

Providing Personalized Assessment Feedback for Problem Drinking on the Internet: A Pilot Project*

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ABSTRACT. *Objective:* This project developed an Internet program that conducts a brief assessment of an individual's drinking habits and then provides normative feedback comparing the user's drinking to that of others of the same gender and age group. The Internet program, "Try Our Free Drinking Evaluation," was based at the Addiction Research Foundation Internet web site (now at <http://notes.camh.net/cfeed.nsf/newform>). *Method:* A voluntary survey linked to the participant's feedback summary collected respondents' impressions of the program. *Results:* During the trial period, the site received approximately 500 hits

per month. While the feedback was generally well received, the weekly summary format was less credible to those individuals who drink less than once per week or whose consumption varies a great deal over time. *Conclusions:* Given these pilot results indicating that there is an audience for Internet-based interventions, the next step is to evaluate whether receiving such personalized feedback materials on the Internet leads to any change in drinking behavior by participants (*J. Stud. Alcohol* **61**: 794-798, 2000)

THERE IS convincing evidence that self-help materials can help problem drinkers (e.g., Agostinelli et al., 1995; Heather et al., 1990; Koski-Jännes, 1995; Miller and Muñoz, 1982; Sanchez-Craig et al., 1996; Sitharthan et al., 1996). The next step towards promoting the use of these interventions is to explore ways to increase their availability. Such efforts follow logically from the Institute of Medicine's recommendation to broaden the base of treatment and to provide a wide array of services for people with alcohol-related problems (Institute of Medicine, 1990). The Internet is one tool that can be used to improve the accessibility of self-help interventions. The pilot project discussed here is an Internet program that conducts a brief assessment of the individual's drinking habits and then provides normative feedback comparing the participant's drinking to others of the same gender and age group. Normative feedback has been theorized to increase motivation for change (Agostinelli and Miller, 1994; Miller and Rollnick, 1991) and has been found to promote behavior change in drinkers (Agostinelli et al., 1995) and smokers (Curry et al., 1991, 1992). The Internet program,

"Try Our Free Drinking Evaluation," was mounted on the Addiction Research Foundation Internet web site (now at <http://notes.camh.net/cfeed.nsf/newform>). This article provides details of the drinking self-evaluation program and reports on the preliminary evaluation of the feedback service.

Method

Baseline survey

On contacting the Internet site, participants are asked to fill out a brief, anonymous survey about their drinking. The survey consists of 21 questions:

1. The first 10 items constitute the Alcohol Use Disorders Identification Test (AUDIT; Babor et al., 1989; Saunders et al., 1993), used to assess severity of alcohol problems. The measure, while brief, distinguishes between social and problem drinkers (Conigrave et al., 1995; Fleming et al., 1991; Seppä et al., 1995), which is of key importance as participants include a wide range of drinkers.
2. Respondents' drinking is assessed using the period-specific normal week approach (Kühlhorn and Leifman, 1993; Romelsjö et al., 1995). This method of collecting drinking data asks respondents for their alcohol consumption during a typical week in the last year (i.e., usual number of drinks on each day of a typical week).
3. Six psychosocial consequence items commonly used in general population surveys (e.g., Canada's Alcohol and Other Drugs Survey, 1994 [CADS; Statistics Canada, 1994]) ask whether in the past 12 months respondents felt that alcohol had a harmful effect on their friendships/social life; physical health; home life or marriage; work, studies, or employment opportunities; financial position; or outlook on life (happiness).

Received: May 19, 2000. Revision: May 20, 2000.

*National Institute on Alcohol Abuse and Alcoholism grant AA11700-01 and Veterans Affairs Mental Health Strategic Health Group supported Keith Humphreys' contribution to this project.

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4. Finally, some demographic data are collected—age, gender, country of origin, and weight (in order to generate length of time to metabolize alcohol).

In order to maximize use and accessibility, brevity was a major concern in the design of the assessment battery. The assessment attempts to collect drinking information that is both valid from a research perspective and face-valid from the participants' perspective. If participants believe that the survey accurately measures their drinking and can see how the feedback is generated based on this information, then they will be more likely to accept the results of the feedback. Thus, drinking "during a typical week in the last year" was chosen as the preferred measure of drinking because, in addition to being extremely easy to report, its meaning is clear to participants (i.e., they can easily see how their drinking summary has been generated based on this information).

Personalized assessment feedback materials

The materials employed for this Internet site are modeled after the Drinker's Check-Up (Agostinelli et al., 1995; Brown and Miller, 1993; Miller et al., 1988) and the Fostering Self-Change intervention (Sobell et al., 1996). Individuals who provide drinking information receive a computerized profile ("Your Personalized Drinking Profile"). This profile displays information about various aspects of their drinking behavior, including a pie chart which allows them to evaluate the heaviness of their drinking in relation to national norms, information about the likelihood of consequences associated with their level of alcohol consumption, and results of the AUDIT. In order to make the feedback more relevant to the participants, this Internet program employs normative feedback that has been tailored specifically for the individual's age group, gender and country of origin (for those accessing the site from Canada or the United States). Finally, the feedback provides an estimate of the length of time it takes for the respondent to metabolize alcohol (based on the respondent's weight) and provides safe-drinking guidelines (Ashley et al., 1997).

