DIFFUSION OF A MULTIMEDIA ALCOHOL EDUCATION PROGRAM TO FIRST-YEAR COLLEGE STUDENTS

Ryan J. Martin, M.S.
Stuart Usdan, PhD
Janet Reis, PhD
Jennifer Cremeens, MSPH

Abstract: Alcohol 101 is an innovative, multimedia CD-ROM educational program that addresses college drinking. At a residence hall at a large Midwestern university, surveys were administered to resident advisors (RAs) and their residents to collect information on the Alcohol 101 diffusion process and program utilization rates. More than half (51.6%) of residents who received the program at their door utilized it, compared to only 23.3% of residents who received the program at a floor meeting. Chi-square analysis (X^2=8.65, p=.01) revealed significant differences in utilization rates based on distribution method. This paper will discuss recommendations for improving the diffusion of this innovative program.

INTRODUCTION

Studies have shown that drinking, particularly binge drinking is widespread on college campuses. Results from the 2001 Harvard School of Public Health College Alcohol Study found that 44% of college students were classified as binge drinkers and that 23% were classified as frequent binge drinkers (Wechsler et al., 2002). Results from the same survey also showed that there is a strong positive relationship between the frequency of binge drinking and alcohol-related health and other problems. Wechsler et al. (2002) reported that frequent binge drinkers were more likely than their non-binge or infrequent binge counterparts to have serious alcohol-related problems. A report by Hingson et al. (2002) indicated that binge drinkers are more likely to not use protection when having sex, to engage in unplanned sexual activity, to get hurt or injured, or to engage in dangerous driving.

ALCOHOL 101

An innovation that has shown promise in addressing college student drinking behavior is Alcohol 101. Alcohol 101 is an innovative, interactive CD-ROM that employs a virtual party scene in which participants make either safe or unsafe decisions concerning alcohol and then virtually see the outcomes of their decisions (The Century Council, 2003). According to Reis et al. (2000), the designers of Alcohol 101 based the program on factors known to influence volitional behavior and presents information in a way that is appealing to college students. The software addressed three factors relating to behavior change, including self-efficacy in maintaining personal control and safety while using alcohol, attitudes and related expectations regarding the physiological and behavioral consequences of alcohol consumption, and peer norms regarding alcohol consumption.

Students who have participated in the program describe it as being "interesting" and like the fact that "it doesn't lecture." A formal assessment done by Reis et al. (2000) found that Alcohol 101, when compared to both traditional class presentations and no intervention, showed significant positive results in the following measures of self-reported learning: being more knowledgeable about the symptoms of alcohol overdose; what to do on behalf of a friend in an emergency condition; how to intervene with a friend who has been drinking too much; the interplay between blood alcohol concentration (BAC), time, amount of alcohol consumed, and the effects

Ryan J. Martin, M.S, is affiliated with the Department of Health Science at the University of Alabama, Tuscaloosa. Stuart Usdan, PhD, is affiliated with the Department of Health Science at the University of Alabama, Tuscaloosa. Janet Reis, PhD, is affiliated with the Department of Family Medicine at the University of Illinois, Urbana-Champaign. Jennifer Cremeens, MSPH, is affiliated with the Department of Health Science at the University of Alabama, Tuscaloosa. Please address all correspondence to Ryan J. Martin, University of Alabama, Department of Health Science, PO Box 870311, Tuscaloosa, AL 35487. Phone: (205) 348-9717. Fax: (205) 348-7568 . E-mail: rjmartin78@gmail.com.

on judgment; and maintaining control and safety.

DIFFUSION OF INNOVATIONS

According to Rogers's (1995) Diffusion of Innovations theory, the way in which first-year students receive Alcohol 101 should influence their utilization of the program. There are four main elements required for the diffusion of innovations: the innovation, the communication channels, the time, and the social system. This research is evaluating the communication channels, specifically the communication channels between resident advisors (RAs) and their residents.

