

# Seeking alcohol information on the Internet

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## Abstract

It has been argued that people may be more willing to seek potentially threatening information on the Internet than they would in 'real life' (Joinson and Banyard, 2002). For alcohol drinkers, potentially threatening information includes diagnostic information on the amount they drink, and information about the negative effects of alcohol consumption. In the present study, participants with varying levels of alcohol intake and plans for change chose four alcohol-related articles to read (from twelve) using either the World Wide Web (WWW) or pen and paper. Results showed that drinkers not currently reducing their drinking were more likely to seek diagnostic, potentially threatening anti-drinking information via the WWW compared to when seeking paper-based information. Drinkers either contemplating or engaging in efforts to reduce their drinking sought pro-drinking information on the WWW, and anti-drinking information when using pen and paper. The potential role of the Internet, and perceived anonymity, in health promotion is discussed.

## Introduction

According to a recent survey of Internet users in the US (Pew Internet and American Life, 2002), 63 per cent of Internet users have used the Internet to research health information – and in any one day six million US Internet users access health information online. The most prevalent use of the Internet is to research a specific illness (93 per cent of 'health seekers'), followed by information aimed at weight control and nutrition (65 per cent). When questioned about the impact of their information seeking, 34 per cent of 'health seekers' said that they had changed their approach to maintaining their own or another's health, and 30 per cent said that they had changed the way they think about their diet, exercise or stress. This pattern of responses matches those found by Nicholas *et al.* (2001) in a survey of users of a health information Web site – 47 per cent of users said that the site had helped with their dealings with their doctor, and fully 58 per cent of users currently suffering from a condition stated that the Web site had helped to improve their condition.

The use of the Internet for health information isn't limited to accessing information. There are large numbers of electronic support groups (ESGs) available online

(Joinson, 2003). A number of empirical studies have examined, for instance, the use of the Internet by people diagnosed with sports injuries (Preece, 1999), eating disorders (Winzelberg, 1997) and depression (Galegher *et al.*, 1998). These studies suggest that the main features of online social support are that it reduces feelings of isolation and provides information and emotional support (Preece, 1999).

There are a number of factors that may well unite users of online ESGs and health information seekers (indeed, much of the time they may well be the same people). For instance, a proportion of health information seekers have reasonably well developed strategies for evaluating the quality of information on health Web sites (Pew Internet and American Life, 2002), while users of online social support use a variety of linguistic devices to establish legitimacy and authority in online forums (Galegher *et al.*, 1998). Ease and flexibility of access is another possible link: some studies of ESGs have suggested that most use occurs outside office hours, when traditional forms of medical and social support are not available (Winzelberg, 1997). A further motivation (and potential barrier) is the users' perceived anonymity when online. For instance, the Pew Internet and American Life report (2002) notes that 80 per cent of health seeking occurs from a home connection. One participant in a follow up focus group is quoted saying, "If I did work, I would probably be too embarrassed to look up stuff online." Another focus group participant echoed her concern, saying, "I know we monitor the use of the Net at work and I have seen it work against people." These quotes suggest that one reason for seeking health information online is the relative anonymity and convenience afforded by home use (Borzekowski and Rickert, 2001). Nicholas *et al.* (2003) have developed the concept of 'search disclosure' to help explain why people moderate their search strategy dependent upon the perceived anonymity of the search location. Looking at the data from 11 different studies, Nicholas *et al.* found that people search for information on sensitive topics during 'private' times of day, and at information kiosks located in places that afford more privacy.

This effect of anonymity on health behaviour isn't just limited to the searching for health information. For instance, Davidson *et al.* (2000) found that for both face-to-face and online social support groups, the number of support groups available positively correlated with the social burden imposed by the ailment, particularly the embarrassment associated with a particular diagnosis or treatment. Similarly, Mickelson (1997) found that users of a 'parent support' ESG reported a greater perceived stigma associated with their child's diagnosis, greater visibility, and lower expectations of support from their parents and causal friends, compared to non-ESG users. Joinson and Banyard (2002, Study 2) found that information access on a cancer Web site was more closely linked to prevalence data than queries to a telephone helpline. In the case of stigmatised cancers, this effect was particularly pronounced. Barak (2001) notes that the anonymity afforded by the Internet has seen high levels of usage on his suicide prevention site by adolescents, shy and socially anxious people, and those with a high public profile.

