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Normative Feedback for Parents of College Students: Piloting a Parent Based Intervention to Correct Misperceptions of Students' Alcohol Use and Other Parents' Approval of Drinking

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Abstract

Objective—Multi-component parent-based interventions (PBIs) provide a promising avenue for targeting alcohol use and related consequences in college students. Parents of college-aged children can have a significant influence on their children's alcohol use decisions. However, parents tend to underestimate their own child's alcohol use and overestimate other similar parents' approval of student drinking. These misperceptions could have important implications for parents' own attitudes and alcohol-related communication with their student. Targeting these misperceptions through normative feedback could help promote greater and more in-depth alcohol-related communication. The present study examines the potential efficacy of web-based alcohol-related normative feedback for parents of college students.

Method—A sample of 144 parents of college students received web-based normative feedback about students' alcohol use and approval, as well as other same-college parents' alcohol approval. Parents completed measures of perceived student alcohol use, student alcohol approval, other-parent alcohol approval, and intentions to discuss alcohol use both pre- and post-normative feedback.

Results—Post-feedback, parents reported stronger intentions to talk to their student about alcohol, were less confident in their knowledge of their students' alcohol use, and believed that

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Statement 2: Contributors

Joseph LaBrie, Lucy Napper, and Justin Hummer have each contributed significantly to this manuscript. Specifically, Dr. LaBrie generated the idea for the study, designed the study, wrote the protocol, and contributed to all sections of the manuscript. Lucy Napper developed the specific hypotheses tested, performed the literature review, performed the statistical analyses, and drafted all sections of the paper. Justin Hummer significantly assisted with drafting the introduction, discussion, and results section and revising/editing all sections of the paper.

Statement 3: Conflict of Interest

All authors declare that they have no conflicts of interest.

their student drank in greater quantity and more frequently than pre-feedback. Parents also perceived other parents to be less approving of alcohol use after viewing normative feedback.

Conclusions—These findings provide preliminary support for the use of web-based normative feedback for parents of college students. Given these promising results, further research developing and testing this approach merits attention.

Keywords

Normative feedback; Parent-based intervention; College drinking; Alcohol use

1. Introduction

Previous research has demonstrated the effectiveness of parent interventions to reduce alcohol initiation and frequency of adolescent drinking (McPherson, 1986; Rohrbach et al., 1995; Smit, Verdurmen, Monshouwer, & Smit, 2008). Extending these efforts to the college population has been recommended (Task Force of the National Advisory Council on Alcohol Abuse and Alcoholism, 2002). The period of emerging adulthood between the ages of 18 and 25 years represents a unique developmental stage between adolescence and adulthood that is characterized by the continued influence of and reliance on parents (Arnett, 2000). Numerous studies have reported relationships between parental attitudes and beliefs and their college-aged children's drinking (see Ryan, Jorm, & Lubman, 2010). Moreover, a growing body of research indicates that parents influence alcohol-related beliefs (LaBrie, Hummer, Lac, Ehret, & Kenney, 2011; Ryan et al., 2010; Turrisi, Wiersma, & Hughes, 2000) and moderate peer influences on alcohol use throughout the college years (Wood, Read, Mitchell, & Brand, 2004). Only during the past decade has research begun to examine the effectiveness of parent-based interventions (PBIs) among college students (Ichiyama et al., 2009; Turrisi, Jaccard, Taki, Dunnam, & Grimes, 2001; Turrisi et al., 2009; Wood et al., 2010). The majority of these interventions have been based on the influential work of Turrisi et al. (2001) who developed a parent handbook describing the importance of parent communication and effective approaches for how parents can talk to college students about alcohol. Evaluations of PBIs have suggested that when parents participate in these interventions, students report greater alcohol-related communication (Testa, Hoffman, Livingston, & Turrisi, 2010), less risky alcohol use trajectories across their first year of college (Ichiyama et al., 2009), and fewer binge drinking events (Turrisi et al., 2001). These initial PBI results are encouraging, yet novel approaches are needed to continue strengthening and refining the potential efficacy of PBIs targeting college student drinking (Ichiyama et al., 2009; Mallett et al., 2010).

