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# Severely Dependent Alcohol Abusers May Be Vulnerable to Alcohol Cues in Television Programs\*

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**ABSTRACT.** The self-reported ability of 96 alcohol abusers to resist the urge to drink heavily was assessed after they viewed a videotape of a popular prime time television program complete with advertisements. Different versions of the videotape were used to evaluate the effects of a television program with and without alcohol scenes as crossed with the effects of three different types of commercials (i.e., beer, nonalcoholic beverages, food). Before and after viewing the videotape, subjects, who were led to believe that they were participating in two separate and unrelated sets of experimental procedures, completed several drinking questionnaires. Responses to one of the questionnaires provided an unobtrusive measure of self-reported abil-

ity to resist the urge to drink heavily. Results indicated that alcohol cues in a television program affected some alcohol abusers' perceived ability to resist the urge to drink heavily. In particular, those with higher alcohol dependence scores showed a decrease in confidence after viewing a television program with alcohol cues compared to subjects who watched the same program but without the alcohol scenes. The clinical implications of these findings are discussed. Until further research is forthcoming, given the artificial nature of the study setting, the results of this study must be viewed with some caution. (*J. Stud. Alcohol* 54: 85-91, 1993)

**T**HE FACT that virtually all homes in North America have at least one television set (Canada, 99%; United States, 98%) underscores the ubiquitous nature of television in our lives (Statistics Canada, 1990; Wallack et al., 1990). Along with its widespread use, television has attracted its share of critics, some of whom feel that programs and commercials can have a negative effect on viewers (e.g., violence; drug use; see Feldman, 1980, and Liebert and Schwartzberg, 1977). Various theories suggest that television viewing may produce a variety of effects (e.g., exposure shapes broad perceptions of the world; social models can shape or modify behaviors and beliefs even without direct consequences). With respect to alcohol and cigarettes, concern has focused primarily on whether use of the product is encouraged or promoted, especially among young viewers (Cafiso et al., 1982; Jacobson et al., 1983; Strickland et al., 1982).

While several studies have documented a very high frequency of alcohol cues in television programs (Cafiso et al., 1982; DeFoe et al., 1983; Futch et al., 1984; Greenberg, 1981; Wallack et al., 1990), few studies have exam-

ined the effects such cues have on actual drinking or on urges to drink (Cafiso et al., 1982; Sobell et al., 1986; Strickland et al., 1982). Only one study has examined the effects of alcohol cues in television programs on drinking, and that study found that neither drinking scenes in the program nor beer commercials precipitated increased drinking in male normal drinker college students (Sobell et al., 1986). One other study evaluated the effects of alcoholic beverage commercials on drinking in female normal drinker college students and found no overall increase in drinking (Kohn and Smart, 1984). The effects of cues within programs, however, were not tested in this latter study.

Since cues in commercials can be readily recognized as persuasive messages, they may elicit resistance in viewers (Petty et al., 1981). However, cues that occur in the context of an ongoing program may not engender such counterresponses. Although research examining the effects of either beer advertisements or alcohol cues in television programs has studied only normal drinkers, several studies have suggested that alcohol abusers, in contrast to normal drinkers, are more responsive to environmental alcohol-related stimuli than to internal alcohol-related stimuli (Brown and Williams, 1975; Buck, 1979; Mathew et al., 1979; Tucker et al., 1979; Williams, 1977). Other research, based on conditioning theory (e.g., Poulos et al., 1981), suggests that alcohol cues in television programs and commercials may act as conditioned stimuli for individuals with a significant drinking history and elicit behavioral (i.e., drinking) and cognitive (i.e., urges to drink alcohol) conditioned responses. Thus, it is possible that drinking history may interact with exposure to

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alcohol cues in television programs or other mass media. If this hypothesis is valid, then alcohol abusers may be at increased risk for drinking when exposed to alcohol-related cues.

The design of the present study closely parallels that of a previous study (Sobell et al., 1986) that investigated the effects of alcohol cues in television programs and beer commercials on the alcohol consumption of male normal drinkers. The present study used alcohol abusers and examined the effects of alcohol cues on self-efficacy (i.e., ability to resist the urge to drink heavily) rather than on actual alcohol consumption.

### Method

#### Subjects

Male clients ( $N = 96$ ) at the Addiction Research Foundation (Toronto, Ontario) were recruited for the study from either the outpatient department ( $n = 54$ ) or the detoxification unit ( $n = 42$ ). To be eligible for the study, subjects were required to: (1) sign an informed consent; (2) be between 19 and 60 years of age; (3) have alcohol as their primary substance of abuse; (4) not be committed to a total abstinence goal; (5) not be using anti-alcohol drugs; (6) have a zero blood alcohol level at the start of the session as determined by a breath test (Mobat SM-9, Lucky Laboratories, San Bernardino, Calif.); (7) not smoke during the study; (8) have consumed alcohol in the thirty days prior to the interview; and (9) have no evidence of cognitive impairment as evaluated by age-adjusted scores on the Trail Making Test (Davies, 1968) and on a shortened version of the WAIS (Wilkinson and Carlen, 1980).

