

**THE ASSOCIATION BETWEEN PARENT
COMMUNICATION AND COLLEGE FRESHMEN'S
ALCOHOL USE***

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ABSTRACT

Using a cross-sectional survey, data were collected from 265 first-year college students to determine if parent-student alcohol communication is associated with college drinking or drinking consequences and if this relationship is mediated by students' parental subjective norms, attitudes toward drinking, and perceived risk. Structural equation modeling was used to test hypotheses. Students whose parents talked with them more about the negative effects of alcohol reported more extensive college drinking ($\beta = 0.12$, $p < 0.05$). Favorable alcohol attitudes were significantly related to both more extensive college drinking ($\beta = 0.49$, $p < 0.05$) and more drinking consequences ($\beta = 0.39$, $p < 0.05$). Lower reported perceived risk was significantly related to more drinking consequences ($\beta = -0.24$, $p < 0.05$). Findings indicate that parental communication regarding the negative effects of alcohol may be ineffective at reducing college drinking or drinking consequences.

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INTRODUCTION

Among college students, consequences of excessive drinking may include unintentional injury, violence, unprotected sex, rape, academic problems, relationship problems, health problems, legal problems, and death (Engs, Diebold, & Hansen, 1996; Ham & Hope, 2003; Hingson, Heeren, Zakocs, Kopstein, & Wechsler, 2002; Knight, Wechsler, Kuo, Seibring, Weitzman, & Schuckit, 2002; Presley, Leichter, & Meilman, 1998; Presley, Meilman, & Cashin, 1996a; Presley, Meilman, Cashin, & Lyerla, 1996b; Wechsler, Lee, Kuo, Seibring, Nelson, & Lee, 2002). First year students are at higher risk than the rest of the college population for excessive drinking and alcohol problems (Cavendish, 1991). Over the course of the first year, freshmen tend to increase their consumption of alcohol and report drinking more than they wanted or intended to drink (Cavendish, 1991).

Parental influences may impact college drinking. For instance, parenting style has been found to be related to drinking (Patoock-Peckham, Cheong, Balhorn, & Nagoshi, 2001). Parental attitude toward drinking also has been associated with students' attitudes toward drinking (Wilks & Callan, 1984). It has been consistently found that students who have parents who drink more in quantity and frequency are more likely to drink than students whose parents did not drink (Jung, 1995; Reeves, 1984). A study conducted by Kuther and Higgins-D'Alessandro (2003) found that parental norms (parent's attitudes toward drinking and parental approval of child's drinking) influenced college juniors' alcohol use, but had no effect on the alcohol use of college freshmen. A recent investigation found that students who perceived that their parents approved of their drinking were more likely to report having experienced problems from drinking than students who did not perceive parental approval (Boyle & Boekeloo, 2006).

There is some evidence that parental communication about alcohol may also influence college students' alcohol use. For example, a study conducted among college students during the first 1-2 months of school found that those who reported ever talking with their mothers about how drinking could get them in trouble with the police, how drinking changes a person's personality, the negative consequences of mixing alcohol and sex, and about the importance of being committed to a healthy lifestyle were less likely to hold positive beliefs about alcohol. In addition, students who had talked with their mothers about alcohol were more likely to believe that alcohol can increase negative affect (Turrisi, Wiersman, & Kelli, 2000). Likewise, the results of a parent-based randomized intervention trial aimed at reducing drinking among 154 college freshmen indicated that parental communication after high school graduation and prior to students' entry into college reduced drinking, drunkenness, and negative consequences (Turrisi, Jaccard, Taki, Dunnam, & Grimes, 2001). These findings are similar to findings among research with adolescents in which parental communication about alcohol has been associated with reduced alcohol use (Komro, Perry,

Williams, Stigler, Farbaksh, Veblen-Mortenson, 2001; Park, Kosterman, Hawkins, Haggerty, Duncan, Duncan et al., 2000).

While some studies indicate that pre-college parental communication about alcohol may be protective against college students' alcohol involvement, no studies have been identified that examine the effect of parental communication while students are at school. Furthermore, the mechanisms through which this communication may work remain unknown. Therefore, in order to explore the relationships between post-matriculation, parent-child communication and college students' drinking behavior, and problematic drinking behavior the following hypotheses were tested using a cross-sectional survey design:

1. perceived parental communication about the negative effects of alcohol is associated with drinking and problematic drinking behaviors; and
2. perceived parental communication about the negative effects of alcohol affects drinking and problematic drinking behavior through its impact on attitudes, parental subjective norms, and perceived risk.

The constructs of attitude toward drinking (whether or not an individual views drinking in generally positive or negative terms; Williams & Hine, 2002), subjective norm (a student's expectancies about whether her/his mother or father would react favorably or unfavorably if he/she drinks alcohol and the student's motivation to comply with those expectancies; Glanz, Rimer, & Lewis, 2002; Williams & Hine, 2002), and perceived risk (an individual's perception of her/his susceptibility to the negative consequences of drinking and the severity of those consequences) were chosen as possible mediating factors for three reasons. First, perceived risk has been associated with college students' alcohol involvement as has attitude (Duistman & Colbry, 1995; Laflin, Moore-Hirschl, Weis, & Hayes, 1994; Miller, Toscova, & Miller, 2000; Williams & Hine, 2002). Subjective norms regarding parents has also been found to be protective against alcohol involvement among adolescents (Williams & Hine, 2002). Second, there is some evidence in the literature that these constructs are associated with parental communication. Adolescent subjective norm has been associated with the frequency of parental communication regarding sexuality (Schouten, Putte, Pasmans, & Meeuwesen, 2006). Among adolescents, risk perception has been found to mediate the relationship between parental communication and substance use (Gerrard, Gibbons, Vande Lune, Pexa, & Gano, 2002). Additionally, as mentioned above, Turrisi et al. (2000) found that college students who reported ever discussing alcohol with their mothers were less likely to report holding positive beliefs about alcohol. Finally, it is plausible that these constructs may be impacted by the type of communication of interest in this study—communication regarding the negative consequences of alcohol use.

