relate to late adolescent drinking (Borsari & Carey, 2001; Wood, Read, Palfai, & Stevenson, 2001). *Active social influences* refer to explicit offers to use a substance. Examples of such influences include being offered a drink, having a drink refilled without asking, or being bought a drink. In contrast, *passive social influences* (Graham, Marks, & Hansen, 1991; Oostveen, Knibbe, & De Vries, 1996) relate to an individual's perception and interpretation of the drinking and reinforcement patterns of others and have been further classified to include two dimensions, social modeling and perceived norms. *Social modeling* refers to modeling and imitation of drinking behavior of others such as close friends (Maisto, Carey, & Bradizza, 1999); *perceived norms* relate to beliefs about how much and how often "typical" college students drink (Baer & Carney, 1993; Baer et al., 1991; Perkins, Meilman, Leichter, Cashin, & Presley, 1999). Perceived norms are examples of *descriptive norms* (Cialdini, Kallgren, & Reno, 1991), which refer to perceptions about others' drinking behavior. These norms have demonstrated relations with heavy drinking and alcohol-related problems in college student samples (Borsari & Carey, 2001; Perkins & Berkowitz, 1986; Larimer, Turner, Mallett, & Geisner, 2003) and have been observed among students soon after matriculation into college (Read, Wood, Davidoff, McLacken, & Campbell, 2002). However, little information exists as to whether perceived norms are related to alcohol use and problems prior to matriculation.

### Parental Influences on Drinking

Recent research (Jaccard & Turrise, 1999; Turrise, Wiersma, & Hughes, 2000) suggests that parental factors may represent an important, and understudied, potential protective influence on late adolescent drinking. In the early adolescent literature, numerous types of psychosocial parental factors that might serve to influence adolescent drinking behaviors have been identified. These influences may be broadly conceptualized according to parents' behavioral influences, such as nurturance and monitoring, and value-related domains, such as parents' attitudes toward and permissiveness related to adolescent drinking.

#### *Parental Nurturance*

Parental nurturance, or support, has been identified as a salient influence on early adolescent alcohol use (Barnes, Reifman, Farrell, & Dintcheff, 2000; Jacob & Leonard, 1994; Rollins & Thomas, 1979; Steinberg, Lamborn, Dornbusch, & Darling, 1992). Parental nurturance is characterized by parenting behaviors that demonstrate caring and acceptance of the child and may include

such things as encouragement of the child's activities and being actively involved in the child's life. Deficits in parental support have been linked both cross-sectionally and prospectively to a number of problem behaviors in adolescents, including adolescent substance abuse (Barnes & Farrell, 1992; Barnes, Farrell, & Banerjee, 1994; Barrera & Li, 1996; Hawkins, Catalano, & Miller, 1992; Windle, 1992).

#### *Parental Monitoring*

Parental monitoring may be defined as the extent to which parents may attempt to attend to, track, or control their children's activities and whereabouts (Kerr & Stattin, 2000). Such parenting behavior is thought to be a protective factor in guarding against alcohol misuse and problems in adolescence. Parental monitoring has been shown both cross-sectionally (Barnes & Farrell, 1992; Chassin, Pillow, Curran, Molina, & Barrera, 1993; Dishion & Loeber, 1985; Dishion, Patterson, & Reid, 1988) and longitudinally (Barnes et al., 2000; Barnes, Reifman, Farrell, Dintcheff, & Uhteg, 1995; Barnes, Reifman, Farrell, Uhteg, & Dintcheff, 1994; Chassin, Curran, Hussong, & Colder, 1996) to be a strong correlate of alcohol use in early adolescents, with higher levels of parental monitoring being associated with lower levels of alcohol use (Barnes & Farrell, 1992) and reduced odds for onset of heavy drinking (Reifman et al., 1998).

#### *Parental Attitudes*

Parental attitudes toward drinking represent a means of indirect social modeling (Jacob & Leonard, 1994; Wood, Vinson, & Sher, 2001) and may be communicated either overtly or tacitly through the implementation of limits or by the expression of values regarding alcohol use by parents. Parents' permissiveness regarding alcohol use may be particularly influential in determining adolescent alcohol initiation and the transition into heavier drinking. Parental permissiveness has been associated with greater alcohol and drug involvement in early adolescence in several studies (Barnes & Welte, 1986; Dielman, Butchart, & Shope, 1993; Hyatt & Collins, 2000). Explicit parental disapproval of substance use also has been suggested to be a protective factor, yet this construct has not been widely studied (Petraitis, Flay, Miller, Torpy, & Greiner, 1998; Welte, Barnes, Hoffman, & Dintcheff, 1999).

#### *Combined Influences*

In their application of developmental theory to alcohol misuse, Windle and Davies (1999) noted the importance of considering moderators in the conceptualization of alcohol use behaviors. Noting that research points increasingly to associations among etiological factors and drinking behaviors as being interactive rather than linear, they argued that that examination of moderators may help to explicate interrelationships among variables. Consistent with this formulation, and with the literature suggesting that both peer and parental factors play an important role in influencing substance use behaviors among older adolescents, an examination of these combined influences appears to be a logical step in the identification of risk and protective socialization influences in this population. Further, as our own and other research shows (Borsari & Carey, 2001; Wood, Read, et al., 2001), it is important to distinguish among different types of socioenvironmental influ-

ences. Thus, it is likely to be useful to distinguish among the interactive effects of these types of influences as well.

To date, the examination of the joint effects of peer and parental factors with alcohol use and misuse has predominantly focused on a mediational role of parental monitoring or permissiveness (Chassin et al., 1993; Dielman et al., 1993), or in one study, on the influence of parents on the formation of cognitive “prototypes” that, in turn, influence adolescent alcohol use (Gerrard, Gibbons, Zhao, Russell, & Reis-Bergan, 1999). With one notable exception, which found support for a moderational role of parental influences (Marshall & Chassin, 2000), very little research to date has examined the extent to which parental involvement may serve to buffer the consistently robust influence of peers.

