Intervention Deliveries: The Role of Peer Educators in Reducing High-risk Drinking Among First-year Students

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Abstract

The purpose of this paper is to examine the differences between peer educators and student affairs professional staff on presenting interventions designed to reduce high-risk drinking among first-year students. The intervention involved an hour-long classroom presentation exposing students to an educational video with gender-specific content related to alcohol expectancies and behaviors, followed by facilitated discussions probing students’ gender-specific issues and the relationship between these issues and the students’ own alcohol use. The discussions were facilitated either by peer educators or professional staff, each trained with the same set of materials, which was a process intended to isolate the effects of intervention delivery - peers versus professional staff - on student high-risk drinking behaviors. We found that, at the end of the semester, students enrolled in the courses receiving the intervention from peers reported reductions in high-risk drinking behaviors to a greater degree than both students enrolled in the courses receiving the intervention from professional staff and those students receiving no intervention at all.
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University stakeholders are often challenged with creating educational environments optimized for helping students achieve desired learning outcomes. As part of this process, educators rely heavily on college impact research, which underscores the importance of designing learning contexts that enable students to learn from their peers (e.g., Pascarella & Terenzini, 2005). The effects of peers on helping students learn are so powerful that co-curricular educators have allocated resources toward hiring and developing programs for training peer educators. In short, peer education involves the “offering of credible and reliable information about sensitive life issues” (Topping & Ehly, 1998, p. 7) by “people who are not professionally trained educators but whose goal is to educate” (Finn, 1981, p. 91). Despite the growing number of peer education programs across the country (Ender & Newton, 2000; Turner & Shepherd, 1999; Wawrzynski, 2009), their efficacy in influencing student behaviors has rarely been the subject of scholarly pursuits that include an experimental longitudinal research design, which would enable researchers to empirically link peer education to student learning. The purpose of this study is to examine the efficacy of peer educators in helping first-year-students reduce their high-risk drinking behaviors.

It is imperative that institutions of higher education use effective, evidence-based strategies to addressing high-risk drinking behavior, including sanctions for underage student use of alcohol and educational interventions designed to address high-risk binge drinking. While the literature on these interventions vary across a number of design features, including content (Baer, Kivlahan, Blume, McKnight, & Marlatt, 2001; Chiauzzi, Green, Lord, Thum, &
Goldstein, 2005; Fournier, Ehrhart, Glindemann, & Geller, 2004; Jewell, Hupp, & Luttrell, 2004; Maney, Theodorou, & Vasey, 2001; Neighbors, Larimer, & Lewis, 2004; Stamper, Smith, Gant, & Bogle, 2004; Werch, et al., 2000), audience (Baer, et al., 2001; Elkins, Helms, & Pierson, 2003; Fournier, et al., 2004; Sheffield, Darkes, Del Boca, & Goldman, 2005), and mode of delivery (Fournier, et al., 2004; McNally & Palfai, 2003; Moore, Soderquist, & Werch, 2005; Walters, Bennett, Melanie, & Miller, 2000), few studies have employed experimental designs for empirically assessing how the efficacy of interventions differs between student affairs professional staff and peer educators.

Most of the research that has interrogated peer education has focused on the impact of the peer education experience on the peer educator rather than on the targeted group of students (Annis, 1983; Badura, Millard, Peluso, & Ortman, 2000; Benjamin, 2004; Chesler, Galura, Ford, & Charbeneau, 2006; Ebreo, Feist-Price, Siewe, & Zimmerman, 2002; Khera, 1995). This is somewhat surprising given the scope of these studies, ranging from peer education addressing health issues in general (Li, et al., 2009; Mathie & Ford, 1998; Turner & Shepherd, 1999) to specific topics such as nutrition (Buller, et al., 1999; Pérez-Escamilla, Hromi-Fiedler, Bermúdez-Millán, & Segura-Pérez, 2008), sexual health (Backett-Milburn & Wilson, 2000; Forrest, Strange, & Oakley, 2002; Freeman, 2001) and substance abuse (Fromme & Corbin, 2004; Harrin, 1997; Mastroleo, Mallett, Ray, & Turrisi, 2008). This study marks a departure from previous efforts in its emphasis on understanding the role of peer educators and their influence on reducing high-risk drinking behaviors among first-year students.

This study examines the differences in reported high-risk drinking behaviors among students in first-year success courses that vary in their approach to delivering intervention messages. The examined intervention included an hour-long classroom presentation exposing
students to an educational video with gender-specific content related to alcohol expectancies and behaviors, followed by facilitated discussions probing students’ gender-specific issues and the relationship of these issues to the students’ own alcohol use. The discussions were facilitated either by peer educators or professional staff, using the same intervention script, which was a process intended to isolate the effects of intervention delivery - peers versus professional staff - on student high-risk drinking behaviors.