One promising methodological intervention approach to explore with respect to PBIs is the use of web-based interventions. The Internet is increasingly used to deliver health and risk behavior information due to cost-effectiveness, ability to personalize information, and accessibility (Muñoz et al., 2006; Strecher, Shiffman, & West, 2005). To our knowledge, Donovan et al. (2012) is the only study to date to specifically explore the efficacy of a web-based PBI. In this study, parents of college students took part in a four-week web-based intervention that aimed to enhance parent communication skills and provide information on ways to discuss protective behavioral strategies (PBS) used to reduce negative consequences

associated with drinking. The study not only indicates that parents are willing and enthusiastic participants in alcohol prevention initiatives, but that they are also amenable to web-delivered information. Web-based parent interventions offer several potential benefits by providing a cost-effective approach to easily disseminate a standardized intervention to large groups of parents, located over geographically diverse areas. The current study was designed to provide preliminary data on the potential efficacy of a brief web-based normative feedback intervention targeting parents of college students, and offer perspective on the impressions of parents exposed to such normative information.

PBIs typically combine several different approaches to encourage parents to increase their alcohol-related communication, for example, by providing information on the effects of alcohol, how to start a conversation with a student, and alcohol use norms among college students. However, there is a scarcity of research exploring the efficacy of individual components of these interventions, and to date there has been limited research specifically exploring the effectiveness of normative feedback for parents of college students. Among college students, social norms interventions can provide an effective approach to reducing alcohol use and negative consequences (for reviews see Carey, Scott-Sheldon, Carey, & DeMartini, 2007; LaBrie, Hummer, Grant, & Lac, 2010; LaBrie, Hummer, Huchting, & Neighbors, 2009; LaBrie, Hummer, Neighbors, & Pedersen, 2008; Larimer & Cronce, 2007; Lewis & Neighbors, 2006; Walters & Neighbors, 2005; Zisserson, Palfai, & Saitz, 2007). The rationale underlying these interventions is that perceptions of what important others believe to be acceptable drinking behavior (perceived injunctive norms) and perceptions of others' alcohol use (perceived descriptive norms) can directly influence an individuals' own attitudes and behaviors. Students overestimate the frequency of alcohol use by other students (actual norm), putting them at-risk of conforming to this overestimated norm and engaging in greater alcohol use (Berkowitz, 2004). Social norms interventions aim to present information that corrects misperceptions of drinking norms and thus reduces the risk of students conforming to a misperceived norm and personally engaging risky drinking behaviors (Borsari & Carey, 2003).

Providing parents with normative feedback has the potential to correct common misperceptions that parents hold about their own child's alcohol approval and use, as well as the other similar parents' alcohol approval. LaBrie et al. (2011) demonstrated that parents tend to overestimate other same-college parents' approval of students engaging in drinking behaviors such as drinking underage and becoming intoxicated at a party. Further, parental misperceptions of other parents' attitudes were strongly associated with parent's own attitudes toward their child's drinking, which, in turn, were associated with their child's attitudes and drinking. These findings suggest that when parents perceive other parents to be more permissive, they may feel pressure to conform to this norm, resulting in more personal lenient attitudes toward student alcohol use. Because parental attitudes continue to hold sway over the attitudes and behaviors of college students, correcting parental normative misperceptions of other parents may change both parents own attitudes towards alcohol and indirectly reduce student alcohol risk.

Parents also tend to misperceive how approving of drinking their own child is towards a range of alcohol behaviors including drinking to get drunk, drinking shots, and drinking to

meet people (Hummer, LaBrie, & Ehret, in press), as well as how frequently their child actually drinks (Bylund, Imes, & Baxter, 2005). These misperceptions could have significant implications (Bylund et al., 2005). For example, if a parent inaccurately believes that their student does not drink alcohol or drinks very little, they may not feel motivated to ask their student about their alcohol use and opinions, or to express their own expectations about alcohol use in college. Furthermore, parents' underestimation of their child's alcohol use and approval may reduce the likelihood of discussing topics relevant to students who do drink. For instance, parents may not address strategies for avoiding the negative consequences associated with alcohol use and ways to stay safe while drinking. A social norms intervention that targets parents' tendency to underestimate their own child's alcohol use and approval, may provide an effective approach to increase the depth and frequency of parent alcohol-specific communication. Greater communication could, in turn, lessen students' approval of alcohol use and lead to safer alcohol use (Booth-Butterfield & Sidelinger, 1998; Turrisi et al., 2000).

