What are other parents saying? Perceived parental communication norms and the relationship between alcohol-specific parental communication and college student drinking

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Abstract

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This study examined parents' normative perceptions of other college parents' alcohol-specific communication, and how parents' perceived communication norms and alcohol-specific communication relate to student drinking outcomes. A sample of 457 student-parent dyads were recruited from a mid-size university. Students completed web-based assessments of alcohol-related attitudes and behaviors. Parents completed alcohol-specific measures of communication norms and parent-child communication, including communication content (i.e., targeted communication) and frequency of communication. Results indicated that parents overestimated how much other parents talked to their college students about the frequency and quantity of alcohol use, but underestimated how often parents initiated conversations about alcohol. In a path model, perceived communication norms positively predicted both targeted communication and frequency of communication. Perceived communication norms and targeted communication negatively predicted students' attitude toward alcohol use. In contrast, more frequent communication predicted students holding more approving attitudes toward alcohol. The relationship between parents' perceived communication norms and students' drinking behaviors was mediated by the parental communication variables and student attitudes. Tests of indirect effects were undertaken to examine meditational processes. The findings underscore relations involving parental perceived communication norms and parents' own alcohol communication and their children's drinking outcomes. The complex relationships of different types of parental communication and student outcomes warrant further research.

Keywords: alcohol, college students, parents, perceived communication norms

Despite assertions that there is little support for the continued influence of parents on college-aged students' alcohol use (Ham & Hope, 2003), a growing body of more recent research suggests that parents remain a persuasive force on students even after matriculation to college (Abar & Turrisi, 2008; LaBrie, Hummer, Lac, Ehret, & Kenney, 2011; LaBrie & Sessoms, 2012; Turrisi & Ray, 2010). College students tend to communicate regularly with their parents and greater frequency of non-alcohol specific

communication is associated with less drinking (Small, Morgan, Abar, & Maggs, 2011). Emerging college alcohol research has focused on a range of parenting factors (Cail & LaBrie, 2010; Turrisi & Ray, 2010; Walls, Fairlie, & Wood, 2009), however, relatively little is known about parent-child alcohol-specific communication's relationship to college students' alcohol use (Abar, Morgan, Small, & Maggs, 2012). A greater understanding of the relationship between parents' alcohol communication and students' alcohol outcomes could have important implications for college alcohol prevention efforts.

Alcohol-Specific Communication

Research examining parent-child communication among adolescents provides important developmental context for understanding how alcohol-specific communication may function in the college context. While there is evidence to suggest that the quality of alcohol-specific communication during adolescence is positively associated with safer drinking practices (Spijkerman, van Den Eijnden, & Huiberts, 2008), other studies have found no relationship between alcohol-specific communication and drinking outcomes (Ennett, Bauman, Foshee, Pemberton, & Hicks, 2001). Still other studies have found that greater communication is associated with more frequent alcohol use in adolescents (Reimuller, Hussong, & Ennett, 2011; van der Vorst, Burk, & Engels, 2010; van der Vorst, Engels, Meeus, Deković, & Van Leeuwe, 2005). In particular, permissive communication (e.g., allowing adolescents to drink with parents) appears to be associated with greater alcohol use in adolescents and this form of communication tends to increase with age (Reimuller et al., 2011). Indeed, the most commonly reported type of alcohol-specific parent communication in late adolescence are permissive messages to use one's own discretion when making choices regarding alcohol (Miller-Day, 2008). Given these developmental changes in alcohol-specific communication, it is possible that parents' alcohol-specific communication during college will have little positive effect on college students drinking behaviors and may even be associated with increases in student drinking.

Research specifically addressing the potential link between alcohol-specific communication and college students' alcohol use and attitudes has produced inconsistent results. Turrisi et al. (2000) demonstrated that among first-year college students, mother's communication about a range of alcohol-related topics was related to students holding less approving attitudes toward the effects and consequences of alcohol use. Similarly, Booth-Butterfield and Sidelinger (1998) found that students' perceptions of how frequently they discussed alcohol with their parents was positively associated with safer alcohol-related behaviors. In contrast, Boyle et al. (2009) found that the more frequently parents talked to their children about alcohol, the more college students drank.