Fourteen first-year seminar courses were studied: four enrolled students that received the intervention from professional staff; four enrolled students that received the intervention from peer educators; and the remaining six enrolled courses that received no intervention. The treatment was randomized across this pool of fourteen courses, meaning four courses were randomly chosen to receive the intervention by professional staff; four were randomly chosen to receive the treatment from peer educators; and six were randomly chosen to serve as the control group.

High-risk drinking was assessed through a series of items related to quantity and frequency of use within certain time periods: 1) “Think back over the last two weeks, how many times did you have five or more alcoholic drinks at a sitting?” 2) “How many drinks do you have on average when you go out/party/socialize with other students?” 3) “How many drinks do you consume in an average week?” 4) “During the last 30 days, on how many days did you consume alcohol?” (Presley, Meilman, & Lyerla, 1994). We analyzed these items in the aggregate to define our criterion, which was engagement in high-risk drinking behaviors; other studies (see Mayhew, Caldwell, & Hourigan, 2008) have adopted a similar approach when examining these behaviors. We anticipate that this study will be an important empirical first step for helping co-
curricular educators justify hiring and training peer educators to deliver high-risk drinking prevention messages to first-year students.

Theoretical Overview

We adopted a multi-pronged approach to reviewing the literature on peer education and its effects on reducing high-risk drinking among first-year undergraduate students. First, we examined social learning theories posited for explaining why peer education, as a form of teaching and learning, works. Second, we turned to empirical studies of peer education and its role in influencing a variety of behaviors, including those associated with wellness such as high-risk drinking. Third, we reviewed studies that specifically interrogated peer education by examining peer learning as a result of delivery mode, particularly focusing on studies with research designs that compared peers to professional staff.

Theoretical Orientation

There is no clear theoretical consensus supporting the use of peer educators, although most programs evaluated in the literature do reference theories relating to social learning or motivation (Topping & Ehly, 1998; Turner & Shepherd, 1999; Wight, 2008). Commonly cited theories from the field of health promotion include 1) social learning theory (Benjamin, 2004; McKeganey & Barnard, 1992; Peck, Cooke, & Apolloni, 1981; Wilton, Keeble, Doyal, & Walsh, 1995), 2) social inoculation theory (Duryea, 1983; McGuire, 1964, 1974) and 3) differential association theory (Sutherland & Cressey, 1974). Although a full review of these theories is beyond the scope of this paper, their shared elements explain why peer education works, that is, how peers help other students learn the information needed to affect behavior.

Across the three theories (see Benjamin, 2004; Duryea, 1983; McGuire, 1964, 1968; McKeganey & Barnard, 1992; Peck, et al., 1981; Sutherland & Cressey, 1974; Wilton, et al.,
1995) most frequently cited for explaining the efficacy of peer education in influencing student behavior (Milburn, 1995; Turner & Shepherd, 1999), it appears as though individuals learn from others through the process of modeling. Essentially, observed behaviors, when accompanied by opportunities to engage in those behaviors, leads to a change in action, if positive reinforcement is provided. When applied to peer health education settings, students assume that their peers not only care about health-related behaviors, but enact them by taking positions as peer educators; these assumptions underscore what Milburn (1995) calls “peer pressure resistance training” (p. 408). Undergirding these approaches is the Bandurian notion that peer educators need to be perceived as “credible” (Turner & Shepherd, 1999, p. 237) for effective role modeling to occur.

In an effort to understand that credibility, Brack et al. (2008) established that peer educators are not substantively different from the students with whom they work. With regard to high-risk drinking, students will not learn from their peers if they are perceived as hypocritical, which would result from the peer educators engaging in high-risk drinking behaviors while advocating for others not to do so.

Literature Review on Peer Education

Studies examining the efficacy of peer educators on changing behavior demonstrate that peer-led interventions are effective across a variety of populations and content areas. For example, in Buller et. al.’s (1999) study of over 2000 low-income, multicultural adults working together in labor setting, he found that peer education was effective in increasing the healthy nutritional habit of eating more fruits and vegetables. Similarly, Mathie and Ford (1998) describe two peer education efforts in the United Kingdom addressing HIV/AIDS education with older teens. In both cases, the educational outcomes for the teen participants were positive and
measurable. The researchers caution, however, that many other project evaluations have not demonstrated similar changes in participant behavior.