Although information on student drinking norms is included in PBIs, few studies have specifically explored the use of normative feedback for college parents. The current study examines the effects of a pilot web-based social norms intervention on parents' intentions to talk to their student about alcohol, their confidence in their knowledge of the students' alcohol-related behaviors, and perceived norms. More specifically, we examine pre- and post-feedback changes in parents' perceptions of their students' alcohol approval and use, as well as other same-college parents' approval of alcohol behaviors. We expected that providing parents with information on student drinking norms, and on the proportion of parents who underestimate student, and overestimate parent approval of alcohol use behaviors, would (1) increase their estimates of their child's approval and alcohol use, (2) decrease their estimates of other parents' approval, and (3) increase parents' motivation to talk to their students. Furthermore, we explored parents' evaluation of the feedback and how they believed the information was likely to shape the way in which they communicated about alcohol with their child. Finally, we examined potential moderators of intervention efficacy to increase motivation to initiate conversations about alcohol.

2. Method

2.1 Participants

Participants were 144 parents of undergraduate students at a medium-sized private university. Participants were 77.8% female (mean age = 50.8 years, $SD = 5.16$) and the majority identified as White (60.4%), with 17.4% identifying as Asian, 9.0% Hispanic/Latino(a), 6.3% Black/African American, 4.2% mixed race and 2.8% other. Most of parents (94.4%) reported seeing or talking to their child at least once a week, and over a third of parents (36.1%) were in contact with their student on a daily basis. On average, parents reported initiating conversations about alcohol with their student six times a year.

2.2 Procedure

Students participating in an online study for course credit were asked to recruit a parent of their choice to complete a separate online survey. Students received additional course credit

for recruiting a parent to the study. Parents were sent an email that contained a study description and a link to an informed consent form. Upon providing consent, parents were presented with an online survey. After completing demographic and baseline measures, parents were presented with normative feedback. Parents were then asked to complete the same measures that were assessed at baseline, to allow for pre/post-feedback analyses. Finally, parents were asked to complete a brief set of questions assessing their responses to the feedback. All measures and procedures were approved by a local Institutional Review Board.

2.3 Normative Feedback

Normative feedback was created from data collected from approximately 450 college student-parent dyads during the previous academic year (a description of the data collection can be found in Hummer et al., in press). Parents were presented with information briefly describing the source of the data to enhance the credibility of the feedback. The feedback was organized into three sections addressing: (1) perceived student alcohol use, (2) perceived other parental approval, and (3) perceived student approval. The perceived student alcohol use feedback began with a statement describing the percentage of parents who underestimate their own students' alcohol use (85%), parents' typical perception of student drinking norms (4 drinks per week), and the actual norm reported by students (9 drinks per week). Next, parents were presented with several statements describing the proportion of parents that overestimate how approving other college parents are towards a range of alcohol-related behaviors, including "drinking shots," "drinking to have fun," and "playing drinking games." Parents were told that in general parents tend to misjudge other parents' attitudes and that parents tend to be less approving than they are perceived to be. Finally, parents were informed that 70% of parents underestimate how acceptable their own student believes it is to engage in various drinking behaviors, and were then presented with a number of statements describing the percent of parents who underestimate how approving their student is towards more specific behaviors including "drinking to get drunk," and "drinking to meet people." For example, one statement read, "88% of [college name] parents underestimate how approving their own child is of drinking with friends."

2.4 Measures

2.4.1 Intentions—Pre- and post-feedback parents' intentions to talk to their student about alcohol use were assessed using two items, "I intend to speak to my child about their alcohol use in the next month" and "I want to speak to my child about their alcohol use in the next month" (Pre-feedback: $r = .93, p < .001$; Post-feedback: $r = .95, p < .001$). Response options ranged from: 1 (*definitely do not intend to / want to*) to 7 (*definitely intend to / want to*). A mean of the two items was calculated, with higher scores indicating greater intentions to talk about alcohol.