In sum, despite substantial evidence demonstrating protective parental influences on adolescent alcohol use (Barnes et al., 2000; Farrell & Barnes, 1993), the vast majority of research in the area of late adolescent drinking has emphasized the drinking behaviors and attitudes of same-age peer reference groups and has not investigated the effects of parental influences. Specific parental factors such as support, parental attitudes and values, and monitoring are suggested to play an integral role in the socialization process, providing youths with the necessary skills to assume adult roles and to interact successfully with others (Baumrind, 1991; Marshall & Chassin, 2000). Therefore, if parental socialization processes contribute to identity development, then adolescents whose sense of identity is heavily influenced by familial socialization factors may be less susceptible to social pressures from peers.

In addition to whether parental influences provide a general buffering effect against those of peers, a yet-to-be addressed critically important research question relates to whether specific types of parental influences may differentially buffer the effect against peer influences. For example, parental behaviors such as monitoring adolescent activities may be effective when adolescents reside in their parents’ homes but may not be internalized by adolescents in such a way that this type of influence would continue to exhibit longer term protective effects against peer influences. Alternatively, attitudinal and value-oriented parental influences such as parental disapproval of alcohol use or perceived limits for drinking, to the extent that they become implicit in an individual’s own value system, would be more likely to afford more durable protective effects. Moreover, differential patterns of moderation would have unique implications for the refinement of parent-based interventions, which can be successfully delivered during the interim period between high school and university matriculation (Turrisi, Jaccard, Taki, Dunnam, & Grimes, 2001).

### The Current Study

The current study had two major goals. First, we sought to investigate the unique and combined associations of a range of peer and parent variables with alcohol use and problems among late adolescents in the period between high school graduation and university matriculation. Specifically, we hypothesized that both active (alcohol offers) and passive (social modeling, perceived norms) social influences and parental behaviors (monitoring, support) and values (permissiveness for drinking, disapproval of heavy drinking) would demonstrate significant direct associations with alcohol use and problems. The second major goal of the study was to investigate whether parental involvement might qualify the

influence of peer influences on alcohol use and problems. Specifically, we sought to test whether parental attitudes toward alcohol use, and specific parenting behaviors such as support and monitoring, reduced the impact of peer influences on drinking behaviors.

## Method

### Participants

Participants were recent high school graduates ( $N = 578$ ) who were invited to participate in a three-wave, longitudinal study of college student health behaviors and attitudes beginning in the summer prior to their matriculation at a midsize public university in the Northeastern United States. The mean age of the participants was 18.1 years ( $SD = 0.25$ ). Women composed 65.1% of the sample, compared with 56% of the incoming freshmen class from which the sample was drawn. The majority of participants were White (87.0%,  $n = 500$ ), followed by Asians (4.5%,  $n = 26$ ), Hispanics (3.3%,  $n = 19$ ), Blacks (1.9%,  $n = 11$ ), Native Americans (0.5%,  $n = 3$ ), multiracial or other (2.4%,  $n = 14$ ), and those not endorsing ethnicity (0.9%,  $n = 5$ ). University census data for the incoming class in the same academic year indicate that Whites were somewhat overrepresented in the sample (87.0% vs. 77.5%), whereas Blacks (1.9% vs. 3.6%) were slightly underrepresented. In contrast, the sample of Hispanic (3.3% vs. 3.6%) and Asian (4.5% vs. 4.1%) participants were representative of the incoming freshmen class. However, 10.4% of the incoming freshmen did not provide race or ethnicity data, which may largely account for the apparent overrepresentation of Whites in our sample. Finally, 52.6% of the participants in our sample were out-of-state students, compared with 50% of out-of-state students in the population of incoming freshmen.<sup>1</sup>

### Procedure

Participants were recruited from a sample of 1,508 eighteen- and nineteen-year-old first-time freshmen attending a university orientation program in the summer prior to their freshmen year. During the academic computer orientation portion of the program, we arranged to have all students view an on-line announcement inviting 18- and 19-year-old first time freshmen to participate in a study of “college student health behaviors and attitudes.” We received 970 e-mail inquiries about the project with contact information, which was used to mail each respondent a cover letter, consent form, and a baseline questionnaire packet. Incentives for participation were \$8.00 for completing the questionnaire and a chance to win one of five \$50.00 gift certificates. Our follow-up recruitment efforts included two rounds of follow-up phone calls, postcard reminders, and re-sending mail surveys, which yielded completed questionnaires from 589 participants. Of these, 11 participants were eliminated because they did not meet the study’s 18–19 age requirement. In addition, 22 participants were not included in our analyses because of missing data on key study variables. Thus, the analyses presented in the current study are based on a sample of

<sup>1</sup> Although SAT scores were not available for our sample, to further characterize the population from which our sample was drawn in comparison to other college students, we obtained institutional data on SAT scores for the incoming class in the year the study was conducted. These data indicate slightly higher average verbal (544) and math (546) scores at the study university as compared with national average verbal (505) and math (512) SAT scores. Computation of effect sizes ( $d$  index) for these differences averaged .33, suggesting moderately higher academic aptitude in the university population from which our sample was drawn as compared with the national population of incoming college students.

556 participants who completed questionnaires in the first wave of data collection.<sup>2</sup>

## Measures

Measures included assessments of demographic information, alcohol use, alcohol-related consequences, active and passive social influences, and parental behaviors and attitudes toward adolescent drinking. These are described in detail in the next subsections.

**Alcohol offers.** We assessed alcohol offers with a four-item scale ( $\alpha = .86$ ) that was adapted from the original measures developed by Graham et al. (1991). Based on feedback from our pilot work, we modified the original two-item scale to include a broader range of alcohol offers (e.g., being offered a drink, being offered a drink without asking for it, having your drink refilled without asking for it, having a drink bought for you without asking for it.) Response options for these four items were based on a 5-point scale ranging from 0 (*never*) to 4 (*10 or more times in the past 3 months*).

**Social modeling.** We assessed social modeling with three items ( $\alpha = .89$ ) adapted from measures previously used by Jessor, Jessor, and Donovan (1981). These included items about drinking patterns and attitudes among close friends (i.e., typical quantities of drinking, attitudes toward drinking, and attitudes toward getting drunk). Responses were rated on 5-point continuous response scales.