METHODS

The students who participated in this study were recruited from a major public research university located in the mid-Atlantic. The University is home to nearly 34,000 students, approximately 25,000 of whom are undergraduate students. Students living on campus, aged 18-19 years, and enrolled in their first year of college were eligible to participate in the survey. A list of all 1,933 eligible students was obtained from the university's registrar. The list of eligible students was numbered and computerized random sampling was used to identify 467 students from that list. These students were invited to participate in the study.

Students were sent letters through campus mail that explained the purpose of the study. Students then received an e-mail with a link to the online consent form. Research assistants contacted students up to three more times by phone and e-mail, requesting their participation. If a student was not personally reachable, a message was left. Once students read and agreed to the electronic informed consent they were connected to the online survey. Students who completed the survey were entered into a drawing to win a \$100 bookstore gift card. Data was collected over 4 weeks following the university's spring break. Data was downloaded into SPSS 10.0 (1999) for analysis. The university's Institutional Review Board approved all study procedures.

Two-hundred sixty-five freshmen completed the cross-sectional survey, yielding a 57% response rate. Reasons given for non-participation included: 15-minute survey is too long ($n = 1$), already completed another alcohol survey ($n = 1$), too busy ($n = 5$), questions are too personal ($n = 2$), "don't want to" ($n = 3$), no interest ($n = 2$), don't like participating in surveys ($n = 1$), reminder calls were annoying ($n = 1$), and small incentive ($n = 1$). The remainder of the non-responders did not give reasons.

Measures

Students were informed that a drink did "not include a few sips of wine for religious purposes." Rather, a drink was defined as "a glass of wine; a wine cooler; a shot of hard liquor such as rum, gin, vodka, or whiskey; a mixed drink; or similar portion of alcohol." General college drinking was assessed using three items from the Alcohol Use Disorders Identification Test (AUDIT; Allen & Columbus, 1995) and problematic drinking behavior was assessed using the 20 drinking consequence items from the Young Adult Alcohol Problems Screening Test (YAAPST; Hurlbut & Sher, 1992). The measures were adapted to assess the timeframe of interest. Therefore, students were asked about their drinking behavior and the occurrence of each consequence since they began school at the university. (This adaptation was necessary in order to assess drinking that occurred *only* since students had entered college.) When answering, students were instructed to exclude breaks "like spring break, when school was not in session." (Breaks were excluded

because drinking and problematic drinking behaviors may have occurred at higher than usual rates during these times and the intent of the study was to capture the average occurrence of these behaviors during the school year.) This timeframe encompassed about 7 months.

The three items to assess drinking behavior adapted from the AUDIT asked students to report how often they drink alcohol, how often they have five or more drinks on one occasion, and how many drinks of alcohol they have on a typical day when they are drinking. For the first two items, students responded on a 5-point scale ranging from “never” to “four or more times a week.” For the last item, students responded on a 6-point scale (1 = “I don’t drink,” 2 = “1 or 2,” 3 = “3 or 4,” 4 = “5 or 6,” 5 = “7 to 9,” and 6 = “10 or more”). Five students responded in a contradictory manner to two or more of these items (e.g., reporting “I don’t drink” on the frequency question and reporting a number of drinks on the quantity question) and were excluded from analysis. The three items were summed to create a college drinking score (Cronbach $\alpha = 0.92$).

The 20 items from the YAAPST asked students to report the frequency of traditional drinking consequences (e.g., hangovers, blackouts, driving while intoxicated) as well as consequences that are presumed to occur at higher rates among college students (e.g., missing class, damaging property, getting involved in regrettable sexual situations; Hurlbut & Sher, 1992) since they began school. Response options included: 1 = “Never,” 2 = “1 time,” 3 = “2 times,” 4 = “3 times,” 5 = “4 or more times.” The frequencies of consequences inquired about in this study are presented elsewhere (Boyle & Boekeloo, 2006). The 20 items were summed to create a problem drinking behaviors score (Cronbach $\alpha = 0.87$).

Post matriculation alcohol related parent-child communication was assessed using the Alcohol Based Parent-Teen Communication Scale (Turrisi et al., 2000). The scale contains 30 items and 3 additional items were added to improve the reliability. The addition of the three items was necessary because during survey development the reliability of the original scale was of concern as a previous pilot study revealed that the average scale reliability was Cronbach $\alpha = 0.64$. However, in a review of the literature, there were no other measures identified that addressed parent-child communication specifically regarding the negative consequences of alcohol use. Therefore, it was decided that taking steps to improve the reliability of the Alcohol Based Parent-Teen Communication Scale was preferable to creating a new measure. Example items of the scale include: “Since I began school, my parent(s) and I have discussed how drinking could get me into trouble with the police”; and “Since I began school, my parent(s) and I have discussed the negative consequences of mixing alcohol and sex.” Response options ranged from 1 = “Not at all” to 5 = “A great deal.” The 33 items were summed (Cronbach $\alpha = 0.97$).

Attitudes toward drinking were assessed by having students rate alcohol on a 5-point scale using four semantic differential items: 1 = bad/5 = good, 1 = unpleasant/5 = pleasant, 1 = foolish/5 = wise, 1 = harmful/5 = beneficial (Wall, Hinson, & McKee, 1998). The items were summed (Cronbach $\alpha = 0.89$).

