

## Acceptance of Web-Based Personalized Feedback: User Ratings of an Alcohol Misuse Prevention Program Targeting U.S. Marines

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The use of Web-based programs for a variety of health education, risk reduction, and health promotion purposes can be a valuable tool in the effort to improve the health of a population. Providing theory-based personalized feedback through such a method can be particularly useful in alcohol misuse prevention efforts. A brief alcohol use feedback program was developed for members of the U.S. Marine Corps, and user-satisfaction ratings were collected from 167 participants. Approximately 44% of the sample found the program to be useful or very useful, and 46% of the sample reported that they were likely or very likely to recommend the Web site to others. The Web-based format with tailored responses was preferred by 85% of respondents over other more traditional methods of alcohol training, and 80% of participants felt that the feedback was appropriate for Marines in their community. Significantly higher usefulness, likelihood of recommending the program to others, and overall ratings of the program were reported among younger and nonheavy-drinking participants ( $p < .05$ ). Results indicate that this computerized assessment and feedback program is a promising mechanism with which to provide personalized alcohol misuse prevention information.

Common types of feedback used in health behavior interventions include generic, targeted, and personalized feedback, with personalized feedback providing the most directly relevant information to the individual (DiClemente, Marinilli, Singh, & Bellino, 2001). Personalized feedback has been found to influence drinking behaviors by reducing alcohol consumption among heavy drinkers (Agostinelli, Brown, & Miller, 1995; Baer et al., 1992; Walters, 2000). Brief interventions that use an immediate method to provide personalized feedback regarding alcohol use, such as using computerized feedback, are emerging (Copeland & Martin, 2004; Cunningham, Humphreys, & Koski-Jannes, 2000) and have considerable potential to affect individual health behaviors. Computerized transmission of personalized feedback messages provides an innovative vehicle to assist in the effort to educate individuals about potential risks, provide suggestions of risk reduction options, and to reduce deleterious al-

cohol-use behaviors by using popular technology (Baer, Kivlahan, Blume, McKnight, & Marlatt, 2001).

For maximum effectiveness, personalized feedback messages must be constructed in a manner that will reduce the likelihood of message rejection. There are various models that represent the way in which feedback messages are received or rejected by recipients, and their applicability varies according to the aim of the message. The extended parallel process model (EPPM) holds promise for the development of effective alcohol misuse feedback messages (Moscato et al., 2001), and its emphasis on fear appeals has been used extensively with other types of risky behaviors (Dillard, Plotnick, Godbold, Freimuth, & Edgar, 1996; Meyerowitz & Chaiken, 1987; Roberto, Meyer, Johnson, & Atkin, 2000; Witte, 1993; Witte, Meyer, & Martell, 2001). The model focuses on creating messages that use fear of severe consequences and show susceptibility to those consequences to encourage behavioral change by also providing confidence in an effective response to deter the threat (Witte, 1992, 1998). Its premise has the potential for being particularly relevant in the development of alcohol-misuse messages for Marine Corps personnel.

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Examining the primary EPPM components of susceptibility, severity, response efficacy, and self-efficacy for a Marine audience yields indications that this model could generate effective health risk messages. Susceptibility to negative alcohol-related consequences is greater among Marines than other branches of military service, and greater than among their civilian counterparts due to higher levels of heavy drinking (Bray et al., 1999, 2003; Hurtado et al., 2003). Severity is also increased, and the channels through which fear can be generated parallel the added consequences of alcohol-related problems. For example, within military populations, fear can be directed not only at standard consequences of drinking that are applicable to other populations, but also at career loss, command punishment, and deleterious effect on unit missions (Hurtado, Simon-Arndt, Patriarca-Troyk, Highfill-McRoy, 2004). In other words, if Marines perceive a threat that their drinking is likely to impair their job performance, increase their likelihood of military punishment, or threaten their unit's cohesion or performance, these severe consequences can be emphasized in conjunction with the more common risks of alcohol misuse to increase message acceptance.

Among the primary factors that interfere with Marines making healthier choices with regards to alcohol use is the perception that heavy drinking is inextricable from Marine Corps life. One tool that can be engaged in dispelling that myth and increasing self-efficacy is normative feedback. Normative feedback has a critical role in messages targeted to altering risky health behaviors, as it has been shown to influence behavior change (Ajzen & Fishbein, 1980, Perkins & Berkowitz, 1986). Specifically, with regard to alcohol misuse, feedback about peer norms has been shown to decrease heavy drinking levels (Agostinelli et al., 1995; Haines & Spear, 1996).