**Perceived norms.** Perceived norms for heavy episodic drinking and for alcohol problems were adapted from measures previously used by Baer et al. (1991) and Baer and Carney (1993). These items asked students to estimate the frequency and degree of heavy drinking and the number of alcohol-related problems experienced by college students. Perceived norms for heavy episodic drinking were assessed with two items and perceived alcohol problems were assessed with a 10-item scale ( $\alpha = .79$ ) adapted from the Young Adult Alcohol Problem Screening Test (YAAPST; Hurlbut & Sher, 1992). This scale required respondents to estimate how often, in the past year, the "typical" student of their gender attending the study university experienced alcohol-related problems such as driving under the influence and missing classes or work.

**Parental monitoring.** Parental monitoring was assessed with a modified version of the nine-item Strictness–Supervision scale (Steinberg et al., 1992). We included only those items that appeared to be more relevant to older adolescents. Our modified scale included two three-item subscales, which were combined ( $\alpha = .84$ ) and asked students about what their parents attempt to know about them and what their parents actually know about their behaviors. For example, in separate questions we asked the following: "How much do your parents *try* to know (and *really* know): (1) Where you go at night? (2) What you do with your free time? (3) Where you are most afternoons after school?" Response options for these items were as follows: 0 (*don't try or don't know*), 1 (*try a little or know a little*), and 2 (*try a lot or know a lot*).

**Parental support.** Parental support was measured with an eight-item version of the Acceptance–Involvement scale (Steinberg et al., 1992), which was designed to assess adolescent perceptions of parental involvement and affection toward the adolescent. Because this scale was originally developed for a young adolescent population, we adapted it to include only those questions that remained relevant for older adolescents (e.g., "I can count on my parents to help me out if I have some kind of problem"; "My parents spend time talking with me"). Response options were 5-point scales ranging from 0 (*strongly disagree*) to 4 (*strongly agree*). Coefficient alpha was .81 in our sample.

**Parental attitudes and values.** Two measures of parental attitudes and values were assessed in the current study: perceived parental disapproval for heavy drinking, and perceived parental permissiveness for alcohol use. Parental disapproval was assessed with four items ( $\alpha = .74$ ) that had been previously modified from questions assessing personal disapproval of heavy drinking from the Monitoring the Future Study (Johnston, O'Malley, & Bachman, 1996) for use in a statewide survey of alcohol and drug use among Rhode Island high school students (Rhode Island Substance Abuse

Survey [RISAS]; Rhode Island Department of Health, 2000). The items addressed how participants thought their parents would feel if they did the following: (a) drank one or two drinks per day, (b) drank four or five drinks per day, (c) drank five or more drinks once or twice each weekend, and (d) drove after having five or more drinks. In both the RISAS and the current study, response options were modified to a 3-point scale including 0 (*approve*), 1 (*wouldn't care*), and 2 (*disapprove*).

Parental permissiveness toward alcohol use was assessed by two questions that asked respondents to indicate the number of drinks that each parent would consider to be an upper limit for them to consume on any occasion during their senior year of high school. Response options ranged from 0 (*no alcohol*) to 7 (*no upper limit*). The items were averaged and coefficient alpha was .85.

**Heavy episodic drinking.** Although a number of aspects of alcohol consumption were assessed in the current study, here we focus on the frequency of heavy episodic drinking.<sup>3</sup> Heavy episodic drinking was defined as five or more drinks in a row (for both men and women) during the past 2 weeks. Responses were continuous and were scored to reflect weekly frequencies.

**Alcohol-related negative consequences.** Negative consequences associated with alcohol use (e.g., hangovers, memory loss) were assessed with a modified version of the YAAPST. Because of concerns about item burden to participants in our mail survey, we shortened the original 36-item YAAPST to 24 items ( $\alpha = .79$ ). The YAAPST response options are continuous and were scored to provide an estimate of the frequency of occurrence of negative consequences in the past year.

## Results

### Alcohol Use and Consequences

Prior to conducting tests of our substantive hypotheses, we computed descriptive statistics on indices of alcohol use and alcohol-related negative consequences in our precollege sample. During the summer prior to matriculation, men reported an average of 6.83 ( $SD = 13.23$ ) drinks per week and women reported an average of 3.08 ( $SD = 6.12$ ) drinks per week. Forty percent of men and 30.1% of women indicated that they had engaged in one or more heavy drinking episodes in the past 2 weeks.

With reference to the past year, participants reported a number of negative alcohol-related consequences. Hangovers and becoming sick from drinking were the most frequent occurrences, re-

<sup>2</sup> On the basis of data collected during summer orientation from incoming students ( $N = 2,119$ ; 95.8% of the incoming class), we were able to make comparisons on two measures of alcohol use: (a) drinking status (e.g., regular drinker to lifetime abstainer) and (b) the past 2 weeks' heavy episodic drinking. The  $t$  tests indicated significant differences in both drinking status,  $t(993) = -3.55, p = .0003, d = .23$ , and the past 2 weeks' heavy episodic drinking,  $t(2017) = 4.75, p < .0001, d = .22$ . It should be noted that the sample size for these comparisons was large and that these effect sizes are indicative of small effects. Our sample was slightly less likely to be regular drinkers or to engage in heavy episodic drinking than the overall population of incoming students. These discrepancies may be reflective of the somewhat disproportionately high number of women in our sample (65.1%) whose alcohol use is significantly lower than the men in our sample.

<sup>3</sup> We consider heavy episodic drinking as but one of several relevant measures of alcohol consumption and note that recent research (O'Neill & Parra, 2001) suggests that it may not warrant special status as an indicator of problematic alcohol involvement. Nonetheless, we opted to focus on it here given its wide usage and demonstrated associations with alcohol-related negative consequences.

ported by 45.7% and 44.2% of respondents, respectively. Alcohol-related memory impairment (blackouts, 33.7%), saying things that were later regretted (31.5%), becoming rude and obnoxious (23.4%), and engaging in sexual situations that were later regretted (18.2%) were the next most commonly endorsed negative consequences. Taken together, these data indicate a considerable amount of alcohol use and consequences in the current sample.