Mother's and father's subjective norm was assessed using a combination of two items: perceived parental approval of alcohol use and motivation to comply. Perceived mother/father's approval of alcohol use was assessed using three items for each parent adapted from the Monitoring the Future Study (Johnson, O'Malley, & Bachman, 2000) and Williams and Hine (2002). Students reported the extent to which their mother/father would approve of their occasional use of alcohol, their regular use of alcohol, and their regular heavy drinking. Students responded to these items on a 5-point scale ranging from $-2 =$ "strongly disapprove" to $2 =$ "strongly approve." Summative scores were created from these items for mothers and fathers individually. These scores represented students' beliefs about their mother/father's expectations. Students were also asked, "How important is your mother's/father's opinion to you?" Students responded to these two items on a 5-point scale ranging from $1 =$ "not at all important" to $5 =$ "very important." This score represented students' motivations to comply. The products of the motivation to comply scores and the mother/father expectation scores were computed. These products represented the subjective norm for mothers and fathers separately (Cronbach $\alpha_{\text{mother}} = 0.75$, Cronbach $\alpha_{\text{father}} = 0.78$).

Perceived risk of drinking was measured by using six, randomly selected, adapted items from the Negative Expectancy subscale of the Comprehensive Effects of Alcohol Questionnaire (CEOA; Fromme, Stroot, & Kaplan, 1993). In the interest of survey brevity, only 6 of the 18 CEOA items were used. Students were presented six potential negative drinking outcomes and rated the likelihood that each would occur on a 5-point scale ($1 =$ "very unlikely" to $5 =$ "very likely"). Students then rated the seriousness of the outcome on a five point scale ($1 =$ "not at all serious" to $5 =$ "very serious"). The product of the likelihood and the seriousness ratings were computed and the products were summed across items (Cronbach $\alpha = 0.84$).

Several items were assessed for use as control variables. Parental drinking behavior was captured by asking students "How often does your father/mother have a drink of alcohol?" ($1 =$ never, $5 =$ very often; $6 =$ I don't have a mother/father (treated as missing ($n_{\text{mother}} = 0$, $n_{\text{father}} = 6$); Williams & Hine, 2002). High school drinking was captured by taking the product of drinking frequency and quantity. To capture frequency students were asked, "During your senior year of high school, how often on average did you drink alcohol?" ($1 =$ never, $5 =$ four or more times a week). To capture quantity, students were asked, "On those occasions when you drank during your senior year of high school, how many drinks did you usually have?" Response options included $1 =$ "I didn't drink in high school," $2 =$ "1 or 2," $3 =$ "3 or 4," $4 =$ "5 or 6," $5 =$ "7 to 9," $6 =$ "10 or more" (Yu & Shackel, 2001). Students whose responses to the quantity and frequency items were contradictory were treated as missing ($n = 7$). Because about half of the students ($n = 128$, 50%) reported that they never drank in high school or drank only one to two drinks per occasion once a month or less, the sample was dichotomized to compare these students with students who reported drinking in greater

frequencies or quantities. High school alcohol-related parent-child communication was assessed by asking students to rate the extent to which their parents talked with them prior to beginning college about the effects of alcohol on making decisions, the dangers of drinking and driving and the risks of combining drinking and sex (1 = not at all, 5 = a great deal). Scores on these items were summed (Cronbach $\alpha = 0.83$).

Students were asked to report their age, sex, and ethnicity (White not Hispanic, includes Middle Eastern; Black not Hispanic; Hispanic or Latino; Asian or Pacific Islander; American Indian or Alaskan Native; Other). The majority of the sample (69%) reported they were White. Thus, ethnicity was collapsed to distinguish between White and Non-White. Involvement in intercollegiate sports (yes or no), and Greek organization membership (yes or no) was also measured. Additionally, to assess physical proximity to parents, students were asked how far their permanent residence was from the university (1 = within ½-hour drive of the university, 5 = more than 5-hour drive from the university). Most students reported that their permanent residence was within an hour's drive of the university (68%). Therefore, the distance variable was dichotomized so that students whose residence was within a 1-hour drive of the university were compared to students whose residence was further. SAT scores for each participant were obtained from the University Registrar.

Prior to implementation, several activities were undertaken to improve the completed instrument. The survey was validated using four focus groups, five observed pre-tests and in-depth interviews, and an expert panel ($n = 5$). These activities were aimed at improving the content and face validity of items/scales as well as improving the formatting, and aesthetics of the instrument. The observed pre-test also served to identify any website navigation issues for the online survey. Finally, an offsite pilot-test was conducted to test the functioning and "user-friendliness" of the web-based survey when it was accessed off-site.

Analysis Plan

Survey participants were compared to non-participants using chi-square for nominal variables and t -tests for continuous variables. Bivariate associations were assessed. The hypothesized models were tested using structural equation modeling (SEM) and the EQS (1994-2004) statistical package. Each model included control variables: mother's drinking; father's drinking; high school drinking; high school parent-child communication regarding alcohol; age; gender; ethnicity; participation in intercollegiate sports; participation in a Greek organization; distance from permanent residence; and SAT score. The models were just-identified. To obtain parameter estimates, the maximum likelihood robust estimation procedure was used. This estimation method iteratively minimizes a function of the discrepancy between the observed (co)variances and those reproduced by a substitution of iteratively changing parameter estimates into the model implied

relations (Hancock & Mueller, 2003). The maximum likelihood estimation procedure selects parameter estimates so as to maximize the likelihood of the observed data and is robust to violations of normality (Loehlin, 1998). For all models, path values were obtained from the standardized solutions.

RESULTS

Sample Characteristics

In general, the sample of students who received an invitation to participate in the survey accurately represents the sex of the freshmen living in residence halls and slightly over-represents females as compared to all freshmen at the university.

In analysis comparing participants and non-participants, participants were more likely to be female and to reside in a Living and Learning Center. No difference was found between participants and non-participants on characteristics such as residence hall style, residence in honors halls, declaration of a major, college of study, or SAT score. The participant sample was 65% female, 69% White (31% Non-White: 14% Black, 5% Hispanic/Latino, 13% Asian/Pacific Islander, 1% American Indian/Alaskan Native, 2% "Other"), and 79% 18-year-olds (see Boyle & Boekeloo, 2006). Table 1 displays the characteristics of the sample compared to that of the university, first-year student, and invited student populations.