Within the Marine Corps, a group in which a sense of belonging represents so much of one's identity and deviation from certain norms (e.g., uniforms, body fat, appearance, conduct) violates regulations, the influence of conformity to standards within group norms has the potential for greater behavioral influence than in the civilian sector. This type of feedback can serve the dual purpose of reinforcing group behavioral values and demonstrating that consumption reduction-related feedback responses are not only viable options, but are practiced by peers. Thus, Marines perceive that they can enact the recommendations, and self-efficacy is increased.

In addition to message development, message delivery is another critical component in the process of communicating health risk. The use of computer programming allows individuals to enter their own information and receive a tailored response about their behavior quickly and precisely. The sense of privacy associated with responding to questions about alcohol consumption to a computer rather than to an in-person counselor also enhances the candor of responses, enabling more accurate feedback messages than interview settings might provide (Duffy & Waterton, 1984). Among military populations, where privacy is at a minimum, and al-

cohol misuse may have implications for one's career, a computerized mode of delivery for this level of an alcohol misuse behavioral intervention could greatly augment its ability to modify risky behavior by enhancing the user's perception of confidentiality.

This article presents findings on the process or implementation phase of evaluation of a computerized alcohol use assessment and feedback program that delivers immediate tailored health-risk messages designed to impart risk level, normative-population information, and risk-reduction strategies. This step, early among those on the continuum of program evaluation, examined the success in implementing the Internet tool and the target audience's reactions to, and satisfaction with, using the feedback program. It serves as an early indicator of the acceptability of the feedback provided. The development of the Web-based, personalized feedback program targeted to U.S. Marine Corps personnel is discussed, and specifically the following research questions are addressed:

- RQ1: Can the tool be implemented as intended and reach the target audience with minimal difficulty?
- RQ2: How will the target audience rate the alcohol feedback tool in a variety of areas such as usefulness and content?
- RQ3: Are ratings of the tool associated with user characteristics such as level of alcohol use and demographic factors?

## METHOD

### Sample and Study Procedures

The participants in this study were active-duty members of three U.S. Marine Corps aviation squadrons located in southern California. A total of 654 Marines participated in the online program; however, because of deployments related to the military operation Iraqi Freedom, only 167 participants completed a user rating survey. Participants had a mean age of 24 years, and 87% of the sample were men. The sample was demographically representative of the Marine Corps as a whole, with the exception that it included more women Marines and more Marines age 25 or younger (comparison data source: Bray et al., 1999;  $p < .05$ ).

Participants were instructed to complete the program at their computer workstations anytime during a 2- to 3-week access window. Participants' ratings of the program were collected approximately 1 month after they finished the online program via an anonymous survey that was administered as part of a larger study.

### Web-Based Assessment

The alcohol assessment questions were developed to assess individual drinking behavior and alcohol-related risk factors.

The first section queried participants about the number of days per week that they consumed alcohol and the average number of drinks consumed per day during a typical week over the past 3 months. The time frame of the past 3 months was used to capture *typical* use, in contrast to using a shorter time frame that may have been influenced by holidays, short deployments, or other periods of atypical alcohol use. Participants were also asked how frequently they had drunk alcohol during the past 30 days, a more common time frame for *recent* alcohol use, using categorical response options ranging from never to every day. Participants were asked to estimate the percentage of their fellow Marines who were heavy drinkers (defined as five or more drinks per occasion one or more times per week) and the percentage of nondrinkers. Both drinkers and nondrinkers completed this first section.

For participants who indicated that they had drunk during a typical week in the past 3 months or during the past 30 days, the program asked how many times they had drunk four or more drinks in a row, for women, or five or more drinks in a row, for men, in the past 2 weeks, which is a widely used definition of binge drinking developed by Wechsler, Dowdall, Maenner, Gledhill-Hoyt, & Lee, 1998 in their college alcohol study. Using items from a previous Department of Defense health behaviors survey series (Bray et al., 1999), users were then asked about the occurrence of alcohol-related problems such as not getting promoted due to drinking, getting a lower score on a performance rating because of drinking, or receiving military punishment because of drinking. In addition, blood alcohol level was estimated based on information that each participant entered about his or her most recent drinking occasion.