### *Examination of Distributions and Bivariate Associations*

Prior to multiple regression analyses, descriptive statistics were calculated to examine univariate distributions of the variables to be included in the regression analyses. Heavy episodic drinking and alcohol consequences were found to be skewed and kurtotic. Following Tabachnick and Fidell (1996), we adjusted scores for "far outliers" to equal one value greater than the largest non-far outlying value. This correction resulted in skewness and kurtosis levels that were within acceptable limits (less than 2.0 and 4.0, respectively). The distribution of parental disapproval also exhibited negative skewness and extreme kurtosis. Multiple transformations did not yield an acceptable distribution, so we elected to dichotomize this variable, which yielded acceptable distributional properties (skewness =  $-2.32$ , kurtosis =  $3.43$ ). Prior to addressing our substantive research questions, we computed Pearson product-moment correlations among our predictor and criterion variables (see Table 1).

### *Associations Between Parent and Peer Influences, and Alcohol Use and Problems*

Our first major goal was to examine joint associations of parental and peer influence variables on alcohol use and problems in our sample of recent high school graduates. Specifically, we sought to examine the unique direct effects of both active and passive peer influences (i.e., alcohol offers, social modeling, perceived norms) and two broad categories of parental influences on our dependent variables of interest. These parental influences included behaviors (perceived nurturance-support, perceived monitoring) and attitudes and values (perceived disapproval of heavy drinking, perceived permissiveness). Our second major purpose was to investigate whether variability in relations between active and passive social influences and alcohol involvement was better characterized by parental behaviors or attitudes and values.

To address these questions, two sets of hierarchical multiple regression analyses were conducted in four steps for each of two alcohol-related dependent variables (heavy episodic drinking and alcohol-related consequences). Prior to all analyses, the peer and parent social influence variables were centered to reduce multicollinearity (Aiken & West, 1991).

To control for anticipated gender differences in heavy episodic drinking and alcohol-related negative consequences, in each set of analyses, we entered gender into the first step of the regression equation. Because developmental theories posit that peer influences predominate during adolescence, these variables were entered in the second step in order to determine their unique contribution to the variance in both of the alcohol outcome variables.<sup>4</sup> In the third step, perceived parental influences were added to the regression equation. Finally, in the fourth step, 12 interaction terms (each peer influence variable crossed with each parental influence variable) were entered to examine the potential moderating effects

of parent influences.<sup>5</sup> Detailed results of these analyses are presented in Tables 2 and 3.

*Heavy episodic drinking.* Significant positive associations were observed between gender and heavy episodic drinking in the first step of the regression analyses, indicating higher frequencies of this pattern of drinking among men. In the second step, the addition of peer influences resulted in a large increment in the amount of variance explained,  $F(3, 550) = 105.58, p < .0001$ . Significant positive associations were observed for each of the peer influence variables, indicating that higher levels of active and passive social influences were associated with increased frequency of heavy episodic drinking. The addition of perceived parental influences in the third step of the analyses also resulted in a significant increment in explained variance,  $F(4, 546) = 13.42, p < .001$ . Three of the four perceived parental involvement variables demonstrated significant associations with heavy episodic drinking. Specifically, parental monitoring and parental disapproval of heavy drinking were negatively associated with heavy episodic drinking such that higher levels of perceived monitoring and disapproval were associated with lower levels of heavy episodic drinking. Perceived parental permissiveness was significantly and positively associated with heavy episodic drinking such that less stringent perceived limits for drinking were associated with higher frequencies of heavy episodic drinking. The final step, which included peer and parental influence interaction terms, also resulted in a significant increase in  $R^2$ ,  $F(12, 534) = 4.96, p < .001$ . Parental permissiveness moderated relations between both active (alcohol offers) and passive (social modeling) social influences and heavy episodic drinking as evidenced by significant Offers  $\times$  Parental Permissiveness and Social Modeling  $\times$  Parental Permissiveness interaction terms (both  $\beta$ s =  $.10, ps < .05$ ).

To probe the significant interactions, we calculated simple regression lines of the relation between peer influence variables and heavy episodic drinking, for different values of the relevant parental variables on the basis of the four-step regression analyses shown in Table 2. Following Aiken and West (1991), simple regression lines were calculated for the mean, one standard deviation above the mean, and one standard deviation below the mean. As can be seen in Figure 1, alcohol offers demonstrated the strongest positive association with the frequency of heavy episodic

<sup>4</sup> To compare the relative influence of parent and peer factors in predicting heavy episodic drinking and alcohol-related negative consequences, we conducted additional regression analyses in which parent variables were entered in the second step and peer influences were entered in the third step. For both heavy episodic drinking and alcohol-related negative consequences, the pattern of results was identical to the analyses reported. Although the magnitude of some relations varied across the analyses, all significant main effects observed in the primary analyses were observed when the order of entry was reversed.

<sup>5</sup> Gender  $\times$  Peer Influence and Gender  $\times$  Parental Factor interactions were also examined in separate hierarchical regression analyses. For heavy episodic drinking, the addition of these interaction terms resulted in a significant increment in explained variance,  $F(7, 539) = 2.39, p < .05$ , largely attributable to a significant Gender  $\times$  Parental Monitoring interaction. Probes of this interaction revealed stronger monitoring effects ( $\beta = -.24, p < .0001$ ) for men than for women ( $\beta = -.07, ns$ ). The addition of Gender  $\times$  Peer Influence and Gender  $\times$  Parental Factors did not result in a significant increment in variance explained for alcohol-related negative consequences.