Although Internet users seeking diagnostic clinical information on the WWW or support via ESGs have been reasonably well researched, the seeking of health promotion information on the Internet is something of an unknown. One possible prediction is that the information seeking behaviour of people either unaware of a risk or not contemplating changing an unhealthy behaviour is unlikely to be highly

motivated (Prochaska *et al.*, 1992). For instance, a study of a staff health promotion site showed that users were predominantly those already exercising, rather than those either not taking any exercise or those contemplating taking more exercise than at present (Griffin *et al.*, 2000). Indeed, a large body of social psychological research suggests that people will go to great lengths to avoid potentially threatening (health) information (Taylor, 1989). This is particularly the case if health information is seen as personally relevant (Sherman *et al.*, 2000) or if it would cause anxiety by raising the possibility of future illness (Brashers, 2001), or presumably if there were privacy concerns linked to the seeking of the information (Nicholas *et al.*, 2003).

The aim of the present study is to compare health promotion information seeking on the WWW and paper for people with varying degrees of unhealthy behaviour, and at different stages of change. The health behaviour, and related health promotion information seeking, considered in the present study is alcohol intake. There is considerable evidence that high levels of alcohol intake by university students can have negative consequences (Migneault *et al.*, 1999). In the present study, college students' information seeking of pro- and anti-drinking information is examined in light of their weekly alcohol unit intake, and their plans for behaviour change. It is hypothesised that the information seeking strategies of individuals using the Internet will differ from those of participants using 'traditional' information seeking methods. The form this difference takes is predicted to interact with individual differences, specifically the individual's plans for drinking reduction, and their current unit intake.

## **Method**

### **Design**

A three-way, between-subjects design was used in the present experiment. Participants completed the measures using either the WWW or pen and paper, and were categorised according to their unit intake of alcohol (high vs. low) and their plans to reduce their drinking (not contemplating or contemplating/engaging in change). Participants' requests for articles to read formed the information seeking dependent variable.

### **Participants**

Participants were 117 undergraduate students at two UK universities (25 males, Mean ages = 20.74 years (SD = 4.82) and 21.72 (SD = 4.30) for each location). The eight participants who abstained from alcohol were not included in subsequent data analysis. Participants were allocated to either the paper version of the study (n = 73) or a WWW version (n = 44).

### **Materials**

Participants completed two measures before the information seeking part of the experiment.

#### *Demographic variables*

Participants were asked to enter their age, gender and alcohol intake (options: 'do not drink at all', '1-5 units', '6-10 units', '11-15 units', '16-20 units', '21-25 units', '26-30 units' and '31+ units'). It was explained in the text that "1 unit = half a pint of beer, one spirit measure, one small glass of wine".

### *Stage of change measure*

The stage of change measure followed the procedure developed by Prochaska and colleagues (e.g. Prochaska *et al.*, 1992). Participants were asked to “please mark the statement that best sums up your current state”. The four statements (“I do not intend to reduce my drinking within the next six months”, “I intend to reduce my drinking within the next six months”, “I intend to reduce my drinking within the next month, and have begun taking small steps” and “I am actually reducing my drinking right now”) correspond to the pre-contemplation, contemplation, preparation or action stages of change respectively.

### **Information seeking**

Once participants had completed the health measures, they were presented with a choice of 12 articles for evaluation. For each article, a title and brief summary was provided, along with a box in a column headed 'click the box to evaluate this article'. The articles represented six different types of alcohol-related information (two each).

### **Pro-drinking articles**

#### *Informative*

Sources that give information about the positive physical, social and emotional consequences of alcohol consumption. For example, "Drink to be Healthy. It's official! A report into the reduced risk of heart disease in people who drink moderate amounts of red wine."