These generally positive results are also reflected in the few studies connecting peer education to outcomes related to alcohol use in a college or university setting. For example, in a longitudinal study of 2,000 randomly selected undergraduate students at University of California, Santa Barbara, White, Park, Israel and Cordero (2009) found that students who had had contact with a peer educator eventually plateaued in their consumption of alcohol while the alcohol use of those students who did not have such contact continued to rise. In another example, Freeman (2001) described an alcohol intervention planned in connection with the campus counseling center at Rollins College that was aimed at students who had been sanctioned through the campus judicial system. The intervention relied on a small-group experience in which a peer educator would lead the sanctioned students through a reflective examination of values and behaviors related to alcohol use. Sanctioned students who completed the peer intervention program demonstrated a 9% recidivism rate for alcohol violations, representing a 50% decrease in repeat alcohol offenses for the campus. Despite these select cases of effective and successfully evaluated peer education programs, there continue to be calls for greater rigor in the evaluation of such programs (Mastroleo, et al., 2008).

Other studies have compared peer-led educational efforts to professionally-facilitated efforts. In a review of 13 different studies comparing the efficacy of peer educators vis-à-vis professionals, Mellanby, Rees and Tripp (2000) concluded that peer educators are at least as capable as professionals; however, methodological weaknesses in the studies reviewed included, but were not limited to, a lack of clarity about the training received by educators and failure to include information on effect size. Forrest et al. (2002) found differences between peer
educators and professional teachers in a study of 7,700 secondary school students participating in a sex-education program in the United Kingdom. Respondents found the peer-led program to be more satisfying, engaging and useful than the teacher-led programs, although students from both groups reported learning from the program.

A limited number of studies have examined the differential success of peer educators and professionals in addressing alcohol use and abuse in a college or university environment, usually in the context of a judicial response. Fromme and Corbin (2004) examined the effect of a Lifestyle Management Course (LMC) in reducing drinking episodes in college students. While the LMC proved to be an effective intervention, there was no difference in efficacy between students who had a peer or professional facilitator. Likewise, a study of first-year fraternity members participating in a brief alcohol-use reduction intervention conducted by a peer or by a professional researcher showed an overall positive impact for the intervention one year later, but no difference between those who worked with a peer educator or a professional (Larimer, et al., 2001).

While there are a few reports specifically examining the use of peer educators in first-year seminar courses (Hamid, undated; Marsh & Friedman, 2009), these studies are practice-oriented pieces that have not appeared in peer-reviewed literature. This, of course, limits their utility in informing this study’s design. Thus, this study departs from and extends the body of work on peer education in many ways, enabling causal claims to be made concerning the effects of peer education on reported high-risk drinking behaviors. First, we designed a longitudinal, experimental study to investigate the efficacy of peer education on influencing high-risk drinking among first-year students. By randomly assigning treatment conditions (professional versus peer versus none) to students enrolled in first-year seminars, we were able to empirically link mode of
delivery to reported high-risk drinking behaviors. Second, because students did not enroll in first-year seminars based on prior knowledge that there would be a presented alcohol intervention or how this intervention would be delivered, we were able to execute a study that, as part of its design, addressed selection bias often introduced by studying students in their natural, albeit non-random learning environments. Third, by using the same intervention by both professional staff and peer educators, we were able to speak to the validity of treatment: observed effects in high-risk drinking were likely due to mode of delivery (peer vs. professional) rather than the intervention.

Method

We hypothesize that students exposed to the peer-led intervention will be the most likely to report reductions in high-risk drinking behaviors than either students exposed to the intervention facilitated by professional staff or those not exposed to an intervention at all. An auxiliary hypothesis is that students exposed to the intervention facilitated by professional staff will be more likely to report fewer high-risk drinking behaviors than those students not exposed to an intervention at all.

Sample

In the fall semester of 2009, seventy percent of first-year students within the institution under examination were enrolled in University 101 (UNI 101), a first-year seminar. Fourteen UNI 101 instructors agreed to allow the alcohol prevention and evaluation team to longitudinally assess their students through the use of two theoretically-derived and empirically-validated instruments (discussed below) and to present the intervention to their students. Interventions were randomly delivered to students enrolled in one of these fourteen seminars: four courses
with interventions presented by peers, four with interventions presented by professional staff, and the remaining six with no intervention presented at all.

Students were enrolled in a first-year success course during the fall 2009 semester and were administered the assessments in the first and last week of the course. The response rate for the entire sample reached 92.86%, with 320 of 350 students providing responses to pre or posttest assessments.