Variations in Measures of Alcohol-Specific Communication

Turrisi et al. (2007) suggest that inconsistent findings regarding alcohol-specific communication among college students may partly reflect differences in measures used to operationally define parent-child communication. For example, Turrisi et al. demonstrated that among college athletes, parental communication about the physical consequences of drinking was negatively related to alcohol consumption. In comparison, communication about social and legal consequences was linked to increases in student drinking.

In a study of parent-teen communication among adolescents, Miller-Day and Kam (2010) found that frequency of communication was not associated with adolescents' alcohol use, but that targeted parent-teen communication, defined as "direct and indirect, as well as one-time and ongoing, conversations specifically about alcohol" (Kam, 2011, p.325), was related to lower levels of alcohol use. Targeted communication was operationalized as 9 types of communication content, including parents providing warnings about the dangers of alcohol and discussing expectations about alcohol use. Miller-Day and Kam suggest that to more fully understand the influence of parent communication on student drinking outcomes, measures should not be limited to assessing frequency of communication, but also the content

of such conversations. Research using communication measures that are more inclusive may improve our ability to predict student drinking and develop recommendations on the most effective aspects of parental communication. In summary, although there is evidence that parent-student communication may curtail alcohol use in college students, it is not clear whether frequency of communication is important or whether measures of alcohol-specific content maybe more predictive. Therefore, one of the current study's aims is to examine the relationship between alcohol-specific communication and college students' alcohol-related outcomes using measures of both frequency and content of communication.

Potential Influence of Social Norms Factors on Parental Communication

The identification of factors that promote or hinder parent-student communication is an important area of research that has yet to be fully explored (Cremeens, Usdan, Brock-Martin, Martin, & Watkins, 2008). The social norms approach (Berkowitz, 2004; Cialdini, Reno, & Kallgren, 1990; Reno, Cialdini, & Kallgren, 1993) provides a useful theoretical framework to identify factors that may foster parent-child communication regarding alcohol use. The approach, in part, stems from a large body of research showing that social influences are consistent predictors of individual attitudes and behavior (e.g., Borsari & Carey, 2003; Perkins, 2002). For example, perceptions of how often other people engage in a range of behaviors, from helping coworkers to gambling (Larimer & Neighbors, 2003; Naumann & Ehrhart, 2011; Neighbors et al., 2007), have been shown to predict individual's own behavior. Indeed, perceptions of what others do (perceived descriptive norms) and think (perceived injunctive norms) are often more influential in determining behavior than the actual prevalence of behaviors (actual norms) (Prentice, 2008; Rimal & Real, 2003).

Although the effects of social norms appear to be stronger for children and younger adults, older non-student samples also appear susceptible to conforming to these types of social influences (Rivis & Sheeran, 2003). For example, in a study of fathers (Murphy, Gordon, Sherrod, Dancy, & Kershaw, 2012), men who were less involved with their children also perceived their peers to be less involved with their own children. The social norms approach suggests that parents' perception of how often other similar parents engage in alcohol-specific communication (i.e., perceived norm) can influence parents' behaviors, even more so than what other parents actually do and think (i.e., actual norm). If parents believe that other parents do not talk to their children about alcohol use, they may be susceptible to social pressure to conform to this norm and therefore communicate less frequently with their own child about alcohol (Linkenbach, Perkins, & DeJong, 2003).

To our knowledge, research conducted by Linkenbach and colleagues (2003) is the only study to date to explore perceived communication norms in parents. The study targeted parents of teens aged 12 to 17 years and found that parents typically underestimated how often other parents discussed family rules and expectations about alcohol use with their children. Although their findings echo the underlying premise of social norms theory, the research did not evaluate what influence, if any, parents' perceived communication norms have on parents' own communication behavior. Indeed, limited research has examined how parents' perceived norms can influence their own behavior as well as student outcomes. LaBrie et al. (2011) found that college parents' perception of other parents' approval of alcohol use was related to parents' own attitude, which in turn predicted student drinking outcomes. Because parents might be challenged by the task of talking to their children about alcohol use (King et al., 2002), it is possible that parents consider how much other parents communicate with their college-aged student as a guide for their own communication on the issue. However, the results of Linkenbach et al. (2003) indicate the parents may not have an accurate understanding of other parents' behaviors, while the work of LaBrie et al. indicates that these misperceptions may negatively influence parents' own communication behavior.