Details of the computerized feedback summary

To gain a better picture of the feedback program the reader is encouraged to access the program and try a range of different hypothetical drinking data.

Pie charts. One of the advantages of a computer-based program is that it is relatively easy to provide feedback in attractive, easily understandable illustrations rather than in text only. A summary of the participant's weekly drinking is generated by adding the number of drinks the person consumes in a typical week (assessed using the period-specific normal week approach). The demographic information is then used to select the appropriate pie chart for the participant. Pie

charts summarizing the average weekly alcohol consumption of the general population have been generated separately for each gender and for the age groups 15-17, 18-29, 30-54, and 55 or more years. The segment of the pie chart that corresponds to the participants' weekly alcohol consumption is highlighted so participants can easily see how their drinking compares to others of their age and gender. Participants from Canada are provided with pie charts that have been generated using data from the CADS (Statistics Canada, 1994). U.S. participants' pie charts have been generated using the 1995 National Alcohol Survey (NAS) of the Alcohol Research Group (Berkeley, CA; Greenfield et al., 2000). In the current version of the feedback program, participants from countries other than Canada and the U.S. are provided with Canadian pie charts. If the demographic information is not filled out, the participant is provided with a summary chart that outlines the average alcohol consumption of all Canadians (along with instructions indicating that he/she can go back and fill in the demographic information to get a more relevant chart). As the NAS assesses drinking only among respondents 18 years or older, younger participants from the U.S. are provided with the Canadian pie chart for 15-17 year olds. Participants under 15 years of age are also provided with the pie chart for 15-17 year olds (along with an explanation that drinking data for their age group are not available).

What about me? Summarizing quantity, cost and caloric intake from drinking. Participants are also provided with the percent of days they drank in the last year and the total number of drinks they consumed. This estimate is calculated from the participant's drinking during a typical week. Based on this estimated yearly total, the amount of money the participant spent on alcohol is calculated and reported as a range of values (with a drink at home estimated to cost \$1.50 and a drink in a bar assumed to cost \$4.00). Finally, the amount of extra calories the participant consumed in a drinking day is generated on the assumption that each drink contains 100 calories.

Risky drinking. The participant is provided with a dose-response chart that highlights the chance of experiencing negative consequences related to the number of drinks consumed per week. The chart was generated using the CADS (Statistics Canada, 1994), employing data on the incidence of any of six psychosocial consequences experienced in the past 12 months by current drinkers (the same consequence items that are assessed on the 21-item survey for this Internet program).

Heavy-drinking days. Participants who report consuming more than five drinks on one occasion at least once a month are informed that their heavy-drinking days place them at increased risk of experiencing negative consequences (Room et al., 1995).

Alcohol-related consequences. Participants who endorse any of the six psychosocial consequences on their initial

assessment are provided with a summary of the type of consequences they experienced in the last year.

AUDIT score. The participant is provided with his or her summary score on the AUDIT, along with an explanation that higher scores typically reflect more serious problems. The participant's score is also depicted graphically in order to emphasize his or her score in relation to others.

How quickly do you "burn" alcohol? The participant is provided with an explanation about the constant rate of metabolism of alcohol in the body and of how alcohol can therefore be present in the body a long time after drinking. An estimate of the time it takes the participant to metabolize one, four and 10 drinks is then provided, calculated for an average person of his/her weight. Finally, an estimate of the number of hours (and days) in the last year that the person had alcohol in his/her system is provided based on his/her drinking during a typical week.

Sensible drinking. The feedback concludes with a summary of sensible-drinking guidelines recommended by the Addiction Research Foundation division of the Centre for Addiction and Mental Health (Ashley et al., 1997).

Pilot study survey

After receiving the Personalized Drinking Profile, participants were asked to fill out a brief survey about their impressions of the feedback site. Those who indicated their agreement by clicking on the "hotlink" button to go to this survey were asked: (1) how useful they found the feedback; (2) if they found the information surprising; (3) whether they provided information on their own or someone else's drinking or on a hypothetical drinking situation; and (4) to rate whether their drinking was a problem in the last year.

Results

There have been more than 500 "hits" each month on the personalized feedback program. Of the first 1,729 contacts, 243 people filled out the voluntary survey, and 214 of these individuals stated that they had provided a description of their own drinking. Of these 214 participants, 58% were female, the age range was 14 to 69 years (mean [SD] = 33.8, [12.6] years) and most were from Canada (40%) or the U.S. (48%). AUDIT scores were indicative of current problem drinking (i.e., score ≥ 8) for 47.2% of these participants, although the majority of individuals (70.1%) rated their drinking as not a problem or only a very minor problem. When respondents were divided into problem and nonproblem drinkers, using AUDIT scores of ≥ 8 as the cut-off, 95% of problem drinkers rated themselves as having at least a minor problem compared with 5% of nonproblem drinkers ($\chi^2 = 76.5$, 1 df, $p < .001$).