Table 1  
Bivariate Associations Among Predictor and Criterion Variables

| Variable                                  | 1        | 2        | 3        | 4        | 5       | 6       | 7        | 8       | 9        | 10      | 11 |
|---|----------|----------|----------|----------|---------|---------|----------|---------|----------|---------|----|
| 1. Gender                                 | —        |          |          |          |         |         |          |         |          |         |    |
| 2. Alcohol offers                         | .10*     | —        |          |          |         |         |          |         |          |         |    |
| 3. Social modeling                        | .07      | .52****  | —        |          |         |         |          |         |          |         |    |
| 4. Perceived norms—heavy drinking         | .11**    | .34****  | .35****  | —        |         |         |          |         |          |         |    |
| 5. Perceived norms—alcohol consequences   | .02      | .22****  | .16****  | .33****  | —       |         |          |         |          |         |    |
| 6. Parental support                       | -.05     | -.03     | -.06     | -.04     | -.01    | —       |          |         |          |         |    |
| 7. Parental monitoring                    | -.16**** | -.17**** | -.20**** | -.07     | -.02    | .42**** | —        |         |          |         |    |
| 8. Parental permissiveness                | .10*     | .34****  | .37****  | .22****  | .09*    | -.04    | -.14**** | —       |          |         |    |
| 9. Parental disapproval                   | -.11**   | -.23**** | -.20**** | -.16**** | -.05    | .11*    | .12**    | .37**** | —        |         |    |
| 10. Heavy episodic drinking               | .16***   | .51****  | .51****  | .39****  | .21**** | -.09*   | -.28**** | .38**** | -.32**** | —       |    |
| 11. Negative alcohol-related consequences | .06      | .61****  | .56****  | .39****  | .29**** | -.11**  | -.28**** | .44**** | -.32**** | .73**** | —  |

\*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ . \*\*\*\*  $p < .0001$ .

drinking for individuals who reported more permissive perceived levels of parental limits for drinking ( $\beta = .32, p < .0001$ ). For those who reported more stringent perceived levels of parental drinking limits, the relationship was still significant ( $\beta = .12, p <$

Table 2  
Associations Between Gender, Peer, and Parent Variables and Heavy Episodic Drinking

| Step                                   | F for $\Delta R^2$       | Adjusted $R^2$ | $\beta$ |
|--|--------------------------|----------------|---------|
| Step 1                                 | $F(1, 553) = 14.39****$  | .02            |         |
| Gender                                 |                          |                | .03     |
| Step 2                                 | $F(3, 550) = 105.58****$ | .38            |         |
| Alcohol offers (AO)                    |                          |                | .22**** |
| Social modeling (SM)                   |                          |                | .27**** |
| Perceived norms—heavy drinking (PN-HD) |                          |                | .16**** |
| Step 3                                 | $F(4, 546) = 13.42***$   | .43            |         |
| Parental disapproval (PD)              |                          |                | -.08*   |
| Parental permissiveness (PP)           |                          |                | .08*    |
| Parental support (PS)                  |                          |                | .00     |
| Parental monitoring (PM)               |                          |                | -.13*** |
| Step 4                                 | $F(12, 534) = 4.96***$   | .47            |         |
| AO × PP                                |                          |                | .10*    |
| SM × PP                                |                          |                | .10*    |
| PN-HD × PP                             |                          |                | .03     |
| AO × PD                                |                          |                | .03     |
| SM × PD                                |                          |                | -.06    |
| PN-HD × PD                             |                          |                | .06     |
| AO × PS                                |                          |                | -.04    |
| SM × PS                                |                          |                | .05     |
| PN-HD × PS                             |                          |                | -.01    |
| AO × PM                                |                          |                | -.07    |
| SM × PM                                |                          |                | -.08    |
| PN-HD × PM                             |                          |                | -.03    |

Note. Values are taken from the final (fourth) step of the analyses. For the gender variable, 0 = female, 1 = male.

\*  $p < .05$ . \*\*\*  $p < .001$ . \*\*\*\*  $p < .0001$ .

.05), but much attenuated. The simple regression line of the mean of perceived parental permissiveness was intermediate ( $\beta = .22, p < .0001$ ), demonstrating a moderate positive relationship between alcohol offers and heavy episodic drinking. Simple slopes analyses for the Social Modeling × Parental Permissiveness interaction yielded a very similar pattern of effects, with stronger relations between social modeling and heavy episodic drinking when perceived permissiveness for alcohol use was high as compared with lower levels of permissiveness.

*Alcohol-related negative consequences.* In the second set of analyses, procedures parallel to those detailed above were conducted to examine the direct and indirect (moderating) effects of peer and parent influences on alcohol-related negative consequences. These analyses are summarized in Table 3. In the first step of these regression analyses, gender was not associated with alcohol consequences, although, as depicted in Table 3, it became significant in the last step of the regression analyses. Consistent with findings for heavy episodic drinking, the inclusion of peer influence variables in the second step resulted in a large and significant increment in explained variance for alcohol-related negative consequences,  $F(3, 551) = 161.67, p < .0001$ . Significant and positive associations were observed between each of the peer influence factors and negative alcohol-related consequences. Also consistent with the first set of analyses, the addition of perceived parental involvement variables produced a significant increment in explained variance for negative consequences,  $F(4, 547) = 18.94, p < .001$ , although only two of the four parental influence variables demonstrated significant associations. Perceived parental monitoring was significantly and negatively associated with alcohol consequences, whereas perceived parental permissiveness demonstrated significant positive associations with alcohol-related negative consequences. The addition of interaction terms in the regression analyses also resulted in a significant increase in  $R^2$ ,  $F(12, 535) = 6.77, p < .001$ . Again, perceived parental permissiveness moderated relations between both active and passive social influences as evidenced by significant Social Modeling × Parental Permissiveness and Perceived Norms × Parental Permissiveness interactions ( $\beta_s = .13$  and  $.16, ps < .001$ , respectively). A significant Alcohol Offers × Parental Monitoring interaction was also observed ( $\beta = -.13, p < .001$ ).

