Investigating Associations Between Perceived Parental Alcohol-Related Messages and College Student Drinking

CAITLIN C. ABAR, PH.D.,^{a,*} NICOLE R. MORGAN, M.S.,^b MEG L. SMALL, PH.D.,^b AND JENNIFER L. MAGGS, PH.D.^b

^a*Center for Alcohol and Addiction Studies, Brown University, Providence, Rhode Island*

^b*The Pennsylvania State University, University Park, Pennsylvania*

ABSTRACT. Objective: A debate remains regarding whether parents should teach their children harm-reduction tips for using alcohol while in college or whether they should maintain a zero-tolerance policy. Which type of alcohol-related communication parents should endorse is not empirically clear. The current study made use of a longitudinal measurement-burst design to examine this issue. **Method:** The sample consisted of 585 second-year students from a large university in the northeastern United States. Participants completed a baseline survey and 14 daily web-based surveys. Students were assessed for perceptions of

parental alcohol-related messages and their own alcohol use. Multilevel models were estimated using HLM 6.04. **Results:** The data indicate that zero-tolerance messages appeared most protective against alcohol use and consequences. Harm-reduction messages were most risky, even when compared with mixed messages or the absence of a message. **Conclusions:** Findings indicate that a zero-tolerance approach was associated with safer outcomes than other messages, even if students were already using alcohol. (*J. Stud. Alcohol Drugs*, 73, 71–79, 2012)

“EMERGING ADULTHOOD” REFERS TO a transitional phase from high school to young adulthood, spanning ages 18 to 25 (Arnett, 2000). This is a time marked by frequent change, exploration, and movement toward the acquisition of more adult roles and responsibilities. It also is a time during which the prevalence of alcohol use and related problems peaks (Arnett, 2000; Schulenberg and Maggs, 2002). For example, studies conducted over the past 2 decades reveal that the highest proportion of heavy drinkers and individuals with diagnosable alcohol use disorders are 18–25 years old, the ages encompassing more than 92% of all students enrolled in college (Dawson et al., 2004; Grant, 1997; Hingson et al., 2005; Johnston et al., 2005; O’Malley and Johnston, 2002). College students drink more per drinking occasion than their non-college-attending age-mates, placing college students at high risk for negative outcomes (Dawson et al., 2004; Jackson et al., 2006). Because of the high prevalence rates of college student alcohol consumption and related problems, alcohol arguably poses the greatest threat to the health of university students (Hingson et al., 2005). Research indicates that approximately two in five college students engage in heavy episodic drinking (five or more drinks on a single occasion for men, four or more drinks for women), roughly 25% drink alcohol 10 or more days a month, and nearly one third report

being intoxicated three or more times a month (Wechsler and Nelson, 2008).

An understanding of the individual and contextual influences on college drinking behavior is crucial to the eventual development of campus interventions designed to reduce the onset and extent of alcohol use and its associated negative consequences (Carey, 1993; Hawkins et al., 1992). Across a wealth of research, the influence of the family network on college student alcohol use and related problems has been clearly demonstrated (Hawkins et al., 1992; Masten and Shaffer, 2006; Read et al., 2005; Reifman et al., 1998; Turner et al., 2000; Wood et al., 2001). Over the past decade, research examining the association between parenting and college student alcohol use has illustrated a host of mechanisms by which parents may influence the drinking behaviors and related problems of their college-age youth. Among them are parental monitoring and knowledge, parental disapproval of alcohol use, parental permissiveness, and parent-teen communication (Abar et al., 2009; Abar and Turrissi, 2008; Chen et al., 2008; Patock-Peckham and Morgan-Lopez, 2006; Reifman et al., 1998; Sessa, 2005; Small et al., 2011; Turner et al., 2000; Turrissi et al., 2000, 2001; Walls et al., 2009; White et al., 2006; Wood et al., 2004).