Rogers (1995) states that the essence of the diffusion process is the information through which one individual communicates a new idea to one or several others. The communication process involves an innovation (e.g., Alcohol 101), an individual or other unit of adoption that has knowledge of the innovation or experience using it (e.g., RAs), another individual or other unit that does not yet have experience with the innovation (e.g., first-year students), and a communication channel connecting the two units. A communication channel is the means by which messages get from one individual to another. This research is attempting to define exactly what communication channels are being employed and which are more successful. According to Rogers, this information is critical because the nature of the information-exchange relationship between a pair of individuals determines the conditions under which a source will or will not transmit the innovation to the receiver, and the effect of the transfer.

There are two types of communication channels being evaluated in this study. One channel being evaluated reaches a mass audience (at floor meetings) while the other channel targets individuals (at residents' rooms). Mass media communication channels are often the most rapid and efficient means to inform an audience about the existence of an innovation (Rogers, 1995). Though no media was necessarily utilized in this communication channel study, a type of mass communication channel was observed in floor meetings where Alcohol 101 was diffused to all residents at the same time by RAs. According to Rogers (1995), interpersonal communication channels are often less efficient than mass media channels but are more effective in persuading an individual to accept a new idea. This type of channel involves a face-to-face exchange between two or more individuals. An interpersonal channel was observed in this study in the form of individual door-to-door distribution of Alcohol 101 by RAs. Rogers states that the interpersonal channel becomes even more effective if the individuals involved are similar in socioeconomic status, education, or other important ways. Because RAs and their residents are of similar ages and attend the same school, the effect of this interpersonal channel should be higher.

CHES COMPETENCY

This research addressed CHES Sub-Competency #4, Comparing different methods for distributing educational materials, which is part of CHES Competency D, Select effective educational resource materials for dissemination, which is part of CHES Responsibility VII, Communicating health and health education needs, concerns (NCHEC, 2002).

METHOD

Beginning in the fall of 2000, every first-year student entering the large Midwestern university in the study was given his or her own copy of the Alcohol 101 program by their RA. Before distributing the program to their residents, RAs were given a brief description of what Alcohol 101 entailed and an opportunity to use the CD-ROM. Once first-year students received Alcohol 101, they were not mandated to use it, but participation should have been highly encouraged by their RAs.

The populations being studied were the RAs and their first-year student residents at one residence hall at a large Midwestern university. Some of the advisor/resident groups were all male, some all female, and some coed. The residence hall has four floors with three RAs on each floor, except floor one which has one RA. Each RA has his or her own group of residents, and the number of first-year students for each RA ranged from 8 to 43.

FIRST-YEAR STUDENT SURVEY INSTRUMENT

The survey instrument consisted of items to determine if the students received, were aware of, or utilized Alcohol 101. The first questions dealt with the distribution, promotion, and use of Alcohol 101. Participants gave feedback on whether or not they received the program, whether or not the program was promoted to them and whether or not they used the program. Those who utilized the program indicated whether they did so for more or less than 15 minutes. Other variables such as gender, computer access, self-perceived drinking knowledge and present drinking behavior were also collected. The surveys were pre-coded with a floor number code so that they could be matched up with that floor's RA.

RA SURVEY INSTRUMENT

The survey instrument for RAs consisted of 11 items asking about their Alcohol 101 distribution and promotion methods and their opinions on the distribution and promotion process.

The first set of questions assessed the Alcohol 101 distribution methods used by the RA. Open-

ended questions determined how they distributed the program and the distribution setting. The next items dealt with the promotion process and determined whether or not they promoted Alcohol 101 before, during, and/or after the program was distributed. For each of those three questions, RAs were asked to expand on their answers through open-ended questions. If they answered "yes," the survey asked them how they promoted it. If they answered "no," the survey asked them why they did not promote the program. The questionnaire then asked the RAs about their residents' responses to the promotion and distribution of Alcohol 101. Two questions asked about the difficulty of and the effort required in the distribution and promotion process using a 5-point Likert scale. Another question asked whether or not certain residents were targeted for Alcohol 101 promotion, and then asked them "why?" in open-ended form. Two questions asked for the RAs estimation/opinion on how many residents received the program and how many first-year students utilized the program. The last question was open-ended and asked the RAs for their opinions on how both the distribution and promotion process could be improved.