2.4.2 Frequency of past alcohol communication—Parents completed five items assessing how frequently they communicated with their child about alcohol use (Napper, Hummer, Lac, & LaBrie, in press). The items included: "How often do you initiate a conversation about alcohol use with your child?" and "How often do you ask your child how frequently he or she drinks on the weekends?" Responses were given on a 7-point Likert

scale ranging from 0 (*Never*) to 7 (*More than once a week*). A mean composite was calculated ($\alpha = .89$), and the scale was dichotomized using a mean split for inclusion in a repeated measure ANOVA.

2.4.3 Perceived student alcohol use—The Drinking Norms Rating Form (DNRF; Baer, Stacy, & Larimer, 1991) was used to assess parents' perceptions of their students' drinking habits pre- and post-feedback. Participants provided an estimate of the number of drinks consumed by their student each day of the week. In addition to calculating the estimated 'number of drinking days per week', responses were summed to form a measure of estimated 'total drinks per week'. The DNRF has been used in numerous studies related to social norms and college student drinking. It has consistently demonstrated good prospective and concurrent validity and has good test-retest reliability (e.g., Neighbors, Dillard, Lewis, Bergstrom, & Neil, 2006). Participants were provided with a definition of a standard drink (e.g., 12 oz. of beer, 4 oz. of wine, 8oz of malt liquor) prior to completing any items referring to number of drinks.

2.4.4 Perceived and actual approval of alcohol-related behaviors—Four items previously used to assess college students' perceived peer approval of alcohol use (Lewis et al., 2010) were used to examine how acceptable parents believed it was for their child to "drink to get drunk," "drink alcohol every weekend," "drinking under the age of 21," and "drink alcohol" (Pre-feedback: $\alpha = .85$; Post-feedback: $\alpha = .84$). Findings from an EFA indicated that the original items had strong factor loadings and the scales had good internal consistency. The specific items for the current study were chosen to provide parents easy to identify items representing common and less severe drinking behaviors. The same set of items was used to assess parents' perceptions of their child's approval (Pre-feedback perceived student approval; $\alpha = .91$; Post-feedback: $\alpha = .93$) and the approval of other parents from the same college as the respondent (Pre-feedback perceived other parent approval; $\alpha = .87$; Post-feedback: $\alpha = .86$). All responses were measured on a 7-point Likert scale ranging from 1 (*Not acceptable*) to 7 (*Very acceptable*). Perceived and actual approval of alcohol-related behaviors was assessed both before and after viewing the normative feedback.

2.4.5 Confidence in knowledge of student alcohol behaviors—Parents completed five items assessing how confident they were in their knowledge of students' alcohol-use behaviors before and after receiving feedback. The measure included items such as "How confident are you that you know how frequently he or she drinks on the weekends?" and "How confident are you that you know how many drinks he or she consumes during a typical weekend?" Response options ranged from 1 (*Extremely unconfident*) to 6 (*Extremely confident*). A mean composite was created (Pre-feedback: $\alpha = .97$; Post-feedback: $\alpha = .97$), with higher scores indicating that parents were more confident in their knowledge of their students' alcohol use.

2.4.6 Evaluations and impressions regarding normative feedback—As part of a post-intervention assessment, parents were asked five questions pertaining to the feedback. The first question asked, "After viewing these statistics, how likely are you to have a

conversation with your child about his or her alcohol-related attitudes and behaviors?” Response options ranged from 1 (*extremely unlikely*) to 6 (*extremely likely*). The second question asked, “How much do you agree or disagree that parents should be presented with alcohol use statistics of students at this university?” Response options ranged from 1 (*strongly disagree*) to 5 (*strongly agree*). The third question asked parents, “How useful are these statistics to you?” Response options ranged from: 1 (*not at all useful*) to 7 (*extremely useful*). Finally, parents were asked to indicate whether the statistics presented would (1) “motivate you to have a conversation with your child about alcohol use in college” and (2) “change how you approach the topic of alcohol use with your child?” (*yes / no / I don’t know*). Parents who indicated “yes” to either of these questions were then asked to “please explain” their answer in an open-ended text box.