The Alcohol Use Disorders Identification Test (AUDIT), which has been recommended for use among enlisted men in the armed forces (Allen, Cross, Fertig, & Litten, 1998; National Institute on Alcohol Abuse and Alcoholism, 1995), was included in the assessment as a summary measure of hazardous drinking. Nondrinkers were directed to the first two items of the AUDIT for reconfirmation of their non-drinker status. The assessment ended with a question that asked participants whether the military base where they were stationed was in a location that was considered isolated from a variety of alcohol-alternative activities. Figure 1 depicts a flowchart of the content through which respondents progressed in the assessment to receive their feedback.

### Personalized Feedback

The goal of the feedback provided to Marines through this assessment was twofold. First, in alignment with the principles of the EPPM, the feedback messages were designed to establish the individual's level of risk and susceptibility to negative consequences and provide tips for risk reduction that would be perceived as efficacious in reducing risk. Second, the messages were designed to show Marine Corps quantity and frequency drinking norms, to highlight that not

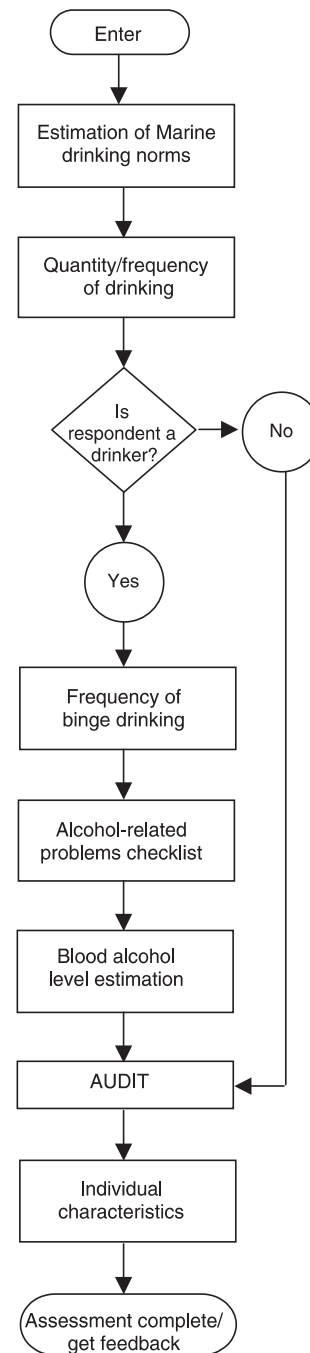


FIGURE 1 Flowchart for the Web-based alcohol misuse prevention assessment.

all Marines engage in heavy drinking and to dispel myths that heavy drinking is part of being in the Marine Corps. In addition, other information, such as individual spending on alcohol, was provided to further personalize the feedback content and serve as another source of motivation.

The beginning of the feedback page stated that this feedback was specific to the participant's responses and it encouraged the individual to print his or her feedback for later reference. Participants were provided with normative feedback of

their own average number of drinks per day and a comparison to the average for Marines of their same age group and gender. A similar comparison was provided for the number of days per week that they reported drinking. Comparison data were also provided via both bar graph and text contrasting the respondent's estimate of the percentage of Marines in his or her same age group and gender that were heavy drinkers and nondrinkers with the actual percentage for each of those categories. The purpose of providing normative data in both of these areas was to help participants gain a more realistic picture of the levels of drinking in the Marine Corps, increase their motivation for change, and work toward dispelling the commonly espoused belief that heavy drinking is part of being in the Marine Corps.

Heavy drinking risk information was provided to alert users to the increased danger of injuries, unprotected sex, problems with law enforcement, car crashes, and fights among people who drink five or more drinks per occasion at least once per week. This information emphasized the susceptibility to serious consequences by focusing on problems that can negatively impact anyone who misuses alcohol but that have greater career implications for Marines than for those in the civilian sector. For example, an alcohol-related injury or legal event might be hidden from a civilian employer but will become part of one's military record and will result in some level of disciplinary action.