Parental communication, in particular, has been shown to play an important role in college student alcohol use and related consequences. For instance, findings from the American College Health Association (2005) revealed that parents are the primary source of health information for college students. Moreover, college students who report better communication with their parents have been shown to have more positive psychological health and to be more satisfied with their families than those students who reported

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*Correspondence may be sent to Caitlin C. Abar at the Center for Alcohol and Addiction Studies, Brown University, Box G-S121-4, Providence, RI 02912 or via email at: caitlin_abar@brown.edu.

poor communication (Amerikaner et al., 1994). In relation to alcohol use, communication between mothers and their children about alcohol has been found to influence students' drinking beliefs, which in turn were predictive of the negative drinking consequences students experience (Turrisi et al., 2000). Furthermore, the greater the amount of time parents communicated with their college-aged children on weekends, the less their children reported using alcohol in college (Small et al., 2011). In addition, parent-based alcohol interventions with college students that emphasize parent-teen communication about alcohol use have found modest effects (Ichiyama et al., 2009; Turrisi et al., 2001; Wood et al., 2010).

Although research on parent-teen communication in college has made some recent advances, knowledge in this area remains somewhat limited. A debate remains among parents and researchers as to whether parents should teach their adolescent children harm-reduction tips for using alcohol once in college or whether they should maintain a zero-tolerance policy (i.e., to completely disapprove of underage use; Abar et al., 2009; Foley et al., 2004; Yu, 2003). Which type of alcohol-related communication parents should endorse is not yet empirically clear. The current study sought to examine this issue further.

A harm-reduction approach to alcohol use is typically adopted in an attempt to reduce the potentially dangerous consequences associated with alcohol misuse by providing an alternative to zero-tolerance or disapproval approaches through the use of tactics aimed at moderation and safety (Marlatt and Witkiewitz, 2002). The LifeSkills Training program, for example, is designed for children in fifth and sixth grades. It focuses on education about the effects of alcohol, on the risks associated with problematic alcohol use, and on teaching skills for social development and for resisting peer pressure to misuse alcohol (Botvin, 1985; Botvin and Griffin, 2004; Botvin et al., 2000). Several studies examining the LifeSkills Training program have found positive effects on alcohol use and alcohol-related problems through late adolescence (Botvin and Griffin, 2004). The Alcohol Skills Training Program, developed for small groups of college students, and Brief Alcohol Screening and Intervention for College Students (BASICS), a brief one-on-one intervention, also are consistent with a harm-reduction approach and have both found decreases in alcohol use and experienced consequences among college samples (Baer et al., 2001; Dimeff et al., 1999).

Although there is ample evidence that a harm-reduction approach is effective among early and late adolescents when administered through treatment settings, schools, or college campuses, this research seems almost contradictory to the literature that links complete parental disapproval of underage alcohol use to better outcomes. Research indicates that parental permissiveness (or tolerance) toward alcohol use increases the risk of developing a heavy-drinking

trajectory (Martino et al., 2009; van der Vorst et al., 2009). Martino and colleagues (2009) found that parental disapproval of substance use that was perceived by the teen to be consistent and strong was associated with youth who were much more likely to abstain from heavy drinking than youth who perceived parental disapproval to decline over time or remain at a more moderate level.

Prospective studies examining adolescent and young-adult alcohol use also have found that parental disapproval of alcohol use effectively deters later drinking (Ary et al., 1993; Reifman et al., 1998; Walls et al., 2009). Furthermore, multiple studies have concluded that parental communication of clear and consistent disapproval of substance use was necessary to discourage initiation of drug use as well as to influence the degree of experimentation and use among adolescents (Abar et al., 2009; Ary et al., 1993; Boyle and Boekeloo, 2006; Brody et al., 2002; Kelly et al., 2002; Reifman et al., 1998; van der Vorst et al., 2010; Walls et al., 2009; Wood et al., 2004). Based on this literature, alcohol-related messages may influence student alcohol use differentially based on the source of the message (e.g., schools vs. parents).

The current study represents an effort to further understand parent-teen communication and its association with college student alcohol use and related problems. Specifically, our primary research question asked which type of parental message (i.e., zero tolerance, harm reduction, or a mixed message) is most associated with lower levels of alcohol use and experienced consequences in college.