Current Study

The current study had two primary aims. Firstly, we sought to extend the work of Linkenbach et al. (2003) by examining the extent to which the parents of college-aged students underestimate how often other parents talk to their children about alcohol use. We predicted that parents would tend to underestimate how frequently other parents talked to their children about alcohol. Secondly, we investigated whether parents' perceived communication norm was associated with their own communication (i.e., frequency and targeted communication) and student outcomes (i.e., student approval of alcohol-related behaviors and their own individual alcohol use). We hypothesized that (1) perceived parental communication would positively predict parents' own communication, (2) communication would be negatively related to students' attitudes toward alcohol, and (3) students' attitudes would be positively related to their alcohol behavior. In addition to these direct effects, we also predicted that the relationship between parents' perceived norms and student behavior would be mediated by targeted communication, communication frequency, and student attitudes. Finally, we expected that the effects of parent communication on student drinking behavior would be mediated by student attitudes. These hypothesized relations were multivariately evaluated in a path-analytic framework. Previous research has demonstrated that both gender (Ichiyama et al., 2009; O'Connor & Colder, 2005; Reed, Lange, Ketchie, & Clapp, 2007) and race (Babb, Stewart, & Bachman, 2012; Herd, 1994; Reed et al., 2007) are related to student drinking outcomes and parenting variables. Thus, to rule out rival effects when estimating the model, both gender and race where included as covariates. As the predictions involved the role of meditational variables, test of indirect effects also were performed to evaluate the plausibility of these processes.

Method
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Participants

Participants were 457 student-parent dyads recruited from a mid-size west coast university. Students in a psychology department subject pool completed an online survey as part of their course requirement. Students were asked to recruit a parent of their choice to complete a separate online survey to receive additional subject pool credit. In total, 475 students completed the student questionnaire, and 457 of their parents (96.2%) completed the parent questionnaire. The students were 61.1% female, with a mean age of 19.1 years ($SD = 1.43$). The majority of students identified as White (60.0%), with 10.7% identifying as Asian, 9.8% Hispanic/Latino(a), 3.7% Black/African American, 0.4% Native American/Alaskan Native, 0.9% Hawaiian Native/ Pacific Islander, 12.5% mixed race and 2.0% other. Students reported that they were currently living on-campus (78.3%), off-campus with roommates (11.3%), off-campus with family (6.3%), or off-campus alone (3.9%).

Parents were 74.0% female and ranged in age from 34 to 68 years of age ($M = 51.3$, $SD = 5.30$). The ethnic/racial composition of the parent sample was similar to that of the student sample: 65.4% White, 11.4% Hispanic/Latino(a), 13.1% Asian, 3.9% Black/African American, 0.9% Hawaiian Native/ Pacific Islander, 3.1% mixed race and 2.2% other.

Procedure

The study was advertised through the psychology department subject pool. Students interested in participating contacted the research team via email, and were asked to nominate a parent to participate and provide the parent's email address. Both the student and parent were emailed a description of the study and a link to an online IRB-approved consent form. After providing consent, participants were immediately directed to an online questionnaire.

Measures

Measures included parental self-reports regarding targeted parent-student communication (actual descriptive norm), frequently of alcohol-related communication (actual descriptive norm), and perceptions of other parents' communication (perceived descriptive norm). Students reported on their approval of alcohol-related behaviors, level of alcohol consumption and alcohol behaviors.

Parent communication

Targeted communication about alcohol Targeted communication was assessed the Targeted Parent-Child Communication about Alcohol (TPCCA; Miller-Day & Kam, 2010) modified for a parent sample. The TPCCA was designed to assess a range of communication content, including warnings about the dangers of alcohol use, providing advice about alcohol-use situations, conveying expectations about alcohol use, and using personal stories and the media to reinforce conversations about alcohol. Using a scale ranging from 1 (*Disagree a lot*) to 5 (*Agree a lot*), parents indicated how much they agreed with nine statements describing their use of different communication strategies. The items included: I have… "Talked to my child about how to handle offers of alcoholic drinks" and "Given my child rules to obey about drinking alcohol". A mean composite was created (α = .86), with higher scores indicating that parents engaged in greater targeted alcohol communication (actual descriptive norm).