Estimated blood alcohol concentration (BAC) was provided based on data entered about the user's last drinking episode, with specific information about the effects of alcohol commonly experienced at that estimated BAC. Often people are unaware of their level of intoxication, so this was designed to make participants think about the number of drinks that would put them within a certain BAC range and to ground that knowledge in an experience that they could recall. General alcohol information was provided as well, including facts about legal intoxication levels, underage drinking, safety, myths, depressant effects, and how the body processes alcohol.

Any alcohol-related problems that the participant reported as having experienced were listed to reinforce the potential for greater consequences in those who had already experienced trouble as a result of their drinking. All participants received practical tips to reduce the negative effects of alcohol. These tips included advice such as alternating alcoholic drinks with nonalcoholic drinks, keeping track of the amount of alcohol consumed, refraining from playing drinking games, arranging to get home before a party or drinking occasion, looking out for friends when drinking, and information about designated drivers.

According to the EPPM, heavy drinkers who do not believe they can change their behavior will reject the message regardless of discomfort resulting from their level of risk, and those who do not feel they are at risk will not respond to it (Witte, 1992, 1998). Within the context of unit readiness, the definition of risk could be expanded to encompass feelings that a unit is at risk not only by one's own behavior, but also by the behavior

of others. Hence, those who are not heavy drinkers might still respond to the presentation of alcohol misuse messages that indicate the risk to others if they feel it will impact the unit. For this reason even nondrinkers were given tips to reduce risk, and it was suggested that they share them with Marines in their squadron. These tips were designed to play off of the fear of threats to operational readiness that is constantly reiterated within other Marine Corps messages.

A nonfear-based, motivational section gave feedback to users on how much money they were spending on alcohol. Because military personnel are not highly paid, money is often an important issue and a motivator to them. Tapping into this motivational value of money, the amount spent per year on alcohol was estimated based on their drinking during a typical week to create consciousness about the financial costs of consumption. Their estimated total was also represented to users in terms of what other desirable items they could have purchased with the same amount of money, such as a DVD player, a computer, or sports equipment, or even a down payment on a car.

Among young military personnel, isolation and a sense of "nothing to do" are commonly espoused justifications for increased drinking behavior. Thus, personnel who reported that they were stationed on an isolated military base (e.g., the Marine Corps Air Ground Combat Center in the desert of Twentynine Palms, California) were advised to seek out the Marine Corps Community Services organization, which is located on most bases and sponsors many activities and events, and were given suggestions of on-base resources for alcohol-incompatible activities. They were also encouraged to pursue educational opportunities that are available on most isolated bases and to consider volunteer work. Participants who reported that they were on bases that were not isolated from the civilian community were encouraged to explore opportunities for nonalcohol-involved activities both on and off their base and to seek more information about off-base opportunities from local sources.

All feedback pages concluded with a personalized summary that outlined the probable level of risk that alcohol posed to the individual Marine's health and career, based on the responses that he or she provided. Local resources available to any unit or squadron, such as the substance abuse counseling officer or chaplain, were provided, as well as links to Web sites for national substance abuse organizations. Civilian medical centers were also recommended as nonmilitary sources of local information for those who prefer to seek help outside of military channels. Nondrinkers also received information about potential resources so they could refer friends or family members who might need further assistance with alcohol misuse prevention. Table 1 lists all of the content areas included in the participant feedback with examples.

### User Ratings Survey

User ratings were assessed with a paper-and-pencil survey that solicited participants' opinions about the experience of



TABLE 1  
Web-Based Alcohol Misuse Prevention Program Feedback Content Areas and Example Messages