To increase accuracy of reported findings, we adopted a conservative approach to approaching missing data. Only students who provided information on pre and posttests were included in the analytic sample. Thirty-five students provided only pretest information and an additional 22 students provided only posttest information. Thus, data from 263 of a possible 320 students were used to calculate our longitudinal response rate of 75.14%.

Because our study specifically focused on high-risk drinking, we analyzed only those students who engaged in high-risk drinking behaviors. Assessment of these behaviors were based on the Harvard School of Public Health’s controversial but widely recognized measure of “binge drinking,” defined at 5 drinks in one sitting for men and 4 drinks in one sitting for women in the past two weeks (Weschler, Dowdall, Davenport, & Rimm, 1995). At the time of pretesting, any student who responded that he or she had never had five or more alcoholic drinks at a sitting within the last two weeks was discarded from the sample. Therefore, an additional 135 students were purged from the sample.

The analytic sample contained a total of 128 high-risk students, distributed across first-year success courses. Seventy of these students were enrolled in the courses that received no intervention; 19 students were enrolled in courses that received the professionally-led intervention; and the remaining 30 students were enrolled in the courses that received the peer-
led intervention. Students enrolled in the courses that received the interventions resembled those students enrolled in the control courses across a number of demographic variables. See Table 1 for descriptions of the student characteristics by delivery mode: intervention presented by professional, peer, or not at all.

Context for the Study

The [information deleted for blind review] is a mid-size university, enrolling 10,711 undergraduate and 1,200 graduate students. It is one of the 16 public institutions within the University System [information deleted for blind review] and is located on the southeastern coast of [information deleted for blind review] within a small city of approximately 75,000 residents. Nearly three in five (58%) [information deleted for blind review] students are female, and 89% of students are white.

Students enrolled at [information deleted for blind review] tend to engage in more high-risk drinking behaviors than their counterparts at other colleges and universities. In 2009, 237 female and 104 male students took a comprehensive assessment that measured their experiences with and perceptions of alcohol on campus. The assessment’s results indicated that binge drinking rates were 62.5% for male and 42.2% for females. The results from the assessment also showed that students reported experiencing negative consequences related to their drinking. Such consequences ranged from experiencing a hangover (52.4%) to driving while under the influence of alcohol (16.3%). Not surprisingly, significantly more males than females report consequences from drinking. However, men and women experience also different types of consequences and use different types of protective strategies when they drink. For example, men are more likely to attend class hungover than women (33.7% versus 19.4%) and women are more likely to keep track of number of drinks than men (74.7% versus 51.7%). This finding suggests the need to
consider gender in the development of curricular-based interventions designed to reduce outcomes related to high-risk drinking.

For over two decades, the university has worked to educate students about substance abuse and prevention through a department with dedicated resources, including staff positions. The department is dedicated to a harm reduction approach including a non-use message, an assessment culture, and collaborating with on and off-campus partners to address substance abuse from an environmental management perspective. Educating a student group of peer educators is an important part of the department’s work.

*Description of the Intervention*

Each year, incoming students take first-year seminar courses on various topics with the aim of familiarizing students with campus resources and easing their transition to the campus environment. These seminar courses are highly recommended by first-year advisors; approximately 70% of new students enroll in these courses. Instructors range from tenured faculty to academic advisors to university staff from student affairs, library, and other departments on campus. Alcohol and drug abuse is one of the required sessions; approximately half of the instructors invite the alcohol and drug prevention professionals to make this presentation. When invited, the substance abuse and prevention department either sends a peer educator or student affairs professional staff member to lead the session.

This alcohol and drug abuse session is designed specifically to cover issues of gender roles and how they contribute to high-risk drinking. During this session, three segments of Ridberg’s (2004) *Spin the Bottle: Sex, Lies, and Alcohol* featuring Jackson Katz and Jean Kilbourne are shown. These segments serve as the basis for the curricular-based intervention. This video was selected because it presents both male- and female-specific issues and also
features students appropriately modeling how to discuss personal issues, such as peer pressure, alcohol, and sexual behavior.

Through this video, Katz and Kilbourne offer a critique of the role that contemporary popular culture plays in glamorizing excessive drinking and high-risk behaviors by contrasting these hyperbolic representations with the ways that alcohol consumption affects the lives of real young men and women. The video puts forth numerous media illustrations in an effort to show students how these media images shape gender identity and how this relationship is linked to alcohol use. Interviews with campus health professionals and students shown in the video provide a clear picture of how drinking impacts student health and academic performance. *Spin the Bottle* concludes with strategies for countering the ubiquitous presence of alcohol propaganda and encourages young people to make conscious, deliberate decisions about their own lives.