#### *Promotional*

Messages from commercial sources promoting the purchase and consumption of alcohol. For example, "What drink to buy, and where to buy it: A guide to the wide range of drinks on the market with details about their alcohol content, taste and general quality. The source also includes information about the cheapest places to purchase your drinks."

#### *Behavioural*

Sources of information on activities to be carried out with alcohol. For example, "Drinking games: Bored of the same old conversation in the pub? Try some of these drinking games that help the evening move along and liven up even the dullest friends."

### **Anti-drinking articles**

#### *Informative*

Sources that inform about the level of individual risk, and possible health consequences – allow individual to calculate risk. For example, "Home is where the heart is, but the bar is for heart attacks: Information about the effects of drinking on the heart and how to estimate your own risk of heart problems."

#### *Promotional*

Sources that seek to encourage abstinence or restrained alcohol use. For example, "Alcohol and the accident prone: Information about how your chances of having an accident at home, at work or in the car can be affected by even small amounts of alcohol".

#### *Behavioural*

Practical advice on how to limit personal consumption and control excessive drinking. For example, "The Tony Adams Story: The England and Arsenal footballer describes the techniques he uses to keep off alcohol."

### **Procedure**

Participants were approached during a training session in Internet use. If they agreed to take part, it was explained that the study was examining the evaluation of articles about drinking. In the WWW sample, participants were then given the World Wide Web address of the questionnaire, and asked to work through the questions. Once the pre-measures had been completed and electronically submitted, participants were automatically shown the list of potential articles for evaluation. Written instructions informed participants that "Listed below are 12 articles about drinking and a short summary of each article. Choose four to read and evaluate by clicking the box next to your chosen article. When you have selected the four articles, click the submit button at the bottom of this page. The articles will then automatically be sent to your Web browser for evaluation by you."

In the paper condition, the instructions were the same except that any Internet references were changed to instruct participants to 'tick' the boxes, and hand the completed responses to an experimenter for collection of the articles to evaluate.

Once subjects had chosen their articles, it was explained that the aim of the experiment was the act of choosing, not the evaluation, and that articles would not be forwarded for evaluation. In the WWW condition, a series of links to similar articles on the Internet were provided for participants to follow if they wished. In the paper condition, these links were provided in a print out. Participants were thanked for their help, and any questions answered by the experimenters.

### **Results**

Initial analyses were conducted to investigate differences between the seeking of either anti- or pro-drinking information. Because seeking one type of information reduced the likelihood of seeking the other, an information-seeking index was calculated by subtracting the number of anti-drinking articles chosen from the number of pro-drinking articles chosen. Thus, if a participant wanted to read four anti-drinking articles, and no pro-drinking articles, their index score would be -4. If they sought two anti- and two pro-drinking articles, their index score would be 0. The mean index score was 0.59, ( $SD = 2.38$ ), indicating a slight bias toward pro-drinking articles. Participants' scores on the information seeking index did not differ according to their university location ( $F(1, 114) = .05, p > .82$ ) or gender ( $F(1, 114) = .42, p > .5$ ). Location and gender were therefore not included in any subsequent analyses.

Because any effect of the WWW on information seeking might interact with individual differences, participants were categorised using two nominal measures from the questionnaire. Firstly, their self-reported alcohol intake was categorised as either high (above and including 11-15 for a female, and above and including 16-20 for a male) or low (below 11-15 for females, 16-20 for males). A second category was created by collapsing participants' scores on the Stage of Change measure into 'not contemplating change' and 'contemplating or engaging in change'. A three way, between-subjects ANOVA (medium (WWW vs. paper) x unit intake (high vs. low) x

stage of change (not contemplating vs. contemplating or engaging in change)) was calculated to examine the interaction between individual differences and information seeking.