<i>Content Area</i>	<i>Example Message</i>
Average drinks per day and days respondents drank per week with comparisons to population means	You reported you drank 6.8 drinks per day, on the average, on the days that you drank. Marines your age drink 5.8 drinks per day, on the average, on the days they drink.
Perceived percentages of heavy drinkers and nondrinkers compared to actual population percentages	You estimated that 63% of Marines your age are heavy drinkers (drank 5 or more drinks per occasion at least once per week). The actual percentage of Marines your age that are heavy drinkers is 34.4%.
Heavy-drinking information and risks	Did you know that people who drink 5 or more drinks per occasion at least once per week have MORE: injuries, unprotected sex (increasing risk of STDs, HIV, and unplanned pregnancy), and problems with law enforcement than nonheavy drinkers? Also, heavy drinkers put their friends at risk for problems such as being involved in a car accident or getting injured in a fight.
Alcohol-related problems	You indicated that you experienced one or more problems related to your alcohol use during the past year, such as drinking and driving within 2 hours of drinking alcohol, and getting into a fight and hitting someone.
Tips for reducing alcohol-related problems	<ul style="list-style-type: none"> <li>• Alternate alcoholic drinks with nonalcoholic drinks.</li> <li>• Keep track of how much you drink.</li> <li>• Don't play drinking games.</li> <li>• Arrange how you will get home BEFORE a party or drinking situation.</li> <li>• Remember you are a role model for younger Marines and family members!</li> </ul>
Blood alcohol level estimate based on recent drinking occasion	You had an approximate 0.19% blood alcohol concentration (BAC) during the last time you drank (based on 8 drinks over 3 hours). When your BAC is at this level, you may feel confused, dazed, or otherwise disoriented. You may need help to stand up or walk. If you are aware you've injured yourself, chances are you won't do anything about it. Your gag reflex is impaired, so you could choke if you do throw up.
Estimated money spent on alcohol	If you continue your current pattern of drinking for a year, you will spend an estimated \$1,638 per year on alcohol. With this same amount of money, you could buy a new computer system or flat screen LCD TV.
Personalized summary	There is a strong likelihood that your drinking is hazardous or harmful to your health. In addition, you may be putting yourself at risk of doing something that may be harmful to your Marine Corps career. It might be a good idea to talk to someone, like the chaplain, substance abuse control officer, or an off-base specialist, who can discuss this with you and help you find solutions to reduce your alcohol-related risk.
Resources for further information	If you want more information on alcohol use, contact your substance abuse control officer, Marine Corps Community Services, chaplain, or the civilian medical center in your area. You can also get information at any of these civilian Web sites. (Web links to the National Institute on Alcohol Abuse and Alcoholism, the National Institute on Drug Abuse, and the Substance Abuse and Mental Health Services Administration were provided.)

completing the program. Using a 5-point Likert-type scale, participants were asked to rate the Web-based feedback program in four primary areas: ease of use, likeability of the program, usefulness of the program, and how likely they would be to recommend the program to others. Questions using similar 5-point scales were also included to query participants on other aspects and about how they rated specific components of the program. Broader questions pertaining to the mode of delivery were included in the survey with a yes or no response format. Users of the program were also asked how many minutes it took them to complete the program.

## Analyses

Descriptive statistics including frequency and percentage distributions, means, and standard deviations were computed to examine the survey data. Nondrinker status was computed

for participants who answered that their typical number of drinks consumed on the days that they drank during the 30 days prior to the survey was zero and that they did not drink on any days during the 30 days prior to the survey. Participants reporting either any drinks or drinking on any number of days during the 30 days prior to the survey were counted as current drinkers. A heavy drinking category was computed for drinkers who reported five or more drinks per occasion at least once per week, a definition used in previous Department of Defense reports on alcohol use (Bray et al., 1999). Independent *t* tests were conducted to examine the bivariate associations between the four primary ratings of the program and demographic and alcohol use status variables. It was speculated that participant age, drinking status, and, in particular, heavy drinking status would be factors that might affect ratings of the program. An overall rating score was computed by taking the mean of three of the primary rating

variables, likeability, usefulness, and likeliness to recommend the program to others, to form a 3-item scale score. The internal consistency for this scale was 0.93. A multiple linear regression analysis was performed to analyze which independent variables shown to have a significant bivariate association to ratings were independently associated with an overall rating of the program.

## RESULTS

The Web-based program was implemented as intended for the 167 participants in this study, and 62.5% of users reported that it took 6 to 10 min to complete the program (Table 2). Only 18.0% of participants who completed the program reported printing their feedback page for later review. These findings provide support for the ability of the Internet tool to successfully reach a sample of the target audience with minimal time requirements (RQ1). However, one feature, printing the hard copy for later review, was not utilized as intended by most Marines.

To answer RQ2 regarding how the target audience rated the alcohol feedback tool in a variety of areas such as usefulness and content, respondents' reactions to the tool in several areas are listed in Table 2. Ninety percent of responders rated the program easy or very easy to use. A total of 41.3% of participants reported that they liked or very much liked the program. The remainder neither liked nor disliked the program (28.9%) or somewhat disliked or did not at all like the program (29.7%). When asked how useful the information was in the program, 43.5% of subjects rated the program useful or very useful, and 45.6% of the sample reported that they were likely or very likely to recommend the Web site to others.