Table 3  
Associations Between Gender, Peer, and Parent Variables and Alcohol Consequences

| Step   | F for $\Delta R^2$          | Adjusted $R^2$ | $\beta$    |
|--|-----------------------------|----------------|------------|
| Step 1                                       | $F(1, 554) = 1.73$          | .001           |            |
| Gender                                       |                             |                | -.07*      |
| Step 2                                       | $F(3, 551) = 161.67^{****}$ | .47            |            |
| Alcohol offers (AO)                          |                             |                | .31^{****} |
| Social modeling (SM)                         |                             |                | .29^{****} |
| Perceived norms—alcohol consequences (PN-AC) |                             |                | .13^{****} |
| Step 3                                       | $F(4, 547) = 18.94^{***}$   | .53            |            |
| Parental disapproval (PD)                    |                             |                | -.05       |
| Parental permissiveness (PP)                 |                             |                | .14^{***}  |
| Parental support (PS)                        |                             |                | -.03       |
| Parental monitoring (PM)                     |                             |                | -.10^{**}  |
| Step 3                                       | $F(12, 535) = 6.77^{***}$   | .58            |            |
| AO $\times$ PP                               |                             |                | .01        |
| SM $\times$ PP                               |                             |                | .13^{***}  |
| PN-AC $\times$ PP                            |                             |                | .16^{****} |
| AO $\times$ PD                               |                             |                | .03        |
| SM $\times$ PD                               |                             |                | -.03       |
| PN-AC $\times$ PD                            |                             |                | .03        |
| AO $\times$ PS                               |                             |                | .00        |
| SM $\times$ PS                               |                             |                | .00        |
| PN-AC $\times$ PS                            |                             |                | .02        |
| AO $\times$ PM                               |                             |                | -.13^{***} |
| SM $\times$ PM                               |                             |                | -.01       |
| PN-AC $\times$ PM                            |                             |                | -.01       |

Note. Values are taken from the final (fourth) step of the analyses. For the gender variable, 0 = female, 1 = male.

\*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ . \*\*\*\*  $p < .0001$ .

Again, simple slopes analyses were conducted to examine the moderating role of parental permissiveness and parental monitoring in peer-influence–alcohol-consequences relations. Relations between perceived norms for negative alcohol consequences and self-reported alcohol consequences are depicted for three levels of perceived parental permissiveness in Figure 2. As can be seen in Figure 2, perceived norms demonstrated the strongest positive association with negative consequences for individuals who reported more permissive levels of parental drinking limits ( $\beta = .28$ ,  $p < .0001$ ), whereas for those who reported more stringent perceived levels of parental drinking limits, relations between perceived norms and negative consequences were slightly negative and nonsignificant ( $\beta = -.02$ ,  $ns$ ). Also shown in Figure 2, the simple regression line of the mean of perceived parental permissiveness was moderately positive ( $\beta = .15$ ,  $p < .0001$ ). Results of parallel simple slopes analyses examining the Social Modeling  $\times$  Parental Permissiveness and Alcohol Offers  $\times$  Parental Monitoring interaction effects were quite consistent with this pattern of effects. Namely, the strongest relations between peer influence variables and alcohol problems were observed for higher permissive parental drinking limits and lower levels of parental monitoring.

## Discussion

The purposes of the present study were two-fold: (a) to examine both unique and interactive associations of a range of peer and parent variables with alcohol use and problems in a sample of recent high school graduates and (b) to investigate whether variability in these relations was better characterized by behaviorally versus attitudinally based parental influences. We observed significant associations between both peer and parent influences and alcohol use and problems. Additionally, although we observed a moderating effect for both perceived parental behaviors and attitudes, more consistent indirect effects were observed in the values domain, such that higher levels of perceived parental permissiveness were associated with stronger relations between peer influences and alcohol use and problems.

### Alcohol Use and Consequences Among Recent High School Graduates

Consistent with the extant literature (Jackson, 1997; Johnston, O'Malley, & Bachman, 2000; Wechsler, Isaac, Grodstein, & Sellars, 1994), we found clear evidence that a substantial proportion of our sample, in the interim period between high school graduation and university matriculation, reported already engaging in regular alcohol use and misuse. Specifically, the prevalence of heavy episodic drinking observed in our sample (33.5% overall) during the summer between high school graduation and entry into college is intermediate between the levels of heavy episodic drinking reported in the Monitoring the Future study (Johnston et al., 2000) for high school seniors (30.0%) and for college students (39.3%). A number of alcohol-associated consequences were also reported among our sample of prematriculated college students, the most common of which were hangovers, blackouts, and problematic behaviors such as regretted verbal or sexual encounters. The prevalence of these consequences was also quite comparable to those observed for college students (Core Institute, 2001). Taken together, these data suggest that the transition into heavier and more problematic drinking that will likely intensify in a college environment featuring new peer groups, altered norms regarding alcohol use, and decreased parental presence is already underway immediately prior to matriculation. The clear implication of these and other data (e.g., Baer et al., 1995; Wechsler, Isaac, et al., 1994) is that alcohol use and misuse are prevalent prior to matriculation and this time period represents an important target for preventive interventions to reduce alcohol misuse.

### Peer Influences

Consistent with our study hypotheses and with previous findings (Graham et al., 1991; Wood, Read, et al., 2001), both active (alcohol offers) and passive (social modeling, perceived norms) peer influences were uniquely associated with heavy episodic drinking and alcohol-related negative consequences. These data, consistent with recent reviews of social influences in college student drinking (Borsari & Carey, 2001), provide further support for the utility of distinguishing among these types of influences and have unique implications for peer-focused preventive interventions. Specifically, with regard to alcohol offers and social modeling, our findings suggest that preventive interventions should include skills training related to moderating drinking (e.g.,

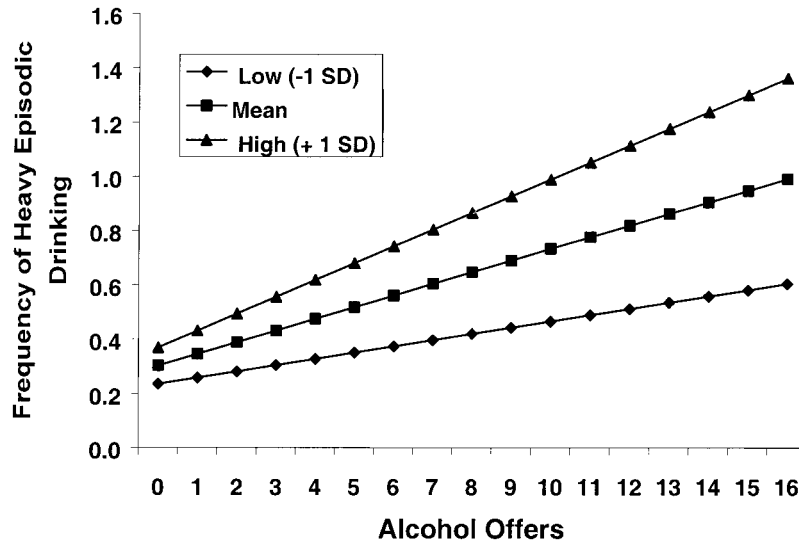


Figure 1. Relations between alcohol offers and heavy episodic drinking at three levels of perceived parental permissiveness for drinking.