Method

Data used in the current analyses were drawn from the University Life Study, a longitudinal study of daily life experiences among college students. The study was approved by the university's institutional review board and was protected by a Federal Certificate of Confidentiality. The University Life Study uses a measurement-burst design, which is a longitudinal design using repeated bursts of intensive within-person data collections to efficiently capture intra-individual variability and development over time (Sliwinski, 2008). In the current study, in each of seven semesters, participants answered one longer web-based survey followed by shorter daily web-based surveys across 14 consecutive days. Participants were recruited as first-year, first-time, full-time students at a large public university in the northeastern United States. Students were eligible for the study if they were younger than age 21, were U.S. citizens or permanent residents, and resided within 25 miles of the campus. A stratified random sampling procedure was used to achieve a diverse sample of students with respect to sex and race/ethnicity. The University Life Study sample was not designed to be representative of the university's overall student population, which includes a higher proportion of

White students than was represented in the current study. The initial response rate for recruitment was 66%.

Each semester from the fall of the freshman (first) year to the fall of the senior (fourth) year, study participants were invited simultaneously via email to complete a relatively large survey followed by smaller daily surveys across 14 consecutive days. Students had approximately 4 weeks to initiate completion of the semester surveys and to begin the 14 days of daily surveys. Reminder emails were sent to encourage participation among those who did not immediately respond. All surveys were completed via the Internet, with participants able to complete daily surveys at their earliest convenience. To accommodate student schedules, a *day* (and *survey availability*) was defined as beginning at 5:00 A.M. and ending at 4:59 A.M. By design, the 14 consecutive days of data collection did not cross any school holiday break but did include naturally occurring calendar and college events, such as Halloween and home football games.

The current sample was drawn from those who responded in the fourth semester (spring 2009 of their second year). This time point was targeted in the current study because measures of the constructs of interest were available in this assessment. Incentives for participation were \$30 per semester survey and \$3 per daily survey, with a \$13 completion bonus for all 14 days (maximum \$85 total for all surveys per semester). Participants provided an electronic signature on an online consent form. In total, of the original 746 recruited students, 652 completed the Semester 4 survey (88% retention).

The current analyses used data from those individuals who responded to questions about both parents' alcohol restrictive behaviors and each parent's harm-reduction-based messages. These individuals reported daily alcohol consumption and daily parental communication on at least 1 of the 6 weekend days in Semester 4, resulting in a final sample of 585 participants. A total of 3,054 weekend daily surveys were used in the analyses. There were relatively similar numbers of female and male participants (Table 1), and the mean chronological age of participants at the completion of the Semester 4 survey was 19.93 ($SD = 0.42$). The sample was racially diverse, and nearly all (98%) were current students at the university when they completed the fourth semester survey. The vast majority of students (97.9%) lived away from parents, either on campus or in off-campus housing. Students who were included in this Semester 4 analysis differed from dropouts on sex, with men less likely to participate than women, $\chi^2(1) = 6.08, p < .05$. However, students retained in this analysis did not differ from dropouts on self-reported race (i.e., African American, Asian American, European American), Hispanic/Latino ethnicity, age, or Semester 1 heavy episodic drinking (all chi-square and F tests nonsignificant at $p < .05$ threshold).

TABLE 1. Sample characteristics

Variable	M (SD) or % of the sample
Age, in years	19.93 (0.42)
Male	46.8%
Race/ethnicity	
White non-Hispanic	27.2%
Hispanic/Latino American	26.3%
Black non-Hispanic	13.8%
Asian HPI non-Hispanic	23.9%
More than one race	8.7%
Student living situations	
On campus	64.1%
Off-campus apartment/house	32.8%
With parents	2.1%
Not in college area and not with parents	1.0%
Parental communication ^a	0.31 (0.25)
Perceived tolerance of underage alcohol use messages	68.2%
Perceived harm-reduction-based messages	66.7%

Notes: HPI = Hawaiian Pacific Islander. ^aThe amount of time communicating with parents was recoded into three categories: 0 = no time, 0.5 = less than 30 minutes, and 1 = 30 minutes or more. Therefore, the value of 0.31 falls between no time and less than 30 minutes.