Eighty percent of participants felt that the feedback was appropriate for Marines in their community, and a consider-

able 85.1% of respondents preferred this mode of receiving alcohol feedback to other modalities such as classroom or one-on-one training. Given the availability of training for other topic areas in a similar format, 40.1% reported that they would be likely or very likely to voluntarily use it. When asked to rate the normative feedback, 43.1% indicated that they liked it or very much liked it ( $M = 3.4$ ,  $SD = 1.2$ ). Regarding the feedback on BAC and money spent, 46.0% ( $M = 3.4$ ,  $SD = 1.2$ ) and 47.5% ( $M = 3.5$ ,  $SD = 1.2$ ), respectively, indicated that they liked it or liked it very much (data not shown in Table 2).

Participant age and drinking status were considered to be factors that might affect ratings of the program. To address RQ3, which asked if these demographic and drinking factors were associated with ratings of the tool, independent  $t$  tests were performed to examine differences in the primary rating items by age and drinking status (Table 3). Participants age 25 years old and younger rated the program more useful ( $t(117) = 2.59$ ,  $p < .05$ ) and were more likely to recommend it to others ( $t(119) = 2.26$ ,  $p < .05$ ) than participants ages 26 years and older. There were no significant differences in primary ratings among drinkers and abstainers; however, there was a significant difference in the perceived usefulness of the program among heavy drinkers and nondrinkers. The average usefulness score among subjects who reported that they drank five or more drinks per occasion at least one or more times per week was 2.7, lower than the average score among nondrinkers, which was 3.4 on a 5-point scale with 5 the highest rating ( $t(85) = 2.08$ ,  $p < .05$ ).

A multiple linear regression analysis was conducted using age and heavy drinking status as the independent variables and the overall program rating score as the dependent variable. This analysis indicated that both younger participant age and nondrinking status were independently significantly associated with a higher, more positive overall rating of the

TABLE 2  
Frequency Distributions and Means for User Rating Items

Item	Response Options							<i>M</i>	<i>SD</i>	<i>n</i>
	1	2	3	4	5	No	Yes			
	%	%	%	%	%	%	%			
Ease of use <sup>a</sup>	0.0	1.6	8.9	14.5	75.0	—	—	4.63	0.72	124
Likeability <sup>b</sup>	19.0	10.7	28.9	15.7	25.6	—	—	3.18	1.43	121
Usefulness <sup>c</sup>	17.2	14.8	24.6	18.9	24.6	—	—	3.19	1.41	122
Recommend to others <sup>d</sup>	16.8	9.6	28.0	23.2	22.4	—	—	3.25	1.36	125
Use similar program for other health topics <sup>d</sup>	17.1	9.4	33.3	16.2	23.9	—	—	3.21	1.37	117
Time to complete program <sup>e</sup>	28.9	33.6	23.4	12.5	1.6	—	—	2.24	1.06	128
Appropriate feedback	—	—	—	—	—	19.8	80.2	1.20	0.40	111
Prefer Internet over other modes	—	—	—	—	—	14.9	85.1	1.85	0.36	121
Print feedback	—	—	—	—	—	81.5	18.5	1.82	0.39	119

<sup>a</sup>Scale from 1 (*very difficult*) to 5 (*very easy*).

<sup>b</sup>Scale from 1 (*not at all*) to 5 (*very much*).

<sup>c</sup>Scale from 1 (*not at all useful*) to 5 (*very useful*).

<sup>d</sup>Scale from 1 (*not at all likely*) to 5 (*very likely*).

<sup>e</sup>1 (1–5 min), 2 (6–10 min), 3 (11–15 min), 4 (16–20 min), 5 (>20 min).