3. Results

After reviewing the normative feedback, 87.5% of parents reported that they were somewhat to very likely to have a conversation with their student about alcohol and 90.3% said that the statistics were somewhat to very useful. The majority of parents (86.8%) also agreed that parents of college students should be provided with statistics on students’ alcohol use.

3.1 Changes post-feedback

A series of paired sample *t*-test were used to examine changes in parents’ beliefs and intentions to talk to their student before and after receiving normative feedback (see Table 1). Parents reported significantly greater intentions to talk to their student about alcohol after viewing the feedback, $t(141) = -5.78, p < .001, d = .41$. Parents also felt less confident about how much they knew about their students’ alcohol use post-feedback, $t(142) = 2.33, p = .021, d = .14$. Parents’ estimates of how much their student drank on a typical week and on how many days they drank per week, increased after viewing the feedback, $t(143) = -7.26, p < .001, d = .26$ and $t(143) = -4.21, p < .001, d = .20$ respectively. Furthermore, parents’ estimates of how much students’ drank per week were significantly closer to the actual drinking norm ($M = 6.9$) of the student sample after viewing the feedback (change in discrepancy pre and post feedback, $t(144) = 7.25, p < .001, d = .60$). Parents estimates of the number of days students’ drank were fairly accurate pre-feedback (actual student norm $M = 1.5$); after the feedback parents slightly overestimated drinking days, $t(144) = -3.79, p < .001, d = .31$. There were no significant differences in parents’ own approval of alcohol or their perceptions of their students’ approval of alcohol pre and post-feedback. Parents did, however, report significant changes in their perceptions of other parents’ approval. After viewing the feedback, parents perceived other parents to be less approving of alcohol use, $t(142) = 4.51, p < .001, d = .32$.

3.2. Moderator analyses of intervention efficacy

A series of repeated measures ANOVAs were conducted to examine whether child sex, parent sex, or frequency of communication prior to the feedback (low vs. high) moderated changes in intentions pre- and post-feedback (Table 2). Analysis of student sex found no main effect of sex, $F(1, 141) = .09, p = .76$. There was, however, a significant Student Sex \times Time interaction, $F(1, 141) = 4.93, p = .028$. The results of simple effect tests indicated that

although both parents of daughters, $t(79) = 3.08, p = .003$, and parents of sons, $t(62) = 5.19, p < .001$, increased intentions post-feedback, this increase was greater for parents of male students.

Analysis of parent sex found a significant main effect of sex, $F(1, 141) = 7.68, p = .006$, but no significant Parent Sex \times Time interaction, $F(1, 141) = 1.18, p = .28$. Mothers were more likely than fathers to want to discuss alcohol both pre- and post-feedback. Finally, analyses examining past frequency of alcohol communication as a moderator also found a main effect of past communication, $F(1, 141) = 22.08, p < .001$, but no significant Past Communication \times Time interaction, $F(1, 141) = 1.22, p = .27$. Parents who communicated more frequency in the past had greater intentions to communicate in the future. Both parents with low and high past communication reported increased intentions to communicate post-intervention.

3.3 Qualitative responses to feedback

The majority of participants (72.9%) said that viewing the feedback was likely to change how they approached discussing alcohol with their student. A total of 71 parents completed open-ended questions assessing how they were likely to change their communication approach and why they felt motivated to talk to their child after viewing the feedback. Responses were examined for common themes in parents' responses. Two independent raters categorized statements into themes identified by the study's authors. Assessment of inter-rater reliability indicated that coders had substantial agreement in ratings, $\kappa = 0.75$ (Landis & Koch, 1977). Discrepancies were resolved through discussions among the raters (Lombard, Snyder-Duch, & Bracken, 2002). Common themes and examples of responses are presented in Table 3. Among those who completed the open-ended items, a noteworthy proportion of parents (42.3%) stated that the feedback would either cause them to have a conversation with their student or that they planned to specifically incorporate the statistics presented into their conversations. In addition, 22.5% of parents noted that they planned to ask their student about his/her use of alcohol and 18.3% wanted to find out more about their child's attitude toward alcohol.