Frequency of communication about alcohol Parents completed a 5-item measure assessing how frequently they communicated with their child about alcohol use (actual descriptive norm). The measure was developed based on a review of frequency-based alcohol-specific communication items (Ennett et al., 2001; Jackson, Henriksen, & Dickinson, 1999; Spijkerman et al., 2008; van der Vorst et al., 2010; van der Vorst et al., 2005; Wills, Gibbons, Gerrard, Murry, & Brody, 2003). Example items included "How often do you ask your child how frequently he or she drinks on the weekends," and "How often do you initiate a conversation about alcohol use with your child?" (See Table 1 for further item descriptions). Responses were measured on a 7-point Likert scale ranging from 0 (*Never*) to 7 (*More than once a week*). Given that these five items were positively correlated from .52 to .81 (all *ps* < .001), a frequency of communication was calculated by taking the average of the five items (α = .91).

Table 1

Parents' Actual Communication Norms versus Perceived Norms about Other Parents' Communication

Perceived descriptive norms of parents' communication Perceived parent communication was assessed using the five-item communication frequency measure described above. Parents were asked how often they believed other college parents discussed alcohol use with their children, for example, "How often do other parents ask their child how many drinks he or she consumes on the weekends" and "How often do other parents initiate a conversation about alcohol with their child." The five items were averaged to create a perceived norm composite score (α = .92). Higher scores indicated that parents believed other parents communicated more frequently with their children about alcohol use.

Students' attitude toward alcohol Students' attitude toward alcohol use was assessed using an 11-item adapted version of the comprehensive scale from Lewis et al. (2010). Students were asked "how acceptable is it for yourself to" engage in behaviors ranging from less severe behaviors, such as "drink to have fun," "drink to get drunk," "drink with friends," to more severe behaviors, such as "drive a car after drinking", "drink alcohol daily" and "drink enough alcohol to pass out." Higher scores indicated that students were more approving of alcohol-related behaviors.

Student alcohol consumption Prior to answering questions related to drinking behavior, a standard drink was defined as a drink containing one-half ounce of ethyl alcohol — one 12 oz. beer, one 4 oz. glass of wine, or one 1.25 oz. shot of 80 Proof liquor. Pictures of standard drinks accompanied these descriptions.

Typical drinking behaviors We assessed students' alcohol consumption using the Daily Drinking Questionnaire (DDQ; Collins, Parks, & Marlatt, 1985; Dimeff, Baer, Kivlahan, & Marlatt, 1999). Participants were asked to consider an average week in the past 30 days and report the typical number of standard drinks consumed on each day of the week. Responses were open-ended and summed to form a measure of typical weekly alcohol consumption.

Specific drinking behaviors To provide a more robust and targeted assessment of the relationship between alcohol-related attitudes and behaviors, participants were queried about the frequency with which they engaged in the same 11 alcohol-use behaviors that were used to measure alcohol-related attitudes (Lewis et al., 2010). Responses were measured on a 7-point Likert scale ranging from 1 (*Never*) to 7 (*More than once a week*). Frequency of engaging in the various drinking behaviors was calculated by taking the average of the 11 items (α = .94).

Results

Analysis plan

Parents' perceptions of other parents' communication frequency (perceived norms) was tested against the mean value of parents' actual frequency of communication (actual norms) using a one-sample t test. Additional analyses examined discrepancies between these two measures at the item level. Discrepancy scores (perceived norm minus actual norm) were calculated to determine the proportion of parents who underestimated other parents' communication frequency. This set of analyses comparing each parent's perceived norms relative to the actual norms determined the extent that parents underestimated or overestimated other parents' level of parent-child communication about alcohol.

Path analysis was undertaken to estimate the postulated relations using the EQS 6.2 program (Bentler, 2005). Maximum-likelihood served as the estimation method for the purpose of producing a model that would converge optimally with the underlying raw data (Kline, 2011). An initial path model was estimated to conclusively retain only the significant direct paths. The initial model was hypothesized and specified as follows. Perceived parental communication norm was set to predict targeted communication and frequency of communication. These three variables obtained from parental reports were permitted to predict student attitude toward alcohol. All four variables were allowed to simultaneously explain variance in students' typical drinking behaviors and specific drinking behaviors. The parental reports of targeted communication and frequency of communication were allowed to be correlated, as were the student reports of typical drinking behaviors and specific drinking behaviors, given that each pair of constructs tapped similar domains. As it is impossible to directly covary endogenous variables in the Bentler-Weeks theory for estimation, the error terms from each pair were correlated as a proxy (Bentler, 2005). For the purpose of ruling out the contribution of demographic characteristics in the model, gender (0 = *female*, 1 = *male*) and race (0 = *non-White*, 1 = *White*) were entered as covariates that predicted all the endogenous variables (targeted communication, frequency of communication, student attitude, student typical drinking behaviors, and student specific drinking behaviors). After estimation of this model, predictive paths found to be nonsignificant were trimmed to produce a parsimonious final model.