After students screen the video, either peer educators or personnel from the department facilitate a discussion with the first-year students, specifically probing the gender-specific issues regarding alcohol use. Additional didactic information is covered, including how to identify alcohol poisoning, how alcohol affects men’s and women’s bodies, signs of addiction, how to help a friend, and other signs of drug abuse.

*Description of the Training*

Peer educators co-facilitate this curricular-based intervention as part of a unique leadership experience. In order to effectively lead the session, the peer educators receive both content and communications training. In terms of content, these upper-classmen students are trained in overall concepts of gender construction, media literacy on alcohol and gender, as well as the findings of the extant literature about the relationship between gender and alcohol. The peer educators also receive training on social norms theory, environmental management theory,
and effective interventions to change individual behavior. Further, they become aware of the role of their specific intervention in the overall framework of this multi-tiered alcohol education strategy. In order to effectively communicate with the first-year students, the peer educators receive explicit training on facilitating group dialogue, gender specific styles of communication, multicultural competency, and presentation skills. The training aims to help develop a team identity among the peer educators, so they can easily pair with each other to co-present and also observe more experienced peer educators present before presenting themselves.

Each year, after the training and interventions have taken place, the peer educators participate in in-depth interviews with evaluators about their experiences. Several key themes have emerged related to what they learn from their involvement: (a) reasons they got involved (desire to be part of the program, family history of addiction, related to career goals); (b) balancing social pressures and being a role model, (c) learning how to present and facilitate discussion, (d) awareness of diverse perspectives, (e) leadership and engagement in campus, and (f) recognizing the cultural knowledge about gender, alcohol, and advertising that they share around them.

**Measure**

We also administered an abridged version of the Core Alcohol and Other Drug Survey (Presley, Austin, & Jacobs, 1997), which is designed to assess the nature, scope, and consequences of alcohol and other drug use in colleges and universities. This assessment tool boasts high validity and reliability in its implementation with postsecondary populations (Presley, et al., 1997). The assessment uses the following items to measure quantity and frequency of use: annual prevalence of use for all drugs and alcohol, 30-day use for all drugs and alcohol, average number of drinks per week, binge drinking within the last two weeks, and
changes in drinking and drug use in the last 12 months. Of these items, four items in particular were used as outcomes for this study as these items are most frequently used in alcohol assessments aimed at determining quantity and frequency of alcohol use. These items included:

1) “Think back over the last two weeks, how many times did you have five or more alcoholic drinks at a sitting?”
2) “How many drinks do you have on average when you go out/party/socialize with other students?”
3) “How many drinks do you consume in an average week?”
4) “During the last 30 days, on how many days did you consume alcohol?”

Higher scores on each of these four items indicated a higher quantity and frequency of alcohol use. Of the four items, the first, “Think back over the last two weeks, how many times did you have five or more alcoholic drinks at a sitting?”, was used to create the analytic sample for this study. Since we were interested in targeting high-risk drinking, we discarded any students who replied “Never” to this item.

The remaining three items were used to construct the high-risk drinking scales. We conducted confirmatory factory analyses for the pre and posttest high-risk drinking scales by using principle axis factoring and orthogonal rotation methods. Factor loadings containing a score of at least .764 or higher were used in the development of subsequent summed scales. Internal validity for each of these scales was high, with Cronbach’s alpha reliabilities ranging from .808 to .817. See Table 2 for factor loadings and alpha reliabilities for these scales.

**Analysis**

Several analytic methods were used to understand the efficacy of the intervention on the outcomes under investigation. First, descriptive and factor analyses were used to understand the defining characteristics of enrolled students and in the development of measurement scales, respectively. Next, paired samples t-tests with Bonferroni adjustments were performed to
understand whether mean pre and posttests differences existed across outcome measures for each sample. Finally, a 2 (Time) x 3 (Delivery mode) repeated measured ANOVA was performed to isolate the effects of the delivery mode of the intervention on high-risk drinking. As a final step, means analyses were again performed to aid with data interpretation. See Table 3 for operational definitions for variables used in this study.

Limitations

Undoubtedly, this study has limitations. First, as a result of sample size constraints, we were unable to include specific demographic variables that have been identified in the extant research as important when studying alcohol use among college students (see Globetti, 1996; Korn & Maggs, 2004) for a list of examples of these demographic variables). Second, we did not assess the extent to which the varying skills among the facilitators of the intervention may have confounded the findings. Third, all of the behaviors and expectancies included in this study were self-reported by students, so the data relied on students’ honesty and accuracy in reporting, although recent research has shown that this is less of a threat than it used to be (see Borsari & Carey, 2005; Connors & Maisto, 2003; Del Boca & Noll, 2000; Marlatt, et al., 1998; Polich, 1982; Walker & Cosden, 2007). Fourth, we measured students at only two points in time and therefore cannot say much about the stability of change over time based on exposure to the intervention. Finally, this study was conducted at a single institution, so generalizations from these results must be interpreted with caution.