Other common themes included increased motivation to ask students more specific questions about alcohol (12.7%), wanting to address peer pressure (11.3%), planning to talk more about negative consequences of alcohol use (12.7%) or express expectations about alcohol use (8.5%). Some parents noted that the information presented would not necessarily change the content of their conversations, but that they were likely to initiate more frequent conversations about alcohol (16.9%).

4. Discussion

The current pilot study revealed that parents are receptive to and enthusiastic about receiving brief web-based normative feedback. The majority of parents believed that the information presented was helpful and was likely to change the way in which they communicated with their student about alcohol. After viewing the feedback, parents reported stronger intentions to talk to their student about alcohol use. Further, the normative feedback appeared successful at changing parents' beliefs about student drinking and other parents' attitudes. Thus, this study helps to establish a proof of concept for the provision of web-based

normative feedback to parents of college students by demonstrating the overall acceptability of the feedback, as well as its ability to change parents' perceptions and potentially impact the content and frequency of their communication with their student.

After presenting parents with actual college campus drinking norms and statistics on the proportion of parents who tend to underestimate their own students' drinking, parents reported that they were less confident in their knowledge of their own students' alcohol use. This reduction in confidence could potentially motivate parents to ask their children about their alcohol-related behaviors and beliefs and engage in greater parental monitoring. Indeed, parents' responses to the open-ended question suggested that after viewing the feedback many parents intended to find out more about their students' drinking and attitudes. Further, parents' estimates of how much and how often their child drank alcohol increased after the feedback. This finding is significant given that parents' underestimation of their students' alcohol use may reduce parents' motivation to discuss alcohol-related topics with their student (Bylund et al., 2005). Parents who perceive their child to be drinking alcohol, and drinking in greater quantity, may be more likely to discuss relevant drinking topics with their child. For example, a parent who believes their child does not drink may not discuss how their child makes decisions about alcohol or strategies to help their child drink more safely. The current study demonstrates that heightening parents' awareness of student drinking by both presenting campus alcohol norms and reinforcing that a high proportion of parents underestimate their own child's alcohol use may provide a useful approach to making social norms information more relevant to parents.

Interestingly, parents' perceptions of their own students' alcohol approval did not significantly change after viewing the feedback. Parents were specifically presented with feedback on the proportion of parents that underestimated their own students' approval for a range of alcohol behaviors. Additional, more concrete feedback may have been useful to reinforce the message that parents tend to misperceive their students' approval. For instance, providing parents with actual normative feedback for student approval (e.g., "80% of students believe that it is acceptable to drink to get drunk"), in addition to feedback on how often parents tend to underestimate their student approval may be one approach to help change parents' perceptions of their students' attitudes.

After viewing the feedback, parents perceived other similar parents to be less approving of students' alcohol use. This finding is particularly significant given research that suggests that when parents' perceive other parents' to be more disapproving of alcohol, they are also likely to hold more disapproving attitudes towards alcohol, and that parents' alcohol approval is associated with students attitudes and behaviors (LaBrie et al., 2011). Thus, using norms feedback to help correct parents' misperceptions of other parents' approval may indirectly reduce alcohol risk in college students. Interestingly, although parents in the present study reported changes in their perceptions of other parents' approval, they did not report any immediate changes in their own approval of students' alcohol use. This finding is not surprising given that the norms feedback did not directly attempt to change parents' attitudes, and parents already reported disapproving attitudes towards alcohol use. Although parents did not change their own approval, having a more accurate perception of other parents' approval may reduce the likelihood of parents conforming to a misperceived norm

and becoming more lenient in their own parenting (Linkenbach, Perkins, & DeJong, 2003). Although beyond the scope of the current study, longitudinal data would help establish whether changes in perceived parental approval resulted in parents' maintaining disapproving attitudes or becoming even more disapproving over time.