The adequacy of the proposed model in approximating the data was evaluated with several fit indices with desirable statistical properties. The model X^2 test was inspected, with a nonsignificant value signifying that such a good-fitting model should not be rejected (Bollen, 1989; Byrne, 2006). Also used to help scrutinize the model were the Comparative Fit Index (CFI) and the Non-Normed Fit Index (NNFI), which typically range from 0.00 to 1.00. In these goodness-of-fit indices, higher values, preferably over .90, are indicative of an appropriate model (Ullman & Bentler, 2003). The Root Mean-Square Error of Approximation (RMSEA) is sufficiently sensitive in detecting structural misspecifications, thus it was used to judge the extent of misfit between the hypothesized model and underlying data (MacCallum & Austin, 2000). Values below .05 indicate close fit, between .05 and .08

fair fit, and between .08 and .10 mediocre fit, and above .10 poor fit (MacCallum, Browne, & Sugawara, 1996). Due to the number of comparisons, a more conservative $p < .01$ was used as the cut-off for significance in all statistical tests.

Perceived communication norm

As shown in Table 1, parents' perceived parental communication norm was discovered to be significantly greater than their actual norm. This finding suggests that parents generally tended to overestimate the frequency with which other parents communicated with their children about alcohol. Analyses then determined whether parents systematically overestimated or underestimated communication on each of the individual items (see Table 1). Results show that parents significantly overestimated how often other parents spoke to their children about the frequency of drinking on the weekend, number of drinks consumed on the weekend, frequency of drinking on weekdays, and binge drinking. In contrast, parents tended to underestimate how often other parents initiated conversations about alcohol use.

Although analyses of mean differences indicated that parents tended to overestimate other parents communication frequency, examination of proportion discrepancy suggested that a noteworthy proportion of parents did underestimate communication frequency (Table 1). For instance, 51.7% of parents underestimated parent communication about number of drinks consumed on weekends, and 63.0% underestimated communication about binge drinking. These conflicting results between the mean values and proportions likely occurred because we examined mean scores of variables with different response distributions.

Correlations

The correlation matrix of mean composites used in the path model is presented in Table 2. As expected, the parental communication variables of targeted communication and frequency of communication were positively correlated; and the student drinking variables of typical drinking and specific drinking were also positively correlated. Perceived parental communication norm correlated positively with targeted communication and communication frequency, but correlated negatively with student attitude toward alcohol. Higher endorsed level of targeted communication inversely correlated with student attitude toward alcohol, but no significant association emerged between frequency of communication and student attitude. Student attitude positively correlated with both student typical drinking behaviors and student specific drinking behaviors.
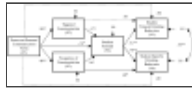
 Table 2

Path Model

The initial model with all potential paths produced excellent fit indices, $X^2 = 1.96$, df = 3, $p = .58$, CFI = 1.00, NNFI = 1.00, RMSEA = .00 [90% CI: .00, .068]. The model is shown in Figure 1. Paths that were not significant ($p > .01$) were trimmed and the model was re-estimated. Gender and race were allowed to remain predictive of the endogenous variables, regardless of whether these paths were significant, to continue to rule out the variance due to demographic covariates. This revised final model demonstrated very high fit indices, $X^2 = 5.03$, $df = 8$, $p = .75$, CFI = 1.00, NNFI = 1.00, RMSEA = .00 [90% CI: .00, .039]. The revised model is structurally nested within the hypothesized model. Thus, a chi-square difference test was conducted, which corroborated that trimming of nonsignificant substantive paths did not significantly degrade the model, $X^2_{diff} = 3.07$, df$_{diff}$ = 5, ns.