ANALYSIS PLAN

After the RAs completed the surveys, the next step involved categorizing and coding the open-ended responses. The open-ended questions included the RAs distribution process, promotion process, and their suggestions for improvements.

The computer program SPSS (Version 11) (2002) was used to analyze the results of this study. Once the data was entered, RAs were matched with their residents in order to answer the research questions. The best methods of diffusion were determined by looking at which floors had highest levels of utilization and the methods used by the RAs on those floors.

RESULTS

RESPONSE RATE AND GENDER DISTRIBUTION

There was a 100% (n=10) response rate from the RAs. The first-year students had a response rate of 57.1% (n=153), with the majority (73.2%) being male. The surveys to first-year students were distributed during floor meetings. The residents who did not fill out questionnaires were likely either absent from the meeting, arrived late or left the meeting early.

RA DISTRIBUTION

Two methods of distribution emerged from the open-ended questions. The RAs either handed out Alcohol 101 at a floor meeting to the entire group or door-to-door to each resident personally. The setting for distribution was either in resident's rooms or in the hall lounge during a floor meeting. All RAs (n=10) at the residence hall distributed the Alcohol 101 program. A few RAs (n=3), who had 31 (20.3%) of the students in this study, used group distribution when they handed out the program to their students during floor meetings. Most RAs (n=7), who had the remaining 122 (79.7%) participants in this study, used individual distribution when they distributed the program to their residents in their rooms. This method meant that RAs either gave the program to the resident personally or simply slid it under the door, depending upon whether or not the resident was in their room.

RA IMPROVEMENT SUGGESTIONS

The RAs were also asked for their opinions on how to improve the distribution and promotion process. Some ideas to improve the distribution process included giving the program to all residents, sending the program to residents through the mail, and giving the program to first-year students during orientation. Some ideas to improve the promotion process included advertisements, bulletin board materials, giving incentives upon completion, group utilization on overhead computer, and playing at interactive computers in bars. Most RAs offered suggestions that would essentially take them out of the diffusion process. When asked to comment on how the distribution process could be improved, most RAs (n=8) felt that either sending Alcohol 101 to residents though the mail or giving it to them during orientation would be better methods than those currently being practiced.

FIRST YEAR STUDENT ALCOHOL 101 UTILIZATION

Most first-year students, 88.2% (n=135), in this study responded that they had received the Alcohol 101 program. The majority of participants (86.9%) also responded that they were aware of the Alcohol 101 program. Almost half (46.1%) of respondents indicated that they used Alcohol 101. Of those 70 students, 35% used the program for more than 15 minutes. Of those students who utilized the program, 88.4% did so in their own room. Participants who responded that they did not use Alcohol 101 indicated that they did not do so because they were not interested (48.8%), because of a lack of time (28%), because they never received it (17.1%), or because they knew everything about drinking alcohol (11%).

FIRST YEAR STUDENT UTILIZATION AND RA DISTRIBUTION

There is a significant difference in student Alcohol 101 utilization rates (X^2=8.65, p=.01) by the distribution methods used by the resident advisor (see Table 1 for distribution of responses). Those students who received the program individually were significantly more likely to utilize the program than those who received the program via distribution in a group setting. When residents were given the program at their door, 51.7% utilized it, compared to only 23.3% when they received it along with the other residents on their floor during a mandatory floor meeting.

DISCUSSION

These results indicate that the method of distribution used by RAs does have an impact on student utilization rates, although most of the RAs felt the diffusion process would be better if they were not involved.