Measures

Daily parent–student communication. Each day, participants were asked, “From the time you woke up until you went to sleep, how much time did you spend doing the following activities?” “Talking to/emailing/messaging with parent(s)” was one of 19 daily activities for which students were asked to provide time estimates, with possible responses of “did not do,” “up to 30 minutes,” “30 minutes to 60 minutes,” “1 hour,” and then increasing by 1-hour increments to 10 or more hours. Because of strong positive skew on these items, the amount of time communicating with parents was recoded into three categories: (0) no time, (0.5) less than 30 minutes, and (1) 30 minutes or more.

Perception of parental alcohol-related messages. In an effort to capture student perceptions of particular parental alcohol-related messages, students were asked to report on the extent to which both their parents tolerated underage alcohol use and the extent to which each of their parents provided them with harm-reduction-based advice. Perceived tolerance of underage alcohol use was measured with the question, “During your sophomore (second) year of college, how many drinks would your parents consider the maximum number for you to consume on any given occasion?” For the present analyses, this item was dichotomized into either “no amount would be ok” (0, zero tolerance) or “1 or more” (1). Harm-reduction-based messages were adapted from Martens et al. (2005).

Students were asked, “During your sophomore (second) year of college, how often did you and your mother/father (asked of each parent separately) communicate about being safe with alcohol?” Students were asked specifically about “limiting your drinking” and “avoiding drinking fast.”

The response scale was “never in my life,” “not during my sophomore year,” “one to three times,” “once a week,” and “more than once a week.” Responses were dichotomized into 0 and 1, based on whether both parents never communicated or did not communicate during the sophomore year (0) or if at least one parent communicated at least once (1). Responses from the above items were dummy coded into four groups and used in the model as an indication of the type of message students perceived receiving from their parents with regard to alcohol use: (a) a zero-tolerance message (students perceived that no amount of alcohol use would be acceptable and received no messages from parents regarding safe drinking practices, representing 17% of the sample), (b) a harm-reduction message (students perceived messages from their parents about how to be safe when using alcohol and that some amount of alcohol would be acceptable to them, representing 52% of the sample), (c) a mixed message (students perceived messages of both zero tolerance and harm reduction from their parents, representing 15% of the sample), and (d) a final group that did not perceive receiving either a harm-reduction or zero-tolerance message (representing 17% of the sample; labeled neither zero tolerance nor harm reduction). For the purpose of the analyses, the fourth group served as the reference group because it was presumed to be the most at-risk group.

Daily quantity of alcohol use. The number of standard drinks of alcohol consumed on the previous day from the time participants woke up until the time they went to sleep was assessed during the second year of college with the question, “How many drinks of alcohol did you drink?” We defined *one drink* as “half an ounce of absolute alcohol, one 12-oz. can or bottle of beer or cooler, one 5-oz.

glass of wine, or a drink containing 1 shot of liquor or spirits” (International Center for Alcohol Policies, 1998). Responses to this daily question were used to compute the three daily outcome variables in the present study. First, the total number of drinks was used as a continuous variable (range: 0–25 drinks). Second, heavy drinking was coded as a dichotomous variable (no = 0, yes = 1) and was defined for men as consuming five or more drinks and for women as consuming four or more drinks (Substance Abuse and Mental Health Services Administration, 2006). Third, estimated peak blood alcohol concentration (eBAC) was calculated only on days participants consumed alcohol ($n = 343$ persons, $n = 800$ days), using Matthews and Miller’s (1979) formula. This formula represents an event-level index of the intoxication based on the number of standard drinks consumed, time spent drinking (i.e., what time did you start your first drink, what time did you finish your last drink), sex, weight, and the average alcohol metabolism rate. The Matthews and Miller’s (1979) formula uses three variables (c = number of standard drinks consumed, w = person’s weight, t = time spent drinking), a sex constant (GC = sex constant [9.0 for women and 7.5 for men]), and an average per-hour alcohol metabolism rate ($\beta 60 = .017$ g/dl).

$$eBAC = [(c / 2) \times (GC / w)] - (\beta 60 \times t)$$

Negative consequences of alcohol use. Consequences of alcohol use were assessed on all days participants reported consuming any alcohol, with a yes/no response to each of the following: “As a result of drinking on (yesterday) did you: (a) lose control of yourself, (b) pass out, (c) get in trouble with the police or university authorities for drinking,

FIGURE 1. Spring sophomore year (Semester 4) percentage of students who communicated with their parents on the 8 weekdays, surveyed by days and sex

FIGURE 2. Spring sophomore year (Semester 4) percentage of students who communicated with their parents on the 6 weekend days, surveyed by time of week and sex

(d) find yourself in a situation where no one was sober enough to drive, (e) not get your schoolwork done?" This subscale was calculated only for participants who consumed alcohol ($n = 347$ persons, $n = 808$ days).