Table 2 illustrates the characteristics of the scaled variables. Figure 1 displays topics of parent-student communication. The most common topics of alcohol communication were those regarding the risks of riding in a car with someone who has been drinking ($n = 184$, 70%), the importance of a healthy lifestyle ($n = 177$, 67%), the importance of not being pressured by others into drinking ($n = 128$, 49%), the dangers of drinking and driving ($n = 126$, 47%) and how difficult it is to make accurate judgments of how drunk you are ($n = 120$, 46%).

Table 1. University, First Year Students, Sample, and Participant Characteristics

	University	First year students	Sample	Participants
18–19 years of age	—	81%	100%	100%
Female	49%	54% ^a	56%	65%
Non-White	32%	—	—	31%
On-Campus	34%	90%	100%	100%

Note: "—" indicates information is not available.

^aThis percentage refers only to freshmen living in residence halls.

Table 2. Sample Characteristics for Scaled Variables

	<i>N</i>	Mean	(<i>SD</i>)	Cronbach Alpha	Min, Max	Skewness	Kurtosis
High school communication	264	7.48	(3.13)	0.83	3, 15	0.45	-0.48
College alcohol communication	251	53.71	(25.16)	0.97	33, 165	1.90	3.99
Attitude toward drinking	265	11.86	(3.64)	0.89	4, 20	-0.50	-0.16
Perceived risk	255	64.42	(25.41)	0.84	19, 150	0.90	2.12
Mother subjective norm	263	-13.54	(9.91)	0.75	-30, 15	0.26	-0.46
Father subjective norm	258	-12.51	(10.37)	0.78	-30, 20	0.22	-0.28
Alcohol problems	241	26.38	(8.18)	0.87	20, 74	1.97	5.48
College drinking	258	7.79	(3.57)	0.92	3, 16	0.18	-1.04
SAT total score	255	1227.96	(117.04)	NA	850, 1500	-0.53	0.52

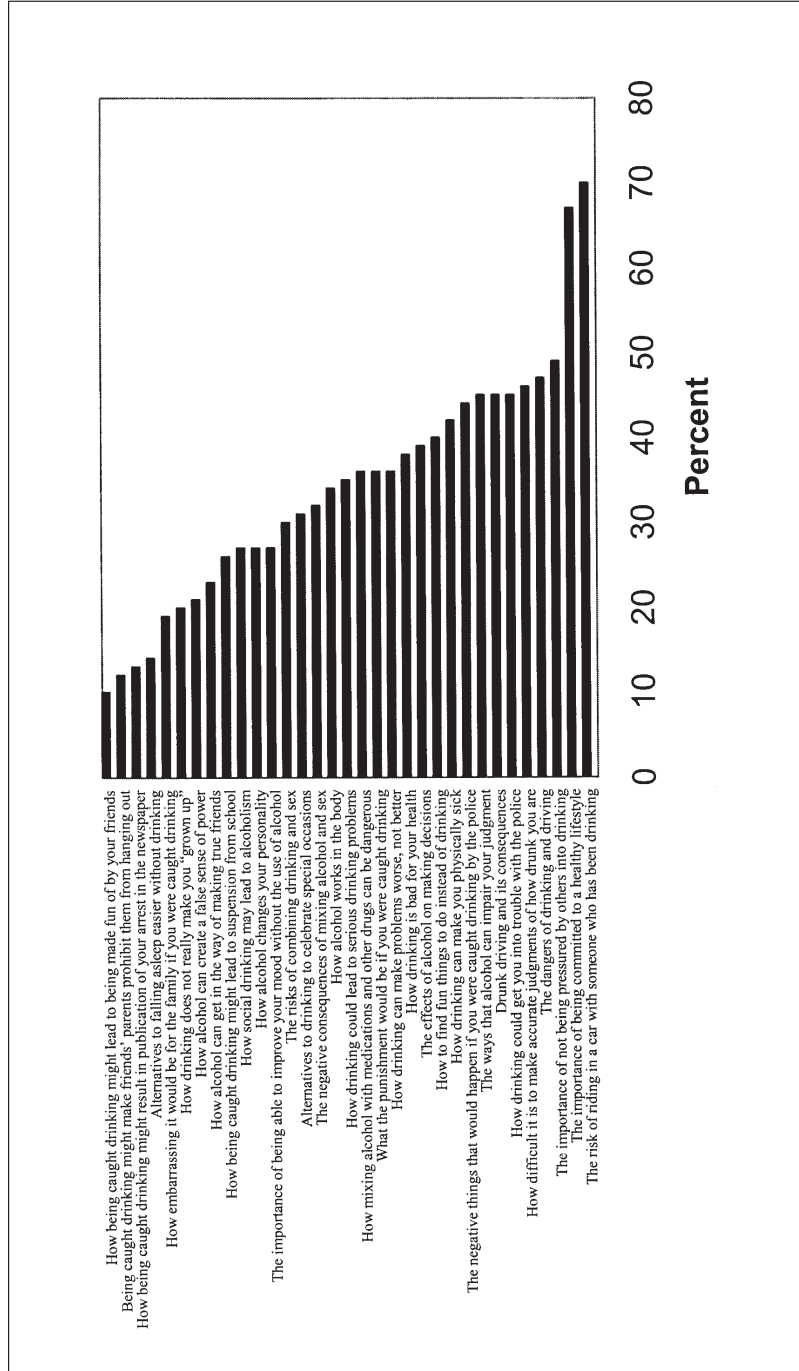


Figure 1. Topics of parent-child alcohol communication.

Bivariate Analysis

Students reporting they were White, that their permanent residence was further from school, that they drank more and more frequently in high school, that they had a favorable attitude toward alcohol, that their mothers and fathers drank more frequently, and those who scored higher on the mother and father subjective norm scales, as well as those who reported greater levels of both high school and college alcohol related communication with parents reported significantly more alcohol related problems and greater levels of college drinking. Male students also reported greater levels of college drinking while students who reported drinking more in college and those affiliated with a Greek organization or an intercollegiate sports team reported significantly more alcohol related problems (Table 3).