TABLE 3  
Mean Primary User Ratings by Age and Drinking Status

Variable/Item	<25 years <sup>a</sup>		>25 years <sup>b</sup>		<i>t</i>	<i>df</i>	<i>p</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			
Age							
Ease of use	4.63	0.76	4.64	0.60	-.03	118	.978
Likeability	3.32	1.48	2.77	1.28	1.83	116	.069
Usefulness	3.37	1.45	2.64	1.22	2.59	117	.011
Recommend to others	3.41	1.43	2.79	1.08	2.27	119	.025
	<i>Drinker<sup>c</sup></i>		<i>Nondrinker<sup>d</sup></i>				
Variable/Item					<i>t</i>	<i>df</i>	<i>p</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			
Drinking status							
Ease of use	4.61	0.75	4.67	0.63	0.40	121	.688
Likeability	3.09	1.52	3.34	1.16	0.87	118	.386
Usefulness	3.13	1.45	3.29	1.32	0.59	119	.558
Recommend to others	3.18	1.39	3.35	1.30	0.63	122	.531
	<i>Nonheavy Drinker<sup>e</sup></i>		<i>Heavy Drinker<sup>f</sup></i>				
Variable/Item					<i>t</i>	<i>df</i>	<i>p</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			
Heavy drinking status							
Ease of use	4.65	0.72	4.55	0.80	0.62	85	.540
Likeability	3.24	1.44	2.89	1.62	1.07	83	.288
Usefulness	3.39	1.37	2.75	1.48	2.08	85	.040
Recommend to others	3.42	1.30	2.86	1.46	1.88	85	.064

<sup>a</sup>*n* = 86. <sup>b</sup>*n* = 33. <sup>c</sup>*n* = 118. <sup>d</sup>*n* = 47. <sup>e</sup>*n* = 71. <sup>f</sup>*n* = 47.

program, accounting for 8.6% of the variance in overall rating (both variables were significant at  $p < .05$ ).

## DISCUSSION

For a feedback message to be effective, it must first be received. Research indicates that several factors may lead to message rejection, including lack of perceived susceptibility to and severity of risk and lack of perceived efficacy of the suggested action (Moscato et al., 2001; Witte, 1992, 1998). This report has examined the end-users' opinions of the alcohol misuse program and, more specifically, feedback messages that it generated. The findings indicate that the use of a computerized assessment and feedback program provided via a Web-based mechanism may be a useful tool to aid in the battle to decrease and prevent alcohol misuse among Marine Corps personnel. The Web-based tool reached its target audience with minimal obstacles, and the vast majority of Marines rated the program as easy to use and felt that the content of both the program and its tailored messages were Marine-appropriate.

Although the program received moderate positive ratings from the majority of the sample, younger Marines, who are at greater risk for alcohol-related incidents and problems (Bray et al., 1999), rated the program as more useful, were more likely to recommend the program to others, and rated the pro-

gram more positively overall than Marines over the age of 25. This result may reflect findings from other studies on characteristics of computer users that show that younger people report more experience and acceptance of computer use (Vandelanotte & DeBourdeauhuij, 2003). Although the demographics of Internet users are beginning to more closely resemble those of greater society (O'Leary, 2000), young males have been using the Internet more extensively than other groups. Hence, it is logical that they would have greater familiarity and ease of use with this delivery mechanism than other groups.

Nondrinkers found the Web-based personalized alcohol feedback program more useful and rated the program overall more positively than heavy drinkers. Issues such as resistance to change, denial of risk, or dependency may reduce the likelihood that heavy drinkers will consider the utility of examining their own drinking behavior. Participants who do not report heavy drinking patterns may be more receptive to information on lowering their alcohol-related risk and therefore consider the program as more useful.

## Conclusions

There are three primary benefits for using this method of health information delivery that are evident from this research. The first lies in the ability to deliver individualized feedback to a large group of people without the need of

trained personnel to distribute it. Clinicians, health educators, and other professionals commonly use personalized feedback by calculating risk and relaying that information to clients (Baer et al., 2001; Dimeff & McNeely, 2000; Murphy et al., 2001). However, using an Intranet-based program allows the computer to do the calculation and allows private, personal feedback without direct personal interaction. The trained staff necessary to provide a personalized response is dramatically reduced when a computer is able to deliver the information in a way that is meaningful to the program user.

The aforementioned discomfort that respondents may have in discussing their risky behaviors with another person for the purposes of receiving feedback is also eliminated. In the context of using computerized systems for drug prevention, Barber (1990) noted, "self-help materials like these are likely to be the only form of treatment that early-stage drug misusers will accept" (p. 130). Similarly, one could argue that due in part to the discomfort of speaking with an in-person evaluator, those with issues of alcohol misuse might reasonably be expected to have greater inclination toward receiving information from a computerized assessment such as the one developed for this project. Reduction of any resistance may enhance the learning process and further decrease risk.