Results

In a preliminary analysis, we investigated variations in the frequency of communication between parents and college students to examine the potential for parental message transmission while students are in college. Communication was similar for weekdays and for weekend days for the students in the current sample (Figures 1 and 2). Most students (89%) communicated with their parents on at least 1 of the 8 sampled weekdays (Sunday through Wednesday), and many communicated with their parents on more than 1 weekday. Female students communicated with their parents on all weekdays more than did male students. Similarly, most students (75%) communicated with their parents on at least 1 of the 6 weekend days surveyed, and many communicated on more than 1 of the 6 weekend days. Female students communicated with their parents on all weekend days more than did male students.

More than half (59%) of the students in the current sample had at least one drink on the sampled weekend days during the second year of college, and 46% reported heavy drinking on at least 1 weekend day.

On weekend drinking days, the average number of drinks consumed was 6.53 ($SD = 3.96$), and the average eBAC was .12 ($SD = .08$). Students reported experiencing no negative consequences on 75% of the drinking days. One consequence was experienced on 17% of the days, and two

or more negative consequences were experienced on 8% of the days students drank alcohol.

Four models, estimated with HLM 6.04 (Raudenbush and Bryk, 2002; Raudenbush et al., 2000), were used to predict the total number of drinks, heavy drinking, eBAC, and negative consequences. Because of the skew in the total number of drinks variable, including a large number of zeroes, a Poisson distribution with overdispersion was used (Snijders and Bosker, 1999). For the dichotomous outcome of heavy drinking, a Bernoulli distribution was used (Raudenbush and Bryk, 2002). Because of the skew in the negative consequences variable, a Poisson distribution was used. To account for typical levels of communication and thus to isolate the within-person association of communication with alcohol use across days, individual means of the amount of time students spent communicating with their parents across the 14 days were entered into the model. This allowed us to isolate any protective effect of communicating with parents specifically on weekend days when holding typical communication constant. Our analyses were focused on parental communication on weekend days because the amount of time parents communicate with their children on the weekends has been found to be associated with alcohol use in college (Small et al., 2011).

Across the 14 days of data collection, women communicated with their parents on more days than did men; therefore, participant sex was entered as a control variable. Previous levels of college student drinking were not included as predictors in the model because (a) their inclusion would change the model from examining associations between two constructs to examining associations between one construct and the change in another; (b) the known strong rank-order

TABLE 2. Parental communications predicting number of drinks, heavy alcohol consumption, estimated peak blood alcohol concentration, and negative consequences (spring sophomore year)

Fixed effects	Total number of drinks event rate ratio ^a [CI]	Excessive drinking OR ^a [CI]	Estimated BAC coefficient ^b (SE)	Negative consequences event rate ratio ^c [CI]
Average outcome over 14 days				
Intercept	0.79 [0.55, 1.14]	0.14 [0.08, 0.23]	0.14 (0.01)	0.20 [0.11, 0.38]***
Average parental communication	0.94 [0.54, 1.65]	0.77 [0.33, 1.79]	-0.01 (0.02)	0.88 [0.32, 2.42]
Male gender	1.06 [0.81, 1.38]	0.90 [0.61, 1.31]	-0.02 (0.01) [†]	1.68 [1.14, 2.48]*
Zero tolerance	0.57 [0.35, 0.92]*	0.43 [0.22, 0.84]*	-0.02 (0.02)	0.96 [0.44, 2.07]
Harm reduction	1.54 [1.08, 2.21]*	1.52 [0.93, 2.49] [†]	-0.01 (0.01)	1.39 [0.80, 2.42]
Mixed message	0.88 [0.56, 1.41]	0.77 [0.41, 1.43]	-0.03 (0.01) [†]	0.96 [0.46, 1.99]
Average fluctuations in daily parental communication intercept				
	1.09 [0.87, 1.37]	1.35 [0.88, 2.09]	-0.01 (0.01)	0.69 [0.37, 1.29]

Notes: CI = 95% confidence interval; OR = odds ratio. ^a*n* = 585 participants, *n* = 3,054 days; ^b*n* = 343 participants, *n* = 800 days; ^c*n* = 347 participants, *n* = 808 days.