refusal skills, strategies for limiting or avoiding heavy drinking) and may profit from discussion of the role of selection and socialization effects with respect to close friends' drinking (Baer, Kivlahan, Blume, McKnight, & Marlatt, 2001; Marlatt et al., 1997). For perceived norms, our findings support the relevance of universal, selective, and indicated interventions attempting to correct misperceptions regarding peer alcohol use, which are currently being implemented and evaluated in university settings with promising results (Baer et al., 2001; Haines & Spear, 1996; Larimer et al., 2001).

*Parental Influences*

We hypothesized that perceived parental behaviors (nurturance-support, monitoring) and values (permissiveness, disapproval of

heavy drinking) would demonstrate significant direct associations with alcohol use and problems. For heavy episodic drinking, three of the four perceived parental involvement variables showed significant associations with heavy episodic drinking, whereas monitoring and permissiveness demonstrated significant direct associations with negative consequences. These findings are consistent with earlier research examining parental influences in younger adolescent samples (Barnes & Farrell, 1992; Barnes & Welte, 1986; Ellickson & Hayes, 1991; Hyatt & Collins, 2000; Reifman et al., 1998). Moreover, our findings extend this earlier work to an older adolescent sample and suggest that parents' behaviors and attitudes toward underage alcohol use continue to have a meaningful influence well into late adolescence.

The absence of significant associations between parental support and alcohol use and problems in our regression analyses was

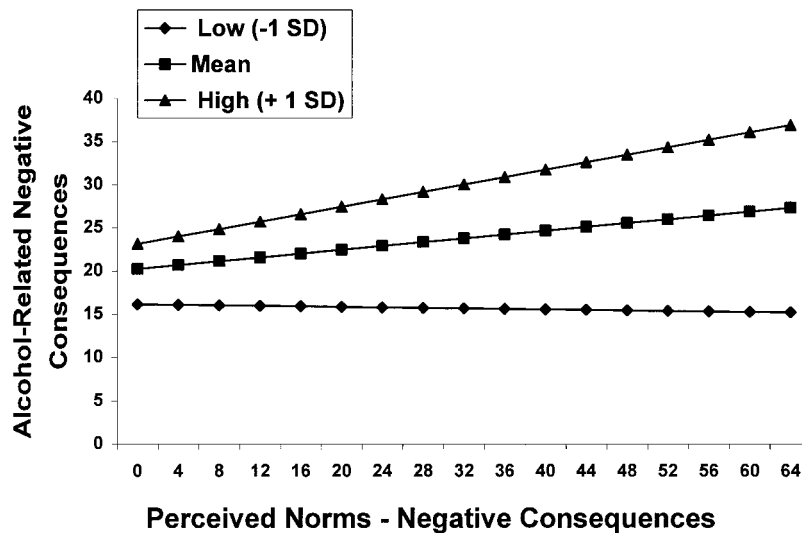


Figure 2. Relations between perceived norms and alcohol-related negative consequences at three levels of perceived parental permissiveness for drinking.



contrary to our prediction, although significant, albeit modest, bivariate correlations were observed (see Table 1). Although some studies have shown significant direct associations between parental support and adolescent substance use (Barnes & Farrell, 1992; Barnes, Reifman, et al., 1994), other research has failed to show these direct associations, instead finding parental support to affect children's substance use only indirectly, through other factors (Barnes et al., 2000; Dielman et al., 1993). Indeed, Barnes, Reifman, et al. (1994) suggested that parental support may serve to influence adolescent substance use behaviors in what they refer to as a "sequential manner," providing a foundation or context for other factors to have a more direct impact. It should also be noted that our measure of parental support is the only parental involvement variable that does not explicitly reference alcohol use or opportunities for drinking, and the lack of an observed association may arise from insufficient specificity in this predictor.

Although we did not observe a significant relationship between parental support and alcohol use and problems, we demonstrated that parental behaviors (e.g., perceived monitoring) and attitudes and values (e.g., perceived permissiveness) are directly associated with late adolescent alcohol use and problems, and that perceived disapproval was associated with lower levels of heavy episodic drinking. The relative lack of research focusing on continued parental influences on older adolescents has been noted by others (Turrisi et al., 2001) and may stem from a dominant view that presumes that peers are more influential than parents in the socialization processes that contribute to adolescent identity development (Kandel & Andrews, 1987; Windle, 2000; Wood, Vinson, & Sher, 2001). Indeed, in comparing the effects for peer versus parent variables in our study, our measures of peer influence clearly exhibit more robust relations. Nonetheless, as noted, we did observe significant direct effects for parental influences after controlling for strong associations between peer influences and alcohol use and problems. Thus, our findings do support the notion that parents continue to influence their late adolescents' decisions regarding alcohol use.

### *Moderational Effects*

In addition to examining direct associations between peer and parent influences, we also investigated whether specific types of parental involvement differentially affected the influence of peer influences on alcohol use and problems. Although some research has suggested that both family and peer factors exert a joint influence on substance use behaviors during adolescence (e.g., Chassin et al., 1993; Gerrard et al., 1999; Jacob & Leonard, 1994), to our knowledge, there have been no studies that have jointly examined both direct and indirect (moderational) influences in a sample of late adolescents.