Medium ( $F(1, 101) = 4.89, p = .03, Ms$  1.05 and .53 for WWW and paper respectively) and unit intake ( $F(1, 101) = 7.03, p < .01, Ms$  .08 and 1.25 for low and high unit intake respectively), but not stage of change ( $F(1, 101) = .12, p > .73, ns, Ms$  .81 and .56 for pre-contemplation and contemplation or engaging in change respectively), showed significant main effects on information seeking. To provide a frame of reference to these results, effect sizes were calculated (Cohen, 1977). As a guide, Cohen proposed that a 'small' effect is .20; a 'medium' effect is .50 and a 'large' effect is .80 (Cohen, 1977). Using Cohen's standardised mean difference ( $d_s$ ), the effect sizes are .22 for medium, .49 for unit intake and .11 for stage of change.

The interaction between medium and unit intake was marginally significant ( $F(1, 101) = 3.35, p = .07$ ). This interaction is illustrated in Figure 1.

**Take in Figure 1** The interaction between unit intake and medium on information seeking

The interaction between medium and stage of change was significant ( $F(1, 101) = 7.85, p < .01$ ). This interaction is illustrated in Figure 2. The interaction between unit intake and stage of change was not significant ( $F < .1$ ). The interaction between medium, unit intake and stage of change was also non-significant ( $F < 2$ ).

**Take in Figure 2** The interaction between stage of change and medium on information seeking

## Discussion

Participants using the WWW to seek alcohol-related articles sought significantly more pro-drinking information than those using pen and paper. This confirms the hypothesis that people would seek different types of health information online compared to pen and paper. In line with earlier work on health behaviour, those with a high alcohol intake sought significantly more pro-drinking articles than those with a low unit intake. There was no main effect for stage of change on information seeking.

The interaction between medium (WWW vs. paper) and unit intake (high vs. low) was marginally significant. When unit intake was high there was no difference in information seeking bias between WWW and paper conditions. However, when unit intake was low, participants answering using paper sought primarily anti-drinking articles, while participants using the WWW sought primarily pro-drinking articles.

The interaction between medium and stage of change was significant. Specifically, when participants were not considering reducing their drinking (pre-contemplation),

they sought primarily pro-drinking information, with those using the WWW showing less of a preference for pro-drinking behaviour than those using paper. Individuals who were either contemplating or engaging in drinking reduction tended to seek pro-drinking information on the WWW, and anti-drinking information on paper (see Figure 2). It would seem, therefore, that on the WWW people are acting in a manner contrary to expectations: those planning or engaging in drinking reduction seek pro-drinking information, while those not planning to reduce their drinking seek a balance of pro- and anti-drinking information. On paper the pattern of information seeking is as would be expected: those engaging in change sought anti-drinking information while those not contemplating change sought pro-drinking information.

This pattern of responses might represent a socially desirable response on paper compared to on the WWW. In the present study, the paper requests were handed to the experimenter – in both locations the participants' lecturer. Although procedures were set in place to protect anonymity of participants, the seeking of information on paper was more public, and less anonymous, than the WWW condition. It would be expected that increases in the 'publicness' of a behaviour would increase socially desirable behaviour (Paulus, 2002), a pattern already established in Web-based surveys (Joinson, 1999) and observed in the use of health information kiosks and health Web sites (Nicholas *et al.*, 2003). The confounding of medium and levels of anonymity (and hence social desirability) make the interpretation of any cross medium results difficult to interpret, and would need to be addressed in any further studies (for instance, by increasing identifiability in the Web condition, or reducing it in the paper condition). However, the pattern of results from the less private paper condition is consistent with the notion of 'search disclosure' (Nicholas *et al.*, 2003). It would be interesting to isolate the unique effects (if there are any) of medium and level of anonymity in health information seeking.

Looking at the results from the WWW alone, this study suggests that health information seeking on the Internet is a double-edged sword. While the WWW delivery mechanism encouraged those not planning to reduce their drinking to seek articles with a slightly less positive slant than average, this effect was reversed for those planning or engaging in drinking reduction. The behaviour of those currently engaging in change is unusual – that people should seek predominantly pro-drinking messages while either contemplating or engaging in drinking reduction is somewhat counter-intuitive. It may be that many of those classified within this group may have been contemplating change, a stage associated with traditional 'social exchange' processes (i.e. the weighing up of pro and anti arguments and outcomes) (Janis and Mann, 1977).