First-year students who received the Alcohol 101 program from their RA personally were significantly more likely to utilize the program than students who were given the program in a group setting. Most RAs indicated that they would rather not be involved in the diffusion process at all and none mentioned that they themselves could improve the process. However, the results indicate that the way RAs distribute the program is an influence on their residents' utilization of the program.

Improving the way in which RAs distribute and promote an educational program such as Alcohol 101 will lead to more of the target population utilizing the program. According to Rogers (1995), potential users of a program rely on subjective evaluations that are conveyed to them by individuals who have previously adopted the innovation. Rogers also states that these subjective evaluations will have more impact if they are received from near-peers. Four ways to potentially improve the diffusion process of multimedia education programs are derived from this research as well as Rogers's Diffusion of Innovation theory (1995).

The program diffuser should be aware of their importance in the diffusion process. Most RAs (8/10) felt that the distribution and/or promotion of Alcohol 101 could be improved if they were taken out of the process. They felt the process would be better off if the program was distributed to participants through the mail or at freshmen orientation, rather than by the RAs continuing to be the principal distributors/promoters. The program diffuser should be aware that how they distribute a program, such as Alcohol 101, correlates with whether or not the target population uses the program.

The program diffuser should use the intervention and be familiar with it before the diffusion process. According to Rogers (1995), potential users of a program rely on subjective evaluations that are conveyed to them by individuals who have previously adopted the innovation. In order to convey a subjective evaluation, it is necessary for the program diffuser to have utilized the program. In this case, the program diffusers (RAs) were not mandated to use the program, and this research did not determine whether or not they did so. Because most users of Alcohol 101 have had positive experiences with it, it is likely that the program diffusers who use it will as well. If they convey that positive experience, the target population will be more likely to utilize the program. It is important for the target population to get the impression that the person diffusing the program to them not only used it themselves, but also had a positive experience while doing so.

The program diffuser should distribute the program to the participants in person (one-on-one) rather than distribute it to them all at once. Of all the variables analyzed in this research, the distribution method used by RAs most significantly impacted first-year student utilization. The target population is more likely to utilize a program, such as Alcohol 101, when program diffusers distribute the program on an individual basis rather than to everyone all at once. Participants in this study were significantly more likely to utilize Alcohol 101 if their RA distributed the program in their room rather than during a floor meeting.

Table 1. First Year Student Alcohol 101 Utilization by Distribution Method*

Individual distribution (n=122)	
Used Alcohol 101	51.7%
Did not use Alcohol 101	48.4 %
Mass distribution (n=30)	
Used Alcohol 101	23.3%
Did not use Alcohol 101	76.7 %

*There is a significant difference in first year student utilization rates (X2=8.65, p=.01) in regards to the distribution method used by the resident advisor.

A rate of higher utilization being associated with interpersonal distribution is consistent with what Rogers (1995) says about communication channels: interpersonal channels are often less efficient than mass channels but are more effective in persuading an individual to accept a new idea.

When diffusing a health education program, such as Alcohol 101, to participants, the program diffuser should convey the program in a positive light. The manner in which a health education program, such as Alcohol 101, is conveyed to participants will likely influence their decision to use the program or not. Rogers (1995) states that diffusion investigations show that most individuals do not evaluate an innovation on the basis of scientific studies of its consequences; they instead depend on a subjective evaluation of an innovation that is conveyed to them from other individuals like themselves who have previously adopted the innovation.

Another way to influence program adoption is during the persuasion and decision stage of an individual's innovation-decision process, which is the stage that participants were in when they received Alcohol 101. The innovation-decision process is the process through which an individual passes from first knowledge of an innovation, to forming an attitude toward the innovation, to a decision to adopt or reject, to implementation and use of the new idea, and to confirmation of this decision (Rogers, 1995). At both the persuasion and decision stages an individual seeks evaluation information about the innovation's advantages and disadvantages in his or her own situation.