[†]*p* < .10; **p* < .05; ****p* < .001.

stability in alcohol-related behaviors in college would preclude the illustration of potentially relevant targets of future intervention; (c) the current study did not involve an intervention that might disrupt this stability; and (d) all of the data on the larger project were collected while students were in college, rather than across the transition to college where changes in patterns of alcohol-related behaviors might be expected.

Multilevel models nesting days within persons showed that, for the current sample of students, the amount of time spent communicating with parents on weekend days was not a significant predictor of any of the drinking outcomes in the sophomore (second) year of college (Table 2). However, between-participants (Level 2) predictors showed that students who perceived their parents as presenting a zero-tolerance message regarding alcohol consumed 43% fewer drinks on weekend days than students who did not perceive a clear alcohol-related message from their parents. In contrast, students who perceived harm-reduction-based messages from their parents consumed 154% more alcoholic drinks on weekend days compared with those who perceived neither type of alcohol-related message. Results are similar for daily heavy drinking, such that students who perceived a zero-tolerance message from parents had much lower odds of heavy drinking on weekend days than students who perceived neither zero-tolerance nor harm-reduction messages, whereas the odds were marginally elevated for individuals who perceived harm-reduction messages (*p* = .09).

Having received mixed messages (i.e., both zero-tolerance and harm-reduction messages) also was examined. Results indicated that students who perceived parents to be communicating a mixed message had marginally lower eBAC values than those in the reference group (*p* = .07). Sex was found to significantly predict negative consequences independent of the other predictors, with men experiencing increased negative consequences. The effect of sex on eBAC

approached significance (*p* = .05), such that men had lower eBACs than women.

Discussion

Parents and social scientists have long debated the optimal approach to communicating with college-aged youth regarding alcohol use, particularly as youth move into more independent developmental stages and leave the parental home. Evidence exists supporting a harm-reduction approach in which alcohol education, moderation, and safety are emphasized as an alternative to a zero-tolerance policy when dispensed through treatment settings, schools, and college campuses (Baer et al., 2001; Botvin, 1985; Botvin and Griffin, 2004; Botvin et al., 2000; Dimeff et al., 1999; Marlatt and Witkiewitz, 2002). Alternatively, research also supports the notion that complete parental disapproval of underage alcohol use is protective in regard to alcohol use and consequences among adolescents (Ary et al., 1993; Brody et al., 2002; Kelly et al., 2002; Reifman et al., 1998; van der Vorst et al., 2010) and college students (Abar et al., 2009; Boyle and Boekeloo, 2006; Walls et al., 2009; Wood et al., 2004).

The present study examined the association of parental communication of zero tolerance, harm reduction, and mixed messages of both zero tolerance and harm reduction with college students' alcohol consumption and experienced consequences assessed daily across 14 consecutive days. Findings indicate that parental communication of zero tolerance, or complete disapproval, of alcohol use was associated with the safest student behaviors regarding both weekend drinking and experienced consequences. Conversely, a harm-reduction approach from parents was found to be associated with the highest levels of risk behaviors. Specifically, students who perceived zero-tolerance messages consumed 43% less alcohol than students who did not perceive zero-tolerance or harm-

reduction messages from their parents, and students who perceived harm-reduction-based messages from their parents consumed 150% more alcohol than those students who perceived neither type of alcohol-related message. This finding contradicts our initial assumption that those students who did not perceive alcohol-related messages from their parents would be most at risk.