### **Implications for health promotion on the Internet**

Most studies of health information seeking on the Internet have focussed on access to sites providing medical information for those diagnosed with a condition, or their carers (Joinson and Banyard, 2002; Nicholas *et al.*, 2001; Pew Internet and American Life, 2002). The results of the present study suggest that the seeking of health promotion information may be motivated in a different way. First, there seems to be an effect of medium – if traditional modes of information seeking have a level of identifiability attached, people seem to behave in a socially desirable manner (i.e. seeking somewhat anti-drinking information). Second, the current health behaviour and plans for change lead to different information seeking motivations, which may

well also interact with medium. In the present study, these interactions led the pattern of information seeking on the Web to appear somewhat counter-intuitive and contrary to expectations. Further research with a larger, more varied sample and tighter control of anonymity and privacy is needed to identify the exact nature and causes of these interactions.

A note of caution must be sounded in the interpretation of the results. In the present research, the Internet sample consisted of students assigned to the WWW condition. This was necessary to allow *post-hoc* contrasts with a comparable group using paper measures. However, this design is not a true representation of the environment in which most people access information on the Internet, nor does it replicate possible differences between an Internet and paper sample. Indeed, it could be argued that any effects might be greater if the sample consisted of a 'genuine' Internet sample rather than an allocated sample because of the increased privacy afforded to Internet users outside the laboratory.

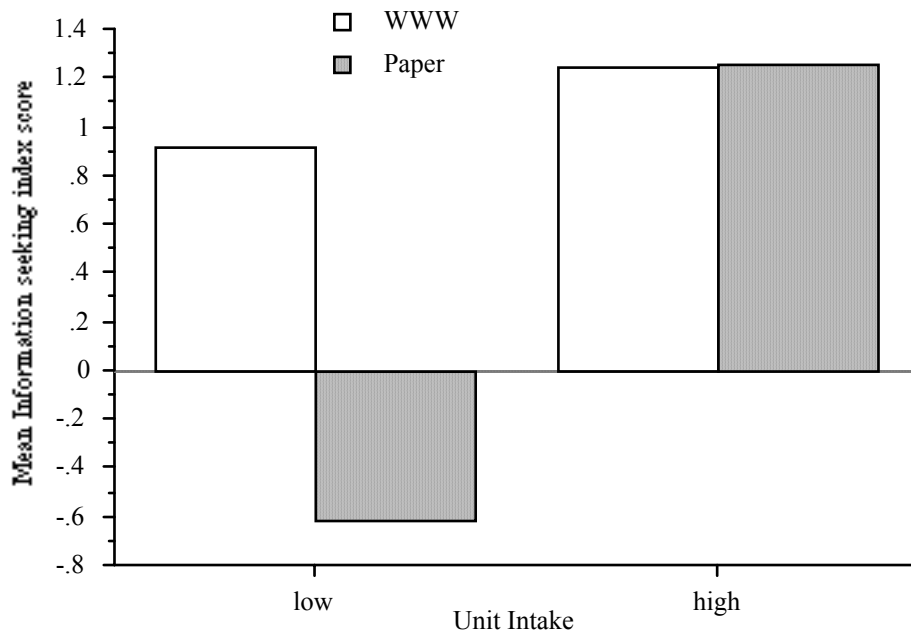
The present research shows that the Internet may prove to be an unrivalled environment for the provision of health promotion information aimed at encouraging people to change unhealthy behaviours. However, the WWW may also have previously unforeseen consequences in the seeking of health-related information amongst those contemplating, preparing or engaging in health-behaviour change. Continued research effort that investigates how users browse health promotion information on the WWW is urgently required. The current trend is for health promotion professionals to simply convert existing paper resources to digital format. Although this approach is a commendable effort toward providing access to health promotion material, we would suggest that researchers need to know who is likely to seek specific information using the WWW, and should tailor their resources to meet the motives of those users and their perceived anonymity.

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**Figure 1** The interaction between unit intake and medium on information seeking



**Figure 2** The interaction between stage of change and medium on information seeking