According to Rogers (1995), interpersonal networks with near-peers are particularly likely to convey such evaluative information about an innovation. Subjective evaluations of a new idea from other individuals are especially likely to influence an individual at the decision stage. If the program diffuser conveys a positive subjective evaluation to the target population, they will likely be more inclined to use the program.

LIMITATIONS

Some of the limitations in this research were due to the construction of the survey instruments. The effect of the personal distribution was probably diminished because on floors where RAs distributed the program door-to-door, the researchers were unable to compare the utilization rates of residents who were home to receive the program against those who simply got the program under their door. The research team suspects that the students who were actually present for the distribution and promotion from their RA at their door would be more likely to use Alcohol 101 than first-year students who came home to find a CD-ROM lying on their floor. Future research is necessary to prove whether or not this suspicion is accurate.

Another limitation was due to the small number of RAs (n=3) and students (n=30) who received Alcohol 101 during floor meetings. In order to determine more conclusively the impact that program distribution has on program utilization, a larger sample is necessary. Randomly selecting program diffusers to either distribute the program to the target population individually or in a mass setting would be useful in further exploring this research.

FUTURE DIRECTIONS

More research is needed to study the relationship that promotion and distribution has on participant utilization of educational multimedia. While this research did reveal which distribution methods relate to higher program utilization, it was unable to distinguish which promotion methods were more effective. Questions asking RAs about promotion would need to be more specific, with clearer distinctions about when the promotion actually occurred.

The effect of distribution could also be examined more closely. This research was able to distinguish the different distribution methods used by RAs: personal (one-on-one) and mass distribution. It was found that personal distribution was much more effective in achieving first-year student utilization. However, future research should differentiate the personal distribution group into two separate groups, because not all residents were actually present for the personal distribution and promotion. It would be helpful to find out the differences in utilization rates of those residents who were home when they got the program and those who simply got the program under their door.

CONCLUSION

Despite these limitations, there are implications that can be derived from this research. These findings identify strategies to increase the utilization of computer-based health education programs geared towards college students. Minor adjustments in the distribution methods will likely increase the use of these innovative programs. It is likely that the use of these programs will increase if the previously identified strategies are integrated into the diffusion process.

REFERENCES

The Century Council. (2003). Alcohol 101 Plus. Retrieved May 15, 2006, from http://www.alcohol101plus.org/home.html.

Hingson, R., Heeren, T., Zakocs, R., Kopstein, A. & Wechsler, H. (2002). Magnitude of alcohol-related mortality and morbidity among U.S. college students ages 18-24. Journal of Studies on Alcohol, 63. 136-144.

National Commission for Health Education Credentialing Inc. (2002). About NCHEC: Responsibilities and Competencies. Retrieved May 15, 2006, from http://www.nchec.org/aboutnchec/rc.htm.

Reis, J., Riley, W., Lokman, L., Baer, J. (2000). Interactive multimedia preventive alcohol education: a technology application in higher education. Journal of Drug Education, 30, (4), 27-49.

Rogers, E. (1995). Diffusion of Innovations (4th Ed.). New York: The Free Press.

SPSS, version 11.0. (2002). Applications guide and computer software. Chicago: Author.

Wechsler, H., Lee, J., Kuo, M., Seibring, M., Nelson, T. & Lee, H. (2002). Trends in college binge drinking during a period of increased prevention efforts. Journal of American College Health, 50, (5). 203-217.

HEALTH EDUCATION RESPONSIBILITIES AND COMPETENCIES

Responsibility IV- Conduct Evaluation and Research Related to Health Education

- Competency A: Develop plans for evaluation and research
- Competency B: Review research and evaluation procedures
- Competency D: Carry out evaluation and research plans
- Competency E: Interpret results from evaluation and research
- Competency F: Infer implications from findings for future health-related activities