Second, the program users can access the program at their own convenience to learn about the implications of their behavior and get tips for improving their health. Individuals can log on to the program at any time of day or night without having to make an appointment to fit someone else's schedule or wait for a designated group training session. Because this type of program is not designed to replace counselors or to serve as a treatment modality, the need to have face-to-face interaction to gain greater understanding about the user's behavior is not necessary. This type of system allows Marines to get training in health-related topics when they need or desire it. The immediate feedback provides information about their own behavior as a tool for their education, as well as potentially for risk reduction and behavioral change purposes.

In addition, the emphasis on using technology for receiving training and education that can improve health behaviors may keep the attention of younger people who are used to graphics and visual stimuli to hold their interest. Overwhelmingly, Marines indicated that they would prefer this method of receiving information to standard lectures or one-on-one discussions. The current American culture is greatly influenced by visual media, and the Internet is one component of this influence. Providing a tool that is both useful and visually stimulating will increase the likelihood that it will fulfill the intended outcome of education by making it more interesting to the users. Marines can often be heard complaining about having to attend lectures that they find boring or other types of monotonous training. This type of training will have added utility in that it is interactive, and their participation will assist in maintaining their attention while they use it.

It should also be noted that because the Marines were given the option of participating in the assessment as part of their required annual alcohol training, they accessed the Web site to fulfill a training requirement. Therefore, their overall evaluations may reflect a lack of personal interest in the program content. In this context the moderately favorable likeability scores and the indication that 40% would voluntarily access similar training in other topics should be considered quite positive.

### Limitations

The primary limitation in this study is the number of participants available to rate the program. Due to war-related deployments, many of those participants who completed the program became unavailable prior to completion of the survey. However, the researchers have no reason to expect that those Marines who were deployed prior to the completion of the survey differed substantially from those who were available at the time of the survey in any way that would have affected their user ratings.

A second limitation lies in the temporal distance between use of the Web-based instrument and actual completion of the user satisfaction survey. This constraint can also be attributed to the operational tempo of the units involved in this study during the time that the program was being evaluated. With recall bias a potential issue, ratings of the program may represent a somewhat less accurate description than if the survey had been administered immediately following the program.

### Future Directions

The ratings for this computerized assessment in the areas of ease of use, liking of the program, likelihood to recommend the site to others, and usefulness of the feedback information indicate that it is a promising mechanism to provide interactive, personalized alcohol use information. The next phase in this evaluation process will be to evaluate the tool for its effectiveness in reducing risky drinking behavior. Future research should evaluate how effective similar Web-based feedback programs are at modifying alcohol use behaviors, risk factors, and related outcomes. In particular, further research utilizing a controlled experiment to evaluate the effectiveness of this program on modifying alcohol use behaviors should be conducted. In addition to introducing similar programs for other topic areas, another step would be to explore generalizability to other military personnel, families, and civilians. Another direction for future study is to assess the most efficacious way to integrate this type of prevention tool into both new and existing prevention programs for military and civilian populations.

A short Web-based assessment and feedback instrument can be integrated easily into other health-intervention programs. Because alcohol misuse prevention has been shown to be more effective when multimethod strategies are used to re-



duce problem behavior, tools like this are meant to be just one part of a multicomponent program (Cohen, Scribner, & Farley, 2000; Wechsler, Kelley, Weitzman, San Giovanni, & Seibring, 2000). Beyond creating awareness through this type of Web-based program as a stand-alone product, media efforts, small-group or lecture-style training, environmental modifications, counseling, and many other tactics can be combined with computerized assessments to reduce risky alcohol-related behaviors. Web-based programs are one dimension of a systemic health-enhancement strategy that may fill a gap left by other intervention tools. When effectively designed programs are readily available, health professionals can evaluate the integration of existing Web-based programs into their health-enhancement strategy, or they can design new Web-based programs as the technology needed to do so becomes increasingly accessible and user-friendly. The difficulty in creating behavioral change requires that behavioral health researchers constantly look for new tools to add to the arsenal currently available to combat risky behavior. Toward this end, the potential usefulness of effective computerized assessment and feedback tools makes them an avenue that should be explored in the development or modification of future alcohol misuse prevention plans.

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