Structural Equation Modeling

In SEM, students who reported a more favorable attitude toward alcohol reported significantly more drinking related problems ($\beta = 0.39$) and significantly greater levels of college drinking ($\beta = 0.49$). Students who reported more alcohol communication with their parents since they began college reported significantly greater levels of college drinking ($\beta = 0.12$; Figures 2 and 3). Neither attitude, subjective norms, nor perceived risk mediated relationships between communication and drinking outcomes. In both models, there were significant associations between the covariances of attitude and father's subjective norm, attitude and mother's subjective norm, and father's and mother's subjective norm.

Significant covariates were similar between the two models. In the model depicting drinking consequences as the outcome, covariates significantly related to alcohol communication included age ($\beta = -0.18$), mother's drinking ($\beta = -0.12$), and high school alcohol communication ($\beta = 0.50$). In the model depicting college drinking behavior as the outcome, age ($\beta = -0.18$), mother's drinking ($\beta = -0.12$), involvement in sports ($\beta = -0.12$), and high school alcohol communication ($\beta = 0.49$) were significantly related to alcohol communication. Models were just-identified and, therefore, the model fits are perfect. Thus, no fit indices are reported.

DISCUSSION

On a descriptive level, it is important to note that while students frequently experienced alcohol problems, they perceived relatively little communication about alcohol risks with their parents after they began college. Outside of the risks of drinking and driving and being committed to a healthy lifestyle, less than half of students reported communication with parents about more specific alcohol risks.

Students who reported more favorable attitudes toward alcohol reported more college drinking and more problematic drinking consequences. This finding is

Table 3. Correlations

	White	Distance	Greek	Sports	H.S. drink	Attitude	Mom drink	Dad drink	College drink	Mom subj. norm	Dad subj. norm	Alcohol problems	H.S. communication	College communication	Male	Perceived risk
White	1.00															
Distance	0.18*	1.00														
Greek	0.11	0.09	1.00													
Sports	0.05	0.09	-0.03	1.00												
H.S. drink	0.30*	0.18*	0.24*	0.13*	1.00											
Attitude	0.20*	0.29*	0.16*	0.06	0.57*	1.00										
Mom drink	0.15*	0.16*	0.12*	0.10	0.24*	0.21*	1.00									
Dad drink	0.12	-0.05	0.02	0.10	0.20*	0.09	0.41*	1.00								
College drink	0.30*	0.25*	0.19	0.06	0.70*	0.70*	0.22*	0.17*	1.00							
Mom subj. norm	0.27*	0.25*	0.11	0.02	0.41*	0.40*	0.32*	0.23*	0.43*	1.00						
Dad subj. norm	0.21*	0.20*	0.05	0.02	0.37*	0.36*	0.28*	0.37*	0.38*	0.77*	1.00					
Alcohol problems	0.19*	0.15*	0.19*	0.15*	0.55*	0.51*	0.14*	0.14*	0.74*	0.33*	0.26*	1.00				
H.S. communication	0.16*	0.12	0.14*	0.04	0.33*	0.23*	0.07	0.11	0.34*	0.19*	0.06	0.23*	1.00			
College communication	0.04	0.03	0.14*	-0.03	0.20*	0.19*	-0.09	-0.01	0.28*	0.11	-0.01	0.18*	0.50*	1.00		
Male	0.16*	0.05	0.01	-0.03	0.10	0.13*	-0.05	-0.05	0.19*	0.18*	0.14*	0.13	-0.05	0.04	1.00	
Perceived risk	0.11	0.18*	-0.04	-0.06	0.08	0.12	0.13*	0.06	0.09	0.07	0.12	-0.10	0.10	-0.01	-0.06	1.00