Figure 1

Initial path model. Standardized coefficients are presented. All paths controlled for gender and race on the endogenous variables. E = prec diagrammatic clarity, the following paths were estimated but not disp

Direct paths of the final model were then evaluated, as diagrammed in Figure 2. Higher perceived parental communication norm simultaneously predicted higher levels of targeted communication and frequency of communication. Each of these three variables obtained from parental self-reports were observed to simultaneously explicate student attitude toward alcohol in different ways. Specifically, perceived parental communication norm and targeted communication contributed to less approving, but frequency of communication contributed to more approving, student attitude toward alcohol. Student attitude then explained greater levels of both student typical drinking behaviors and student specific drinking behaviors. Results also indicated that frequency of communication predicted greater student specific drinking behaviors.

Figure 2

Final path model. Standardized coefficients are presented. All paths have statistically controlled for gender and race on the endogenous variables. E = predictive error. For diagrammatic clarity, the following paths were estimated but now displayed: correlation **...**

After statistically controlling for perceived parental communication norm and targeted communication, the model yielded the unanticipated positive direct effect of frequency of communication on student attitude toward alcohol (Figure 1). Originally, the Pearson correlation between frequency of communication and student attitude was not significant (Table 2). However, after accounting for the variance explained by perceived parental communication norm and targeted communication, results revealed that frequency of communication emerged as predictive of more approving student attitudes toward alcohol. Upon closer inspection, the finding was not an artifact arising from multicollinearity, as these 3 communication variables possessed values of variance inflation factor (VIF) no greater than 1.42 (Tabachnick & Fidell, 2007).

Indirect Effects

After examination of the direct effects in the final model (Figure 2), tests of indirect effects were undertaken to investigate the statistical tenability of the meditational processes depicted. These tests of indirect effects designed for path models are based on the multiple regression variant of the Sobel test (Bentler, 2005; Sobel, 1987). All possible sequences of indirect effects in the model are reported in Table 3. Greater targeted communication indirectly contributed to students' reduced levels of typical drinking behaviors and specific drinking behaviors as significantly mediated by student attitude toward alcohol. Conversely, higher frequency of communication indirectly contributed to students' increased level of specific drinking behaviors and typical drinking behaviors as mediated by student attitude toward alcohol. The noteworthy positive indirect effects stemming from frequency of communication suggests that discussing alcohol more often might indirectly foster elevated levels of student drinking. Taken together, these findings underscore that parents' use of targeted communication appears to be a more effective strategy than specific communication in indirectly curtailing students' alcohol consumption.

Table 3

Tests of Indirect Effects in Final Path Model

Perceived parental communication norm was not shown to have an indirect effect on student attitudes (Table 3). Perceived parental communication norm also did not have a significant indirect effect through targeted communication, communication frequency, and student attitude to the final outcomes of student typical drinking behaviors and student drinking specific drinking behaviors.

Discussion Go to:

Relatively few studies have attempted to address factors that predict parents' alcohol-related communication with their college-aged offspring (Cremeens et al., 2008). Even fewer studies have sought to compare the relative predictive contribution of different parent-child communication measures despite recent suggestions that the subtle distinctions between constructs may be related to the effects of communication on student outcomes (Miller-Day & Kam, 2010; Turrisi et al., 2007). The current study examined parents' perceived parent-student communication norms concerning alcohol, and how these perceived descriptive norms were associated with parents' own frequency and content of communication, and how communication related to students' alcohol-related attitudes and behaviors. This preliminary investigation of college parents' perceived communication norms yielded a number of interesting findings and revealed important directions for further empirical inquiry.

Misperceptions: Directionality and Content Type

In an extension of previous work by Linkenbach et al. (2003), we first focused on the accuracy of perceived parental communication norms among parents of college-aged students. Linkenbach had found that parents of adolescents generally underestimated the extent that other parents communicated with their adolescents about alcohol use. In contrast to these findings and our hypotheses, tests of mean differences in the current study showed that parents of college-aged students generally overestimated how often other parents talked to their student about alcohol use. There are several differences between Linkenbach's study and the current study that may help account for the discrepant pattern of results. For example, Linkenbach recruited parents of adolescents. Parents in the current study may perceive alcohol use to be more common in college populations, and therefore be more likely to overestimate how much college parents communicate about this topic. Differences in measures used may also be relevant. Unlike the current study, Linkenbach assessed communication about alcohol rules and expectations. Such constructs have less bearing in college-aged populations, with whom conversations specifically about students' alcohol use (e.g., frequency and quantity) are developmentally more appropriate. The current study's findings suggest that even subtle differences in the assessment of parental communication may influence whether parents tend to underestimate or overestimate communication frequency. For example, we found that parents significantly underestimated how often other parents initiated conversations about alcohol, but not how often other parents discussed frequency and quantity of alcohol use.