Results

Exploratory and Descriptive Analyses

Results from the series of exploratory and descriptive analyses verified that student characteristics did not vary across intervention delivery modes. That is, there were no significant
differences in gender, race, age, expected grade point average, enrollment status, hours spent at work, or student status between students enrolled in success courses with no intervention, with professionally-led interventions, or with peer-led interventions. Of course, these results are expected, given that the intervention delivery mode was randomly assigned to the success courses examined for this study. See Table 4 for results from relevant descriptive and exploratory analyses.

**Repeated Measures ANOVA**

Results from a 2 (Time) x 3 (Delivery mode) mixed-model repeated-measures ANOVA indicated that high-risk drinking was related to, but not dependent upon, the specific ways the alcohol intervention was delivered to first-year students. Specifically, results showed that the main effect for delivery mode was significant \( F(2, 125) = 3.773, p < .05, \eta^2 = .057 \). Thus, there were overall differences in high-risk drinking scores of students enrolled in success courses with no intervention (Δ Time 2 High-risk drinking – Time 1 High-risk drinking = .450) compared to those enrolled in the success courses with professional-led interventions (Δ Time 2 High-risk drinking – Time 1 High-risk drinking = 0.059) compared to those enrolled in the success courses with peer-led interventions (Δ Time 2 High-risk drinking – Time 1 High-risk drinking = -0.583). Note that only those students enrolled in the success courses with the peer-led interventions reported an average reduction in high-risk drinking behaviors.

Post-hoc analyses of mean differences showed that significant between-subject differences were likely due the changes reported between students enrolled in the success courses without the intervention and those enrolled in the success courses with the peer-led interventions. While students enrolled in success courses without the intervention reported increases in high-risk drinking over the term, those in the success courses with the peer-led
intervention reported decreases. These change score differences reached statistical significance at $p < .05$. See Figure 1 for a graphic presentation of the between-subjects results.

The main effect for Time failed to reach statistical significance. This indicates that, regardless of delivery mode, there were no significant average changes in high-risk drinking behaviors reported by students in this sample. This is probably due to summing the average increases in high-risk drinking reported by students in the success courses with no intervention and with the professional-led interventions with the average decreases in high-risk drinking reported by students in the success courses with the peer-led interventions. Adding average increases to decreases likely neutralized the potential main effects of Time.

The interaction term, Time x Delivery mode, also failed to reach statistical significance, indicating that average high-risk drinking change scores were not dependent upon delivery mode. That is, the average change scores of students within each delivery mode did not significantly change from pre to posttest periods. Taken together, these results suggest that differences in high-risk drinking were related to how interventions were delivered, but not dependent upon it.

Discussion

This study takes a small but important step toward understanding the roles peers play in shaping student outcomes. Specifically, we investigated if alcohol prevention messages, embedded in first-year success courses and presented by peer educators, helped curb high-risk drinking among first-year students. Results from this study suggest that, when compared to students enrolled in first-year courses with no intervention messages, those enrolled in courses with peer-led interventions reported lower occurrences of high-risk drinking at the end of one semester.
Theoretically, results from this study echoed some from previous research that investigated the efficacy of peer educators on helping students achieve desired learning outcomes related to alcohol use on a college campus (Freeman, 2001; Mastroleo, et al., 2008; White, et al., 2009). Our central hypotheses was supported, that, at the end of the semester, students enrolled in the courses receiving the intervention from peers would report a greater decrease in high-risk drinking behaviors than either students enrolled in the courses receiving the intervention from professional staff or those receiving no intervention at all. Exposure to peer messages within the context of first-year course may not only reinforce the didactic information about alcohol and its negative consequences, but may have also increased the likelihood of creating and sustaining social learning environments that maximize opportunities for students to learn from each other, a suggestion that finding theoretical support in the work of Bandura (1977) and his contemporaries (see Benjamin, 2004; Duryea, 1983; McGuire, 1964, 1968; McKeagney & Barnard, 1992; Peck, et al., 1981; Sutherland & Cressey, 1974; Wilton, et al., 1995).