About half (56%) of respondents who provided a description of their own drinking said they found the feedback very

or extremely useful and 34% said that they were surprised by how much more they drank than other people. More problem drinkers (53%) than nonproblem drinkers (17%) were surprised by how much more they drank than other people ($\chi^2 = 27.4$, 1 df, $p < .001$). When asked if the feedback seemed to capture the amount they drank, 61% said "yes." The remainder did not think that the feedback provided an accurate picture, with half stating that they drank less than once per week and half stating that their drinking varied over time.

To explore further why feedback was viewed as accurate or inaccurate, participants were divided into three groups: those who said the feedback was accurate ($n = 129$), those who stated it was inaccurate because they drank less than once per week ($n = 41$) and those who stated that their drinking varied too much over time for the feedback to be accurate ($n = 41$). The drinking of these three groups was then compared. Analyses indicated that the program works well for regular drinkers but not so well for heavy episodic drinkers and others that consume alcohol less than once per week, probably because the primary feedback reports drinking during a typical week. While this format appears to be a good one for regular drinkers, it does not accurately summarize drinking for those whose drinking does not exhibit a "typical week" pattern. Of respondents who said that the feedback was accurate, 73.6% consumed alcohol more than once per week. Of those who said that the feedback was not accurate because they drank less than once per week, only one respondent (2.6%) actually listed his/her frequency of consumption as greater than once per week. Of respondents whose drinking varied, 43.9% stated that they drank more than once per week ($\chi^2 = 62.6$, 2 df, $p < .001$). There was also variation in the actual quantity of drinking reported and the severity of respondents' drinking concerns. Respondents who felt the feedback was accurate reported that they consumed an average (SD) of 19.5 (41.5) drinks per week, and their mean AUDIT score was 11.5 (9.2). For respondents who felt the feedback was not accurate because they drank less than once per week, the mean drinks consumed per typical week was 4.6 (5.3) and the mean AUDIT score was 4.7 (3.2). And for those whose drinking varied, respondents averaged 13.6 (14.3) drinks per week and had a mean AUDIT score of 10.6 (7.6). One-way analyses of variance across the three groups revealed that these patterns of drinking and severity of problems were significantly different between the three groups (total drinks in a typical week, $F = 3.2$, 2/206 df, $p < .05$; AUDIT scores, $F = 11.1$, 2/208 df, $p < .001$). For the variable, total number of drinks per week, Scheffé post hoc tests revealed that the weekly consumption of those who said the feedback was accurate was significantly greater ($p < .05$) than those who said they drank less than once per week. Scheffé post hoc tests revealed that the AUDIT score of those who said they drank less than once a week was significantly less ($p < .05$) than the other two groups.

Discussion

This pilot project was conducted to evaluate the level of interest in an Internet version of a personalized feedback intervention. Although this pilot project does not provide evidence that such interventions would help participants deal with their drinking concerns, it demonstrates some of the potential strengths of this type of program: (1) it was widely used (roughly 500 hits per month); (2) it was very cheap (after initial set-up it had low staffing requirements); and (3) it was able to serve a wide geographic area. The pilot project was also useful for gathering preliminary data on the quality of the feedback program. Although the program was widely accessed and generally well received, weekly summary feedback was less credible to those individuals who drink less than once per week or whose consumption varies a great deal over time. There does not appear to be any simple solution to this limitation. One could argue, however, that the group for whom accurate feedback is most important is heavy, rather than light, drinkers. An additional limitation from a research perspective is that there is no way to judge the reliability of participants' responses. Some participants who use this type of program provide hypothetical responses just to see what type of feedback they will get and, although this diversity of use would appear to be appropriate for such a service, it requires a different orientation in interpreting the responses of participants. In addition to personal use of the program, various participants have identified several other uses: as an assignment for students, as a feedback tool within treatment settings and as a potential means to attract clients to managed-care settings.

There are several limitations to this pilot project which suggest areas of research that are important to the clarification of the use of the Internet as an intervention medium. One of the most striking limitations was the small proportion of individuals who provided feedback on the materials (243 of 1,729 "hits" on the program). Respondents in the present survey may not be representative of all participants (indeed, it is impossible to estimate representativeness, as an unknown proportion of users provide hypothetical drinking data). A study design that recruited volunteers into a more controlled study would allow the collection of reactions to the materials from all participants. In addition, such controlled studies would help explore the most effective way to present feedback materials on the web. Can such programs have a greater impact if the feedback is more specific to age group, country of origin and occupation (e.g., college/noncollege)? Furthermore, are the items used in the assessment valid when presented on the computer? Other issues to be explored within an Internet medium include whether improving the appearance of the web site with more attractive graphics would create an unacceptably slow response time for some participants who do not have fast Internet service providers? In the same vein, would a more detailed assessment (e.g., one that would

allow for a more accurate estimate of patterns of alcohol consumption and/or an estimate of BAC level) be an improvement or would the respondents get bored and leave the program before receiving the feedback? Outcome evaluations of such feedback programs are needed to see if receiving personalized feedback materials on the Internet leads to any change in drinking behavior by participants (the efficacy of this type of feedback has been demonstrated; however, its effectiveness is unknown in the present application).

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