Note: *p < .05

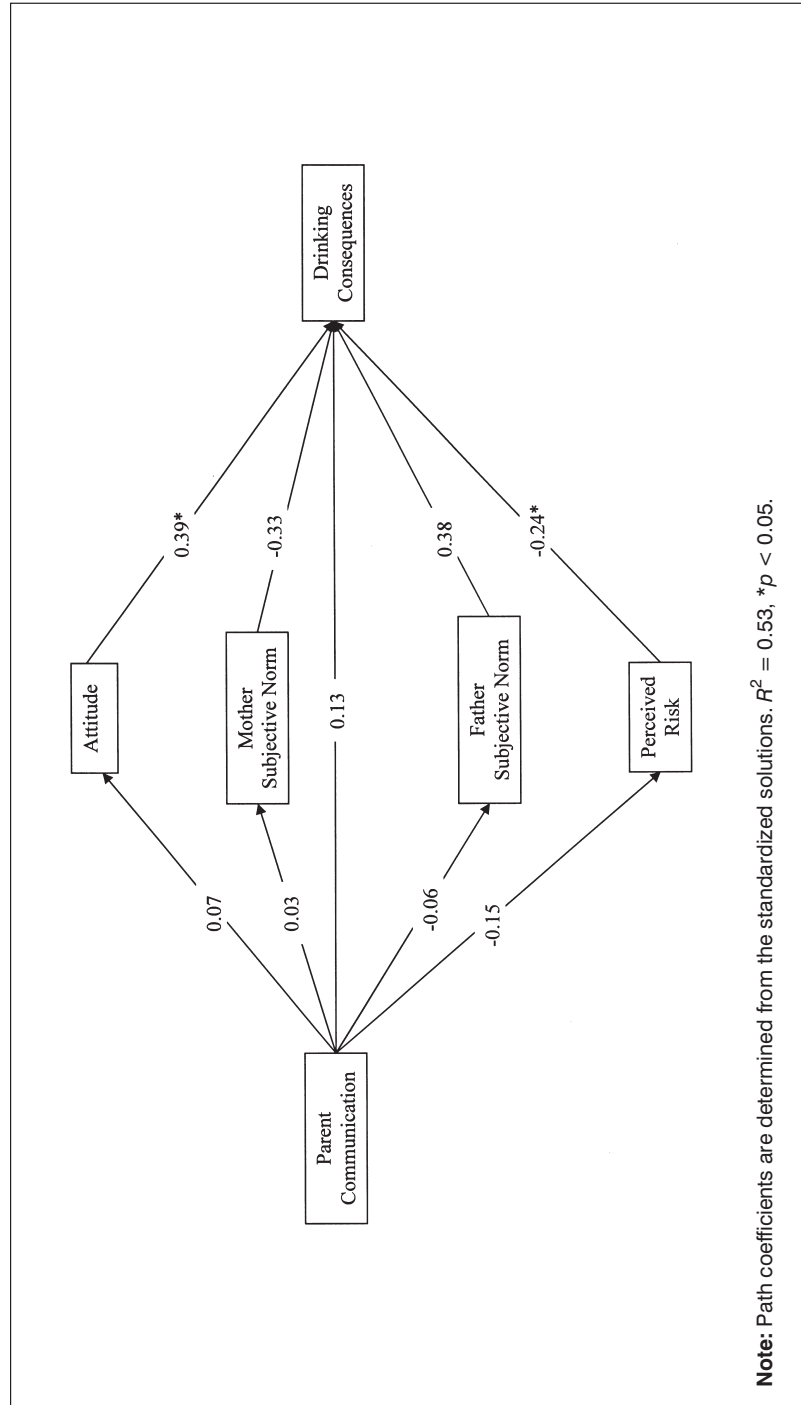


Figure 2. Path coefficients for the drinking consequences model.

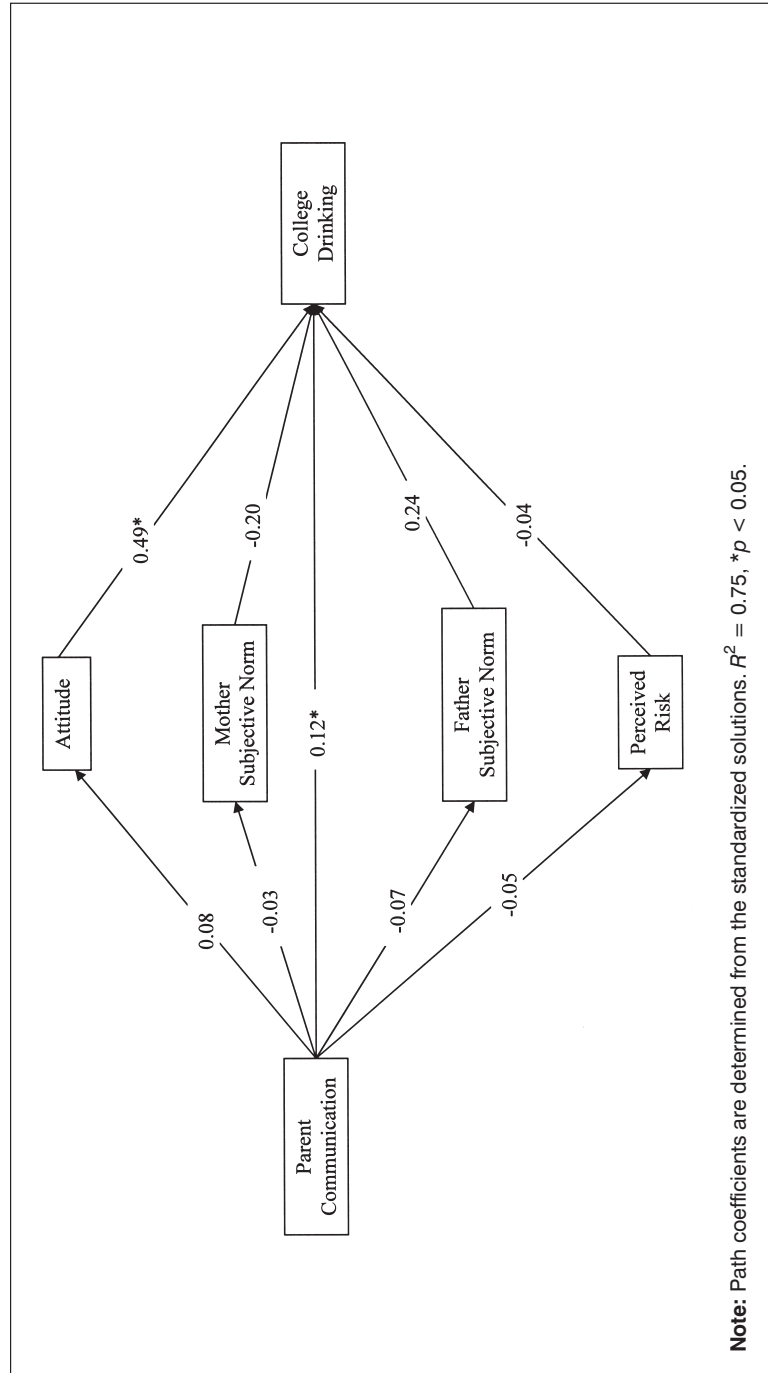


Figure 3. Path coefficients for the college drinking model.

supported by a longitudinal study by Simons and Gaher (2004), who found that a favorable alcohol attitude was associated with greater alcohol consumption and experiencing more alcohol problems 30 days later. Also, students reporting less perceived risk reported more problematic drinking consequences.

Parental communication was related to college drinking in the direction opposite of what was expected. Students who perceived having had more communication with their parents about alcohol since they began college reported more extensive college drinking. It is possible that parents talked more with their student if they perceived the student was more involved in college drinking. Because this is a cross sectional study, it is not possible to rule out that student alcohol proclivity increased parent communication. However, there are other possible explanations as well. It is possible that students may have rebelled against parents' communication or interpreted parents' communication as supportive of alcohol use. Perhaps, for example, parents who spoke to their children about how alcohol can impair one's judgment shared personal college drinking experiences in a way that conveyed the experiences as entertaining or as a means to bond with friends. Thus, such communication may actually encourage college drinking. It is also possible that students who were more involved in college drinking were more likely to perceive greater alcohol communication from their parents than students who were less involved in such drinking. Finally, students who drink more and more heavily might have been more in-tune with messages regarding alcohol and therefore may have been more likely to report such communication.