Somewhat surprising were the results comparing students in courses with intervention messages presented by peers versus professional staff. In some ways our results concur with those offered by others, that peer educators are at least as capable as professionals at delivering prevention messages (Mellanby, et al., 2000); students in the first-year success courses with no intervention messages showed the greatest increases in average high-drinking scores, when compared to change scores reported by students exposed to professional or peer-led intervention messages. Although these patterns were observed, results comparing average high-risk drinking between students exposed to peer versus professionally-led interventions failed to reach statistical significance—a finding supported by the work of Fromme and Corbin (2004) and Larimer, et al. (2001). These mixed findings may suggest a need to re-examine how questions
related to alcohol intervention messages are framed; rather than asking if high-risk drinking among students differs based on the educational agent delivering the intervention message, perhaps, we should interrogate the specific ways students learn about high-risk drinking from both professionals and peer educators. Future mixed method studies may help in further exploring these relationships.

Many of the theories offered for explaining the link between peer education and student learning have been criticized for failing to provide evidence concerning their structural assumptions underscoring these relationships, that learning takes place through social interactions and that perceptions of credibility among learning participants plays an important role in modeling leaning behaviors (see Turner & Shepherd, 1999). The same criticisms can be levied against this study, as one that neither directly tested the mechanisms students used to learn from each other nor perceptions of peer credibility in delivering intervention messages. However, through its use of an experimental research design, this study can make causal claims linking peer education to reduced reported incidents of high-risk drinking among first-year students—a finding that, until recently, had struggled to find empirical footing (Mellanby, et al., 2000). Establishing this link may serve as an important first step in guiding future efforts that examine the theoretical mechanisms responsible for this link.

Implications

Colleges and universities frequently turn to peer educators to convey messages to other students on topics ranging from diversity to academic integrity to substance abuse. The efficacy of using peer educators seems intuitive as they are closer in age and experience to the students with whom they work. However, many peer education programs are implemented based on convenience, cost considerations or simply the prevalence of the practice in higher education.
Pascarella (2006) cautions against programmatic reliance on “rational myths” (p. 513), or those practices or assumptions that continue despite a lack of supporting evidence for their utility. This study provides such evidence, linking student exposure to alcohol intervention messages presented by peer educators to reduced reported incidents of high-risk drinking.

It is highly notable that this analysis is based on first-year students who are actively engaged in high-risk drinking during the first-half of their first semester at college. Peer education programs that attract convenience audiences (such as by advertisement or in a residence hall) are often only offering reinforcing peer messages to students who do not drink or only drink moderately, rather than attracting the highest risk students. This study expands the findings on peer education as a credible intervention for high-risk drinking students.

To curb high-risk drinking among first-year students, institutions may want to provide resources for peer education programs, including funds for their implementation and rigorous assessment. It may not be enough to just hire peers; after all, of equal important is how peers are trained and assessed in terms of their influence on student learning. Professionals at this institution make a commitment to recruiting and training peer educators with high social capital, who are visible and connected student leaders in other social arenas. Peer leaders are expected to be committed to the stated goal of harm reduction and safe behavior, not necessarily non-drinking; thus, they have credibility with an audience to which they are similar (Brack 2008). In this study, peer educators were trained not only on didactic information relating to the delivered alcohol intervention but on how to best communicate this information to students. Although robust explanations of these training activities exceed the scope of this paper, we offer our training manuals to others committed to peer education and its importance on helping curb high-risk drinking among first-year students (contact Author for materials).
Turning to assessment, the adoption of the experimental design for examining the efficacy of peer-led interventions on first-year students high-risk drinking required buy-in from a number of institutional stakeholders, including alcohol intervention specialists responsible for designing the intervention and training the peers; first-year success course instructors who embedded time within their courses for pre and posttesting students; and higher education scholars with expertise in research design and quantitative methods. Results from this study imply that such collaboration is indeed worthwhile, with first-year students reporting lower incidents of high-risk drinking as a result of being exposed to intervention messages led by peers.

Conclusion

Given a growing dependence on specially trained student educators to have an impact on general student behavior, the need for empirical evaluation of peer education programs is becoming ever more acute. Through its use of an experimental research design, this study takes an important first step in establishing the empirical link between peer education and reported reduced high-risk drinking among first-year students. It is our hope that others use similar strategies for addressing the important roles that students play in teaching each other; doing so may help educators migrate to more holistic, student-centered approaches to teaching and learning.
References


Author Note

This research is funded by a grant from the U.S. Department of Education. However, contents do not necessarily represent the policy of the U.S. Department of Education, and endorsement by the federal government should not be assumed.
1 Turner and Shepherd (1999) found some support the tenets of social learning theory in their review of the peer education literature, but cautioned that many of the structural assumptions of the theory had not been demonstrated.