We found evidence of moderation for both the behavioral and attitudinal domains of perceived parental involvement in relations between peer influences and alcohol use and problems. The most consistent moderating effects were observed in the attitudes and values domain for parental permissiveness. Specifically, more stringent perceived drinking limits set by parents were associated with more modest relations between both alcohol offers and social modeling with heavy episodic drinking as compared with less stringent limits. Parental permissiveness also moderated associations between both perceived norms and social modeling with alcohol-related consequences, with probes indicating patterns of

effect consistent with those described above. Moderation by more behaviorally oriented measures of parental involvement was limited to parental monitoring, such that relations between alcohol offers and alcohol-related negative consequences were robust (i.e.,  $\beta = .28, p < .0001$ ) at lower levels of perceived parental monitoring and nonsignificant at higher levels of perceived parental monitoring.

These findings suggest that preventive interventions involving parents should attempt to facilitate communication between parents and late adolescents regarding acceptable levels of drinking, perhaps through the use of methods such as behavioral contracting that have demonstrated efficacy in treatment outcome studies (Meyers & Smith, 1995; O'Farrell, 1995). Although longitudinal or preventive intervention studies featuring mediational analyses are needed to more definitively resolve the mechanisms of association, perhaps the observed direct and indirect effects for parental permissiveness are a result of the internalization of parental values, which may serve to facilitate greater resistance to peer influences or more self-regulation with respect to alcohol use. Observed main effects for perceived parental monitoring on both heavy episodic drinking and negative consequences, as well as the moderational role of monitoring in the alcohol-offers-alcohol-related-negative-consequence relation also have implications for parent-based preventive interventions during late adolescence. Consistent with recent National Institute on Alcohol Abuse and Alcoholism College Student Drinking Task Force recommendations ([www.collegedrinkingprevention.gov](http://www.collegedrinkingprevention.gov)), they suggest that parents should be made aware that their monitoring efforts have potential use in multiple ways, as a direct deterrent to alcohol abuse and perhaps by limiting adolescent opportunities for experiencing "active" social influences (Graham et al., 1991; Wood, Read, et al., 2001). These conclusions are tentative, given the cross-sectional design and sampling time point of the current study, but suggest intriguing hypotheses for future longitudinal and preventive intervention studies capable of examining the durability of these effects over a time period in which transition to a more alcohol-supportive environment takes place.

### *Limitations and Future Directions*

This study has several limitations. Most salient among these is our single site assessment through the use of a suboptimal (i.e., nonrandom) sampling strategy. Random sampling, with oversampling of men, would potentially have increased the generalizability of findings. Nonetheless, with the exception of potential overrepresentation of White students, and a slight under-representation of Black students, the race/ethnicity distribution of our sample fairly closely approximates the non-ethnically heterogeneous population from which it was drawn. Likewise, our sample differed only modestly (2.6%) from the population in terms of residency (in state vs. out of state). Finally, we were able to compare our sample with the sampling frame (representing 95.8% of the incoming class) on two measures of alcohol involvement and observed only modest differences suggesting a little less alcohol involvement in our sample, which would likely have a slightly attenuating effect on the relationships observed in the study.

The extent to which findings generalize to the population of incoming state university college students is unknown, as drinking rates, demographic, and other background variables vary along a number of dimensions, including region of the country, location

(e.g., rural vs. urban), and institutional selectivity (Wechsler, Davenport, Dowdall, Moeykens, & Castillo, 1994). Although SAT scores were not available for our participants, comparison of available institutional data for the study year's incoming class with national data indicates very slight differences, providing equivocal support for the generalizability of our sample with respect to academic aptitude. Additionally, our sample and the population from which it was drawn are quite limited with respect to ethnic diversity. Thus, the extent to which the present findings may be generalizable to a more ethnically heterogeneous group is unknown. Studies of early adolescents have noted variability in the strength of parental and peer influences among members of different ethnic groups (Barnes, Farrell, & Banerjee, 1994). Analyses with the present, predominantly White sample do not permit determination regarding whether such differences also may be demonstrated among later adolescents. Further, as there is currently little research on the role of parental influences in late adolescence, less still is known with regard to how these influences may differ by racial or ethnic background. Future research with more ethnically diverse samples is needed in order to answer these questions.

Our reliance on students' self-report of their parents' attitudes regarding underage alcohol use represents an additional limitation of the current study. Thus, findings presented here may be more reflective of participants' own beliefs about and attitudes toward alcohol than about those actually imparted by their parents. Future studies should seek to gather data from parents directly, as such information will likely yield a more reliable measure of actual parental influences. The cross-sectional design of the present study represents another limitation. Although our data offer consistent support for associations between both peer and parent influences and alcohol involvement, the temporal ordering of these associations cannot be determined from the present design. Longitudinal follow-up of the current sample as participants progress through their early college careers will permit prospective examination of the protective effects of parent influences demonstrated at baseline and whether these influences extend into college, when direct parental monitoring and supervision typically decrease. Additionally, longitudinal data will enable a clearer understanding of how parental influences may wax and wane over the course of the college experience.

Despite these limitations, the current study offers a number of contributions to the literature on contributing and protective factors related to adolescent alcohol use and misuse. To begin with, these data offer support for the notion that both peer and parental factors exert unique and important influences on the drinking behavior and consequences of late adolescents just prior to college matriculation. Further, our findings suggest that specific types of parental factors, particularly parental permissiveness toward alcohol use and parental monitoring, may qualify peer influences on alcohol involvement. Replication of the present findings with longitudinal data will clarify (a) the nature of associations between peer and parent factors as students enter college and (b) how these associations may change over the course of the college experience. In addition to their potential direct benefits, preventive interventions that incorporate parents and focus on active and passive social influences would be informative with respect to the basic (e.g., etiological) processes that influence older adolescent alcohol use and misuse.

As they graduate from high school and prepare to begin college, young adults celebrate autonomy and newly gained independence.

However, this does not preclude the fact that these young adults may still have strong ties to their families and that parents may still exert a strong influence on their children's decisions about risky behaviors. The results of this study suggest that parents continue to matter in late adolescents' choices about drinking, even as they negotiate new roles in preparation for new environments. Further, our findings suggest that those interested in reducing problematic drinking among this population should extend their focus to expanded investigation of the potential role that parents may be able to play in the prevention process.

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