While direct relationships were found between parental communication and college drinking, attitude and college drinking, attitude and drinking consequences, and perceived risk and drinking consequences, none of the hypothesized mediators further explained the relationship between parental communication and college drinking or drinking consequences.

There are several limitations to this study. First, the cross sectional nature of the study means that it is not possible to identify the temporal ordering of parent-child communication and college drinking behaviors. As previously discussed, this may explain the unexpected finding in which students who reported greater parent-child communication also reported significantly higher levels of involvement in college drinking. Second, more women and students living in Living Learning Centers participated in the survey and only 14% of the eligible population participated. Thus, the generalizability of these results may be limited. Third, this study assessed students' perceptions of parental communication. It is possible that parents would have reported different communication behaviors than what was reported by students. Research among adolescents has shown that there often is considerable discordance between adolescent perceptions of parental behavior and parental behavior as reported by parents themselves (Beck, Shattuck & Raleigh, 2001). However, it is the adolescent perception of parental behavior that has been found to be protective against risk behavior (Cotrell, Li, Harris, D'Alessandri, Atkins, Richardson et al., 2003).

While these findings indicate that strategies to increase parent-student communication about alcohol may be ineffective, more needs to be learned to clarify the relationship between such communication and drinking involvement. For example, if parental communication is reactive to student drinking habits, then possibly parents should receive guidance on how to talk to students who are exhibiting these signs of risk. Other studies have shown that parents continue to exert an influence over late adolescents' drinking behaviors. In a study of 556 late adolescents in the summer before they began college, investigators found that adolescents whose parents disapproved of alcohol use, were less permissive of alcohol use, and monitored their children's whereabouts more, reported less engagement in heavy episodic drinking (Wood, Read, Mitchell, & Brand, 2004). While this study did not investigate parental communication, it lends support to the notion that parents could be a source of prevention for drinking problems even after students have begun college.

Future research on this topic that is longitudinal would be helpful to describe the development and effects of communication over time. Such studies could shed light on the unexpected inverse relationship between communication and college drinking found here. Parent-child alcohol-related communication also should be examined in detail as there are many questions left unanswered. In this sample, rates of communication, as measured by the Parent-Child Alcohol Communication Scale, were relatively low. Students perceived that parents communicated very little about alcohol and when communication did take place, the scope of topics covered was rather limited. Thus, it would be of interest to determine why rates of communication are low and if there are other topics regarding alcohol use, besides those measured in this study, that are discussed. Furthermore, the way alcohol messages are communicated could be assessed, as the connotations of the alcohol communication may be important in the impact that communication has on students. Involving parents in future research could help answer many of these questions and give insight into the extent of discrepancy between student and parent reports of conversations. Continued research in these areas can provide parents and educators specific guidance for engaging college students in protective conversations about drinking.

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REFERENCES

- Allen, J. P., & Columbus, M. (1995). *Assessing alcohol problems: A guide for clinicians and researchers*. (DHHS Publication No. 95-3745). Washington, D.C.: U.S. Government Printing Office.

- Beck, K. H., Shattuck, T., & Raleigh, R. (2001). A comparison of teen perceptions and parental reports of influence on driving risk. *American Journal of Health Behavior, 25*(9), 376-387.
- Boyle, J. R., & Boekeloo, B. O. (2006). Perceived parental approval of drinking and its impact on problem drinking behaviors among first-year college students. *Journal of the American College Health Association, 54*, 238-244.
- Cavendish, J. M. (1991). From data to program decisions: Developing a student assistance program. *Journal of the American College Health Association, 39*(4), 191-193.
- Cotrell, L., Li, X., Harris, C., D'Alessandri, D., Atkins, M., Richardson, B., et al., (2003). Parent and adolescent perceptions of parental monitoring and adolescent risk involvement. *Parenting: Science and Practice, 3*(3), 179-195.
- Duistman, D. M., & Colbry, S. L. (1995). Perceived risk and use as predictors of substance use among college students. *Health Values, 19*(2), 44-52.
- Engs, R. C., Diebold, B. A., Hansen, D. J. (1996). The drinking patterns and problems of a national sample of college students, 1994. *Journal of Alcohol and Drug Education, 41*(3), 13-33.
- EQS. (1994-2004). Multivariate Software, Inc.
- Fromme, K., Stroot, E., & Kaplan, D. (1993). Comprehensive effects of alcohol: Development and psychometric assessment of a new expectancy questionnaire. *Psychological Assessment, 5*, 19-26.
- Gerrard, M., Gibbons, F. X., Vande Lune, L. S., Pexa, N. A., & Gano, M. L. (2002). Adolescents' substance-related risk perceptions: Antecedents mediators and consequences. *Risk, Decision and Policy, 7*(2), 175-191.
- Glanz, K., Rimer, B. K., & Lewis, F. M. (2002). *Health behavior and health education 3rd edition*. San Francisco, CA: Jossey-Bass.
- Ham, L. S., & Hope, D. A. (2003). College students and problematic drinking: A review of the literature. *Clinical Psychology Review, 23*, 719-759.
- Hancock, G. R., & Mueller, R. O. (2003). Path analysis. In M. Lewis-Beck, A. Bryman, & T. F. Liao (Eds.), *Sage Encyclopedia of Social Science Research Methods*. Thousand Oaks, CA: Sage Publications.
- Hingson, R. W., Heeren, T., Zakocs, R. C., Kopstein, A., & Wechsler, H. (2002). Magnitude of alcohol-related mortality and morbidity among U.S. college students ages 18-24. *Journal of Studies on Alcohol, 63*(2), 136-144.
- Hurlbut, S. C., & Sher, K. J. (1992). Assessing alcohol problems in college students. *Journal of the American College Health Association, 41*, 49-58.
- Johnson, L. S., O'Malley, P. M., & Bachman, J. G. (2000). *National survey results on drug use from the Monitoring the Future study, 1975-1999, vol. 2*, NIH Publication no. 00-4803. Bethesda, Maryland: Department of Health and Human Services.
- Jung, J. (1995). Parent-child closeness affects the similarity of drinking levels between parents and their college-age children. *Addictive Behaviors, 20*(1), 61-67.
- Knight, J. R., Wechsler, H., Kuo, M., Seibring, M., Weitzman, E. R., & Schuckit, M. (2002). Alcohol abuse and dependence among U.S. college students. *Journal of Studies on Alcohol, 63*(3), 263-270.
- Komro, K. A., Perry, C. L., Williams, C. L., Stigler, M. H., Farbaksh, K., Veblen-Mortensen, S. (2001). How did Project Northland reduce alcohol use among adolescents? Analysis of mediating variables. *Health Education Research, 16*(1), 59-70.