These findings raise further questions as to why the item assessing frequency of initiation of conversation was different to the other four items assessing frequency of communication. Examination of item content suggests that the initiation of communication item may have been conceptually different to the other items. Parents tend to underestimate how frequently their own college student drinks alcohol (Bylund, Imes, & Baxter, 2005), and therefore, may not believe they need to ask their student about how much and how frequently they drink. In contrast, the item assessing initiation of conversations may tap into a more proactive, rather than reactive, form of communication that parents view as a more positive approach. For example, parents may initiate conversations not about how much their student drinks, but to address preventative topics, such as the risks of alcohol use. If parents viewed this type of communication to be more positive, their response on this item may have been more susceptible to self-enhancement bias or social desirable responding, and therefore they may have overestimated their own frequency of initiating conversations (Mandemakers & Dykstra, 2008). This potential distinction among frequency of communication items holds implications for promising avenues of future research. For example, research could examine perceived norms for various types of communication that may tap into other dimensions

of proactive communication, including initiating conversations about alcohol-related consequences, coping with peer pressure, and strategies for safer drinking.

Perceived Parental Communication

Perceived parental communication was positively associated with both frequency of communication and targeted communication. Parents who believed other parents spoke to their child about alcohol more frequently reported personally talking to their own child more frequently and engaging in greater targeted communication. These finding are consistent with the social norms approach suggesting that perceptions of what other similar parents do and believe can have a significant impact on parents' own behaviors. Parents who perceive infrequent communication to be the norm may feel more social pressure to conform to this norm and engage in less communication with their own child (Linkenbach et al., 2003). The results support the potential utility of using social norms interventions to target those who perceive other parents to engage in infrequent communication as one approach to increasing targeted communication and frequency of communication among college parents. Indeed, although tests of mean differences suggested parents overestimated parent communication in general, an inspection of item-level data revealed that a substantial proportion of parents, ranging from 30–65%, actually underestimated how often other parents communicated with their children about alcohol use. The majority of parents underestimated other parents' communication frequency on three of the five items. Thus, interventions targeting specific normative misperceptions could prove useful for a substantial proportion of parents. Further expanding the range of communication items and subsequently differentiating between their respective influences could produce more effective targets for intervention.

Divergent Effects of Communication Type on Student Outcomes

One of the goals of the current study was to examine the relationship between frequency of alcohol-specific communication and college students' alcohol-related outcomes and the relationship between targeted alcohol-specific communication and college students' alcohol-related outcomes. Analyses of bivariate relationships demonstrated that targeted parent communication was negatively related to student approval of alcohol-related behaviors, while frequency of communication was not significantly related to student approval. Similarly, results of the path model indicated that the relationship between communication and approval was dependent on the type of communication measure used. Higher levels of targeted communication were associated with students holding less approving attitudes towards alcohol. When parents engaged in either onetime or ongoing conversations about a range of alcohol-specific topics, including warnings about alcohol use, strategies for handling offers of drinks, and using the media to create "teachable moments", students' reported lower approval for alcohol use behaviors. In turn, lower approval was associated with less weekly drinking and fewer alcohol-related behaviors. These findings are consistent with research suggesting that greater parent-student communication is negatively related to student drinking outcomes (Booth-Butterfield & Sidelinger, 1998; Turrisi et al., 2000). Moreover, the findings provide further support for the use of parent-based interventions (PBIs) that have successfully provided parents with informational materials on alcohol use in college and encourage meaningful conversations regarding risky drinking (e.g., Ichiyama et al., 2009; Turrisi, Jaccard, Taki, Dunnam, & Grimes, 2001; Wood et al., 2010).