2 All first-year seminars include alcohol prevention messaging. However, students enrolled in the seminars comprising our study's control group received the intervention messages after posttesting. None of the students enrolled in the seminars labeled as "receiving no intervention" had been exposed to any alcohol-related intervention messages before the posttest.
### Table 1

**Descriptive Information for Students by Delivery Mode**

<table>
<thead>
<tr>
<th></th>
<th>Success courses with no intervention (n=70)</th>
<th>Success courses with professional staff intervention (n=19)</th>
<th>Success courses with peer educator intervention (n=39)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Percent female</td>
<td>42.9</td>
<td>52.6</td>
</tr>
<tr>
<td>Age</td>
<td>Percent 18 or under</td>
<td>75.7</td>
<td>73.7</td>
</tr>
<tr>
<td>Race</td>
<td>Percent white</td>
<td>80.3</td>
<td>78.9</td>
</tr>
<tr>
<td>Expected G.P.A</td>
<td>Percent at least 3.0 or higher</td>
<td>65.2</td>
<td>63.2</td>
</tr>
<tr>
<td>Living Status</td>
<td>Percent on-campus</td>
<td>94.2</td>
<td>89.5</td>
</tr>
<tr>
<td>Number of hours of work per week</td>
<td>Percent 0 hours</td>
<td>84.1</td>
<td>73.7</td>
</tr>
<tr>
<td>Enrollment status</td>
<td>Percent full-time</td>
<td>98.5</td>
<td>100.0</td>
</tr>
<tr>
<td>Student status</td>
<td>Percent first-year</td>
<td>100.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>

### Table 2

**Items, Factor Loadings, and Reliabilities for Alcohol Behavior Scale**

<table>
<thead>
<tr>
<th>Factor and Survey Items</th>
<th>Factor Loading</th>
<th>Factor Loading</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>High-risk drinking behavior (alpha)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>How many drinking do you consume on an average week?(^a)</td>
<td>.817</td>
<td>.808</td>
</tr>
<tr>
<td>How many drinks do you have on average when you go out/party/socialize?(^b)</td>
<td>.931</td>
<td>.915</td>
</tr>
<tr>
<td>During the last 30 days, on how many days did you consume alcohol?(^c)</td>
<td>.845</td>
<td>.867</td>
</tr>
<tr>
<td></td>
<td>.789</td>
<td>.764</td>
</tr>
</tbody>
</table>

\(^a\) Item measured through use of the following scale: 1=0, 2=1-3, 3=4-6, 4=7-10, 5=11-15, 6=16-20, 7=21-30, 8= 30 or more.

\(^b\) Item measured through use of the following scale: 1=0, 2=1-2, 3=3, 4=4, 5=5, 6=6-7, 7=8-9, 8=10-14, 9=15 or more.

\(^c\) Item measured through use of the following scale: 1=0, 2=1-3, 3=4-6, 4=7-10, 5=11-15, 6=16-20, 7=21-30, 8=every day.
### Table 3

**Operational Definitions and Descriptive Statistics**

<table>
<thead>
<tr>
<th>Operational Definition</th>
<th>Mean (SD)</th>
<th>Min. (SD)</th>
<th>Max. (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pretest covariate</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pretest high-risk drinking</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Delivery Mode</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 = Enrolled in success courses without intervention,</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 = Enrolled in success courses with professional-led intervention</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 = Enrolled in success courses with peer-led intervention.</td>
<td>0.758 (0.894)</td>
<td>0.000 (0.000)</td>
<td>2.000 (2.000)</td>
</tr>
</tbody>
</table>

### Table 4

**Means and Standard Deviations for Pre- and Posttest High-risk Drinking by Delivery Mode**

<table>
<thead>
<tr>
<th>Delivery Mode</th>
<th>Pretest High-risk Drinking Mean (SD)</th>
<th>Posttest High-risk Drinking Mean (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Success courses without intervention</td>
<td>-0.218 (1.052)</td>
<td>-0.173 (1.018)</td>
</tr>
<tr>
<td>Success courses with professional-led intervention</td>
<td>0.251 (1.080)</td>
<td>0.267 (0.935)</td>
</tr>
<tr>
<td>Success courses with peer-led intervention</td>
<td>0.291 (0.848)</td>
<td>0.232 (0.994)</td>
</tr>
<tr>
<td>Total</td>
<td>0.006 (1.021)</td>
<td>0.016 (1.013)</td>
</tr>
</tbody>
</table>
Figure Caption

*Figure 1.* Interaction of average high-risk drinking change score by intervention delivery mode.