- Kuther, T. L., & Higgins-D'Alessandro, A. (2003). Attitudinal and normative predictors of alcohol use by older adolescents and young adults. *Journal of Drug Education, 33*(1), 71-90.
- Laflin, M. T., Moore-Hirschl, S., Weis, D. L., & Hayes, B. E. (1994). Use of the Theory of Reasoned Action to predict drug and alcohol use. *International Journal of the Addictions, 29*, 927-940.
- Loehlin, J. C. (1998). *Latent variable models, 3rd Edition*. Mahwah, NJ: Erlbaum.
- Miller, W. R., Tosco, R. T., & Miller, J. H. (2000). A theory-based motivational approach for reducing alcohol/drug problems in college. *Health Education and Behavior, 27*(6), 744-759.
- Park, J., Kosterman, R., Hawkins, J. D., Haggerty, K. P., Duncan, T. E., Duncan, S. C., et al., (2000). Effects of the "Preparing for the Drug Free Years" curriculum on growth in alcohol use and risk for alcohol use in early adolescence. *Prevention Science: The Official Journal of the Society for Prevention Research, 1*(3), 125-138.
- Patock-Peckham, J. A., Cheong, J., Balhorn, M. E., & Nagoshi, C. T. (2001). A social learning perspective: A model of parenting styles, self regulation, perceived drinking control, and alcohol use and problems. *Alcoholism: Clinical & Experimental Research, 25*(9), 1284-1292.
- Presley, C. A., Leichter, M. A., & Meilman, P. W. (1998). *Alcohol and drugs on American college campuses: A report to college Presidents: Third in a series, 1995, 1996, 1997*. Carbondale, Illinois: Core Institute, Southern Illinois University.
- Presley, C. A., Meilman, P. W., & Cashin, J. R. (1996a). *Alcohol and drugs on American college campuses: Use, consequences, and perceptions of the campus environment, Vol. IV: 1992-1994*. Carbondale, Illinois: Core Institute, Southern Illinois University.
- Presley, C. A., Meilman, P. W., Cashin, J. R., & Lyerla, R. (1996b). *Alcohol and drugs on American college campuses: Use, consequences, and perceptions of the campus environment, Vol. III: 1991-1993*. Carbondale, IL: Core Institute, Southern Illinois University.
- Reeves, D. (1984). Parental power and adolescents' drinking. *Psychological Reports, 55*, 161-162.
- Schouten, B. C., Vanden Putte, B., Pasmans, M., & Meeuwesen, L. (2007). Parent-adolescent communication about sexuality: The role of adolescents' beliefs, subjective norms and perceived behavioral control. *Patient Education and Counseling, 66*(1), 75-83.
- Simons, J. S., & Gaher, R. M. (2004). Attitudes toward alcohol and drug-free experience among college students: relationships with alcohol consumption and problems. *The American Journal of Drug and Alcohol Abuse, 30*(2), 461-471.
- SPSS for Windows, Rel 10.0.0. (1999). Chicago, Illinois: SPSS, Inc.
- Turrisi, R., Jaccard, J., Taki, R., Dunnam, H., & Grimes J. (2001) Examination of the short term efficacy of a parent intervention to reduce college student drinking tendencies. *Psychology of Addictive Behaviors, 15*(4), 366-372.
- Turrisi, R., Wiersman, K. A., & Kelli, K. (2000). Binge drinking related consequences in college students: Role of drinking beliefs and mother teen communications. *Psychology of Addictive Behaviors, 14*(4), 342-355.
- Wall, A. M., Hinson, R. E., & McKee, S. A. (1998). Alcohol outcome expectancies, attitudes toward drinking and the Theory of Planned Behavior. *Journal of Studies on Alcohol, 59*(4), 409-419.

- Wechsler, H., Lee, J. E., Kuo, M., Seibring, M., Nelson, T. F., & Lee, H. P. (2002) Trends in college binge drinking during a period of increased prevention efforts: Findings from four Harvard School of Public Health study surveys, 1993–2001. *Journal of American College Health, 50*(5), 203-217.
- Williams, P. S., & Hine, D. W. (2002). Parental behavior and alcohol misuse among adolescents: a path analysis or mediating influences. *Australian Journal of Psychology, 54*(1), 17-24.
- Wilks, J., & Callan, V. J. (1984). Similarity of university students' and their parents' attitudes toward alcohol. *Journal of Studies on Alcohol, 45*(4), 326-333.
- Wood, M. D., Read, J. P., Mitchell, R. E., & Brand, N. H. (2004). Do parents still matter? Parent and peer influences on alcohol involvement among recent high school graduates. *Psychology of Addictive Behaviors, 18*, 19-30.
- Yu, J., & Shacket, R. W. (2001). Alcohol use in high school: Predicting students' alcohol use and alcohol problems in four year colleges. *The American Journal of Drug and Alcohol Abuse, 27*(4), 775-793.

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