Analyses examining factors that moderate intervention efficacy indicated that the feedback was effective at increasing intentions to communicate for mothers and fathers, as well those who had previously communicated about alcohol frequently and infrequently. Thus, although results pertaining to fathers must be interpreted with caution due to the relatively larger proportion of mothers included in the sample, the moderation analyses suggesting intervention efficacy for both mothers and fathers are encouraging. These promising findings suggest that this feedback approach could have applications for motivating greater communication for those already engaging in this behavior, as well as, more importantly, those who may benefit the most from increasing discussions about alcohol. Interestingly, although the intervention increased parents' motivation to talk to daughters, the feedback was most effective at promoting intentions to talk to sons.

The results of this pilot study are particularly noteworthy given that parents were exposed to a very brief web-based normative intervention. Donovan and colleagues (2012) demonstrated that a four-week web-based PBI could change parents' communication about protective behavioral strategies. The current study is the first to test the potential effectiveness of a shorter intervention. Although we did not assess long-term parent or student outcomes, the findings do suggest that a brief, one-time session could potentially offer an effective approach to change parents' perceptions and motivate greater and more in-depth alcohol-specific communication. Further research examining the long-term outcomes of brief norms-based interventions would help provide further support for this type of PBI.

The current study is unique in that it attempts to assess the utility of a single component of past PBIs; that is the effectiveness of normative feedback among parents. Although questions remain about the effectiveness of focusing on this single component to motivate parent-student communication, the promising results of this study indicate the need for further research examining normative feedback interventions for parents of college students. Such studies would benefit from using an experimental design with a control group to assess intervention effects on parent-student communication and student attitudes, drinking and alcohol-related negative consequences. Furthermore, research is also needed to examine the use of different formats of this novel parent normative feedback intervention. For example, research among college students has demonstrated the potential efficacy of web-based personalized normative feedback (Bewick et al., 2010; Neighbors et al., 2010; Walters, Vader, & Harris, 2007), in-person group interventions (LaBrie et al., 2010; LaBrie et al., 2008) and gender-specific normative feedback (Lewis & Neighbors, 2007; Neighbors et al., 2010). There is potential to adapt these approaches for use among college parents to further strengthen the effects of a norms-based PBI. Finally, there is also potential to integrate greater normative feedback components into existing PBIs. The efficacy of PBIs is predicated on encouraging parents to communicate more frequently and effectively with their child. However, if parents hold misperceptions about their child's alcohol use, this could impact the content of parent communication and reduce intervention effects. Norms

feedback may offer potential both as a standalone intervention but also in combination with existing PBI approaches.

The current study has a number of limitations. First, the current study did not include a control condition. Thus, it is possible that the effects observed may have resulted simply from the heightening of their student's drinking in parents' consciousness simply from an assessment about drinking and drinking-related attitudes. Future studies should use a randomized control trial design to have adequate control of possible confounding variables.

The normative feedback strengthened parents' intentions to talk to their college student about alcohol. However, we do not know whether these conversations actually took place or if the feedback improved the content and quality of conversations. Indeed, although behavioral intentions are an important motivator of behavior (Ajzen, 1991), intentions do not always translate into action. More research is necessary to specifically examine the impact of parent normative feedback on parent-student communication and college student drinking and attitudes. Although the current study did not collect student drinking data, past research suggests parents' perceptions of other parents' alcohol approval can indirectly influence student drinking outcomes (LaBrie et al., 2011), and that greater parent communication can have a positive impact on student drinking outcomes (Booth-Butterfield & Sidelinger, 1998; Turrise et al., 2000). Studies should also examine whether priming parents with normative feedback and pairing this with tools to engage in effective alcohol-specific conversations with their college child (Cleveland, Lanza, Ray, Turrise, & Mallett, 2011; Turrise et al., 2001; Turrise et al., 2009) could provide an effective alcohol prevention strategy. An additional limitation is the short duration between the pre and post-test assessments. It is possible that parents were influenced by their answers to the pre-feedback questions when responding to later questions. Similarly, parents may have answered post-feedback questions in a socially desirable fashion. Further studies should also consider including a manipulation check to assess depth of processing of the presented information

In summary, the current study demonstrates the potential for web-based parent normative feedback to change parents' perceptions of other parents' approval and their own child's alcohol use. This approach reduced parents confidence in their own child's behavior and encouraged parents to engage in more alcohol-specific communication. While more research into this approach is necessary, this study describes a promising, practical, and easily implemented approach to intervening with college parents to reduce alcohol risk in college students.