Findings that a zero-tolerance approach was associated with the safest alcohol-related outcome in college are consistent with previous literature examining parental disapproval of alcohol use. In an independent sample, Abar and colleagues (2009) found that parents who were completely disapproving of any underage alcohol use tended to have children who exhibited the safest alcohol-related behaviors in college. Although results from the present study were found to be consistent with literature examining parental disapproval of alcohol use, support for a harm-reduction approach from parents was not found in the current study. It is possible that, although harm-reduction approaches have been shown to be successful across a variety of populations when dispensed from certain sources such as treatment facilities or schools, given that perceived parental harm-reduction messages were not linked with less alcohol use in these analyses, the context or facilitator of harm-reduction approaches is crucial.

Based on the plethora of work linking parental approval of alcohol use to greater use and experienced consequences, it may be that a harm-reduction approach from parents is tantamount to approval. National statistics indicate that approximately 87% of students have at least tried alcohol, and approximately 40% report engaging in heavy episodic drinking (Johnston et al., 2006). Based on these prevalence reports, it is likely that by the second year of college many parents become more reactive than proactive in their communications and parenting in this domain. As such, it also is possible that harm-reduction messages from parents are, ultimately, the result of previous student drinking, such that parents tend to adopt these messages only in situations where they are aware that their child is using alcohol. Although our correlational design does not allow us to disentangle the direction of causal impact, our findings do not support the idea that parents should provide harm-reduction tips in response to this knowledge. Additional work prospectively examining perceived parental messages among initially abstinent and initially heavy-drinking students is required for stronger conclusions to be made.

Furthermore, it also is possible that our study did not measure the most effective harm-reduction strategies or that parents did not communicate them effectively. Therefore, more research on message framing and transmission is necessary to gain a more complete understanding. In addition, it is important to note that not all harm-reduction messages are necessarily equal, such that the quality of the message and how it was delivered may play an important

role in how well it is received. Finally, additional work is needed specifically examining the unique influence of parental alcohol-related messages in the context of other parenting characteristics because it is possible that these messages are primarily proxies/markers for the quality of earlier parenting or the parent-teen relationship.

Limitations

There are several limitations to be considered. First, the sample consisted of students from a single U.S. university. Although the sampling methodology and relatively high response rates produced a racially and ethnically diverse sample, future research should seek to replicate our findings among different sets of students from multiple sites. Second, assessment occurred in the sophomore (second) year of college, because that is the time point at which data were available. The examination of potential longitudinal effects of communications about alcohol across the transition to college and beyond (e.g., age 21, after graduation) could provide prevention scientists with more explicit and time-sensitive targets for communication-based intervention programs.

Third, parental alcohol-related messages and other alcohol-related items were assessed based on the perception of the student alone. This reliance on student self-report data may raise concerns about the validity of these perceptions of parenting and the accuracy of retrospective alcohol use measures. Although literature exists documenting that adolescents can accurately and reliably report on their parents' practices (Goldin, 1969; Moskowitz and Schwarz, 1982) and on their own substance use behaviors (Burleson and Kaminer, 2006; Sobell and Sobell, 1997), future studies might be further strengthened by the incorporation of multiple methods of data collection (e.g., self-reports, biological markers, direct observation) and/or multiple reporters (e.g., student, parent, collateral reporters).

Finally, some of the perceived parenting items represented aggregate measurement across mothers and fathers. These more global measures of perceived parenting were used in lieu of more parent-specific measures because of limits within the data. Future research should seek to examine the potential impact of both mothers' and fathers' messages separately to explore the result of inconsistent messages within households.

Conclusions

The current study findings add to a small but growing literature supporting the continuing importance of parents in late adolescence and imply that the type of alcohol-specific message parents communicate to their college-aged students may have important consequences in terms of alcohol use and experienced problems. Findings from this study serve

to enhance current alcohol-focused intervention efforts at the college level by better informing prevention research about types of messages that may be more associated with reductions in the onset or extent of college alcohol use when being dispensed from parents rather than from other sources. The data from the current sample indicate that zero-tolerance (complete disapproval) messages from parents were associated with lower levels of alcohol use and that harm-reduction-based messages were associated with riskier alcohol use in college. A future randomized preventive trial would greatly strengthen these assertions regarding parental communications. Future work also is necessary to determine how seemingly contrary messages from different sources (i.e., harm reduction from school vs. zero tolerance from parents) may or may not work simultaneously to better reduce alcohol misuse and related problems.

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