The results of the path analysis also showed that, after controlling for targeted communication and perceived communication norm, frequency of communication positively predicted student approval. Thus, after controlling for breadth of communication content, students tended to report more approving attitudes toward alcohol as the number of parent-initiated conversations about alcohol increased. This finding is consistent with other research suggesting that measures of frequency of communication are not always associated with drinking outcomes in the hypothesized direction (Miller-Day & Kam, 2010; Turrisi et al., 2007). It may be that in some cases, parents' repeated questioning of their child regarding alcohol use is perceived as nagging by the student and may lead to student reactance and engagement in

greater alcohol use (Ennett et al., 2001). It is also possible that parents who frequently ask about alcohol provide mixed messages or even encourage alcohol use. Alternatively, parents may have asked their child more frequently about their alcohol use when they perceived their child to be using alcohol and holding more approving attitudes. Based on the current findings, PBIs encouraging parent-student communication may be more beneficial if focused on targeted communication rather than simply aiming to increase the frequency of asking students about their alcohol use.

Direct Relationship between Perceived Communication Norms and Student Approval

In the path analysis, a direct relationship was found between perceived communication norms and students' approval of alcohol use, indicating that the connection was not fully mediated by the two parent-student communication variables. The relationship between perceived parental communication norms and student alcohol attitude might be mediated by additional parenting factors that should be investigated in future research. For example, perceived communication norms may be associated with non-alcohol specific communication and parental monitoring. These more general forms of communication and monitoring of students activities and whereabouts have previously been shown to be related with students' attitudes and behaviors (LaBrie & Cail, 2011; Small et al., 2011; Walls et al., 2009). Future research examining perceived norms for the different types of communication and monitoring would provide further insight into these relationships.

Expansion of Student Approval Items and Alcohol Use Behaviors

One strength of the current study lies in the assessment of a comprehensive range of 11 alcohol behaviors and student approval toward those behaviors. Research on college student drinking typically uses measurements of overall patterns of alcohol use like the DDQ (generating total drinks per typical week) also used in this study. The use of item-level analyses with regards to a more diverse range of alcohol use behaviors, like that of the current study, could help educators, parents, and clinicians focus in on more specific behaviors to target with preventative messaging. For example, parents may tend to discuss more severe (drinking and driving) or general (drinking alcohol in college) behaviors which may not resonate as much with students. However, initiating conversations about "drinking to have fun" or "having drinks before going out" may be more relevant to students. This is a fruitful avenue for future research, especially given the emerging emphasis on understanding and preventing more context-specific alcohol risk behaviors (Neighbors, Lee, Lewis, Fossos, & Walter, 2009).

Limitations

The study has several limitations and potential directions for future research. The current study addresses the distinction between two measures of parent-student communication: targeted communication and frequency of communication. A limitation of the current study is that we did not assess perceived norms regarding the targeted communication measure. Future research should examine perceived parental norms for a broader range of age-appropriate alcohol-related topics, including those assessed by the targeted communication measure. The examination of such measures could provide further insight into the relationship involving communication norms and student outcomes. In addition, research examining whether some types of communication content are more closely associated with student approval and alcohol use may help develop specific recommendations for how parents should talk to their college student about alcohol. Such research endeavors could also benefit from evaluating how the quality of the conversation, such as the optimal delivery strategy, relates to the outcomes being studied. The current study did not examine parents' motivation for communicating with their student. Parents may engage in communication both proactively and reactively (Kam, 2011), and these different types of communication may result in different effects for student outcomes.

The current study utilized cross-sectional data; further research utilizing longitudinal data is needed to unambiguously tease out the causal relationship among different types of communication, communication norms and student alcohol-related outcomes. Finally, it is possible that parent gender moderates the relationship between communication and student outcomes (LaBrie & Cail, 2011; Luk, Farhat, Iannotti, & Simons-Morton, 2010). Although it was beyond the scope of the current study to test for these differences, further research examining this topic could provide additional insight into whether more frequent and in-depth conversations are equally effective for mothers and fathers.

Conclusion

The current study was the first to test the processes involving college parents' perceptions regarding parent-child alcohol communication. The fact that parents overestimated other parents' communication about quantity and frequency of college drinking, but underestimated initiation of more general conversations about alcohol indicates a need to pursue this topic further. The results add to the body of research indicating that parents' alcohol-specific communication might be related to their college students' attitudes and behaviors, even after matriculation. Finally, the study demonstrates that a researcher's choice of parent-student communication assessment can have a substantial role in the observed relationships. Further research is needed to identify the types of parent communication most effective at reducing alcohol use and resultant negative consequences in college students.

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