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Highlights

Social Norming of College Parents: Piloting a Parent Based Intervention Correcting Misperceptions of Students' Alcohol Use and Other Parents' Approval of Drinking (3–5 bullet points, maximum 85 characters, including spaces, per bullet point)

1. Examines efficacy of alcohol normative feedback for parents of college students.
2. Post-feedback, parents perceived other parents to be less approving of alcohol.
3. Normative feedback promoted greater intentions to talk to students about alcohol.
4. Parents believed that their student drank more after viewing normative feedback.

Table 1

Pre- and Post-feedback Intentions to Communicate and Perceived Alcohol Use and Approval

	Pre-feedback M (SD)	post-feedback M (SD)	t	d
Intentions to speak to student	5.02 (1.96)	5.83 (1.59)	-5.78**	.41
Confidence in knowledge of students alcohol use	4.27 (1.40)	4.07 (1.44)	2.33*	.14
Perceived student total drinks per week	3.97 (5.39)	5.35 (6.12)	-7.26**	.26
Perceived student days drinking per week	1.49 (1.51)	1.79 (1.54)	-4.21**	.20
Own approval of alcohol use	2.57 (1.38)	2.57 (1.31)	0.07	.00
Perceived student approval	3.47 (1.78)	3.58 (1.86)	-1.14	.06
Perceived other parent approval	3.05 (1.40)	2.60 (1.25)	4.51**	.32

*
 $p < .05$.**
 $p < .001$.

Table 2

Pre- and Post-Feedback Changes in Intentions as a Function of Parent Sex, Student Sex, and Past Communication.

Moderator	Pre-Feedback <i>M (SD)</i>	Post-Feedback <i>M (SD)</i>	Moderator <i>F(141)</i>	Interaction <i>F(141)</i>
Parent sex				
Male	4.23 (.33)	5.30 (.27)		
Female	5.26 (.18)	5.97 (.15)	7.68**	1.18
Student sex				
Male	4.80 (.25)	5.94 (.20)		
Female	5.19 (.22)	5.72 (.18)	.09	4.93*
Past communication				
Low	4.39 (.21)	5.34 (.18)		
High	5.71 (.22)	6.35 (.18)	22.08***	1.22

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

Table 3

Thematic Themes Based on Qualitative Responses Describing Impact of Feedback on Communication Approach.

Major Theme	Examples Responses	% Providing Theme
Motivated to have a conversation/specifically discuss the statistics	"Gives me facts to initiate a conversation and ask her if she's aware of the dangers of drinking." "It makes me realize I have neglected having these conversations"	42.3%
Ask child about his/her use of alcohol	"I want to know if he drinks alcohol and how much and how often," "Just ask if he has ever had a drink"	22.5%
Find out more about their child's attitude toward alcohol	"Mostly to get a better understanding of them/their life/their views on drinking." "It would be good to compare our opinions"	18.3%
Initiate more frequent conversations about alcohol	"I will ask more questions more frequently," "Would motivate me more to converse with her more often."	16.9%
Increased motivation to ask child more questions/specific questions	"I would ask more detailed questions about my child's drinking," "I will ask more questions and try and have an open dialogue"	12.7%
Talk more about negative consequences/family history of alcohol	"Need to ensure they understand the risks," "It's important to have continuous conversations about how dangerous alcohol use is"	12.7%
Wanting to address peer pressure	"Now that he is in college I wonder how much his new friends can influence him about drinking," "The influence of peer pressure on drinking behavior"	11.3%
Unsure how aware they are of child's behavior	"I realize how much I don't know about her attitudes about what is acceptable. And how little I really know about her drinking activity," "I would now not take it for granted that she isn't drinking or has not tried drinking."	11.3%
Intended to express expectations about alcohol use	"Always good to discuss standards, health, and well-being," "to have better knowledge of daily activity including when drinking so they are clear about what is too much"	8.5%
Express concern	"Need to express concern," "constructive objective review of concerns"	2.8%