Demographic and general drinking history data for both the outpatient and detoxification subjects are presented in Table 1. The data were analyzed using *t* tests for parametrically scaled variables and chi-square tests for nonparametrically scaled variables. Table 1 shows that the detoxification subjects were significantly different ( $p < .05$ ) from the outpatient subjects on all variables assessed except race and age. As a group, detoxification subjects had less education, were less stable in terms of their employment and marital status and were more seriously dependent on alcohol than were the outpatients.

#### Experimental design

Subjects were randomly assigned among six television-viewing conditions defined by a  $3 \times 2$  between-subjects factorial design. The first factor (ad type) involved three different types of advertisements: beer, nonalcoholic beverages and food. The second factor (scene type) was operationalized as two different versions of the same prime-time television program ("Dallas"). One version (alcohol scenes) was unedited and contained numerous scenes con-

TABLE 1. Demographic and drinking history variables for outpatient and detoxification subjects

Variable <sup>a</sup>	Program	
	Outpatient ( $n = 54$ )	Detoxification ( $n = 42$ )
Race: % white	96.3	85.7
Mean ( $\pm$ SD) age in yrs	34.9 $\pm$ 8.2	38.2 $\pm$ 8.9
Mean ( $\pm$ SD) no. yrs education	12.8 $\pm$ 2.9	10.6 $\pm$ 2.5
Usual occupation: % blue collar	44.4	81.0
Current employment status:		
% employed	63.0	26.2
Current marital status: % married	25.9	4.8
Mean ( $\pm$ SD) no. yrs of problem drinking	8.4 $\pm$ 5.9	15.0 $\pm$ 8.8
Mean ( $\pm$ SD) no. public drunk arrests	2.4 $\pm$ 8.5	37.7 $\pm$ 83.2
Mean ( $\pm$ SD) no. drunk-driving arrests	1.3 $\pm$ 1.7	2.8 $\pm$ 3.1
Mean ( $\pm$ SD) no. alcohol-related hospitalizations <sup>b</sup>	0.5 $\pm$ 1.2	28.6 $\pm$ 57.0
Mean ( $\pm$ SD) ADS score <sup>c</sup>	15.9 $\pm$ 8.4	30.2 $\pm$ 9.7
Mean ( $\pm$ SD) SMAST score <sup>d</sup>	7.1 $\pm$ 2.4	10.2 $\pm$ 1.3
Recent drinking history (30-day period):		
Mean ( $\pm$ SD) no. drinking days	17.6 $\pm$ 9.4	21.6 $\pm$ 6.8
Mean ( $\pm$ SD) no. 1-3 drinks <sup>e</sup>	4.0 $\pm$ 4.8	0.8 $\pm$ 1.9
Mean ( $\pm$ SD) no. 4-6 drinks <sup>e</sup>	4.1 $\pm$ 5.6	1.3 $\pm$ 2.5
Mean ( $\pm$ SD) no. 7-12 drinks <sup>e</sup>	5.2 $\pm$ 6.5	2.6 $\pm$ 6.1
Mean ( $\pm$ SD) no. > 12 drinks <sup>e</sup>	4.3 $\pm$ 6.8	17.0 $\pm$ 8.2

<sup>a</sup>Outpatient and detox. subjects differed significantly ( $p < .05$ ) on all variables except race and age.

<sup>b</sup>Includes hospitalizations for detoxification from alcohol.

<sup>c</sup>Alcohol Dependence Scale (ADS) score is out of 47 possible.

<sup>d</sup>Short Michigan Alcohol Screening Test (SMAST) score is out of 13 possible.

<sup>e</sup>Drinks = standard drinks per drinking day.

taining alcohol cues (i.e., drinking and preparing to drink by different characters). The second version (no alcohol scenes) was edited to eliminate scenes portraying alcohol consumption or visual or verbal references to alcoholic beverages. The editing was done so as not to disrupt the program. Additional content was added to the edited version so that both programs were about 1 hour long. At no time during this study or a previous one (with male normal drinker college students; Sobell et al., 1986) that used the same edited videotapes did any subject (236 total subjects) ever mention that they thought the tapes had been edited or that there appeared to be missing segments. This suggests that the deletions were not obvious; programs like "Dallas" that have multiple short vignettes can be easily edited without disrupting the program. Moreover, this is not the first program to edit out drinking scenes and report no detection of the deletions (Rychtarik et al., 1983).

#### Television program design and preparation

Since the study design and preparation of the programs were the same as in an earlier study (Sobell et al., 1986), only essential details will be reported here. Preparation and editing of the television program complete with commercials was performed by the audio/visual department of

the Addiction Research Foundation which is experienced in preparing programs for public broadcast.

The television program "Dallas" was selected for several reasons: (1) it was a current popular prime-time television drama; (2) it had been used in previous studies evaluating drinking portrayals (DeFoe et al., 1983; Greenberg, 1981); (3) it had a very high incidence of drinking scenes among top-rated television programs (13.3 incidents per programming hour; Greenberg, 1981); and (4) it used a multiple vignette format that could be edited with minimal disruptions. Consistent with the literature (Futch et al., 1984; Greenberg, 1981; McEwen and Hanneman, 1974), drinking-related scenes in the present program were predominantly social in nature (Sobell et al., 1986).

The videotape also contained four groups of three commercials each spaced at approximately equal intervals throughout the tape. The ad type commercial (beer, non-alcoholic beverage, or food) was placed first in each set to maximize the likelihood that subjects would attend to the advertisement. The remaining commercials were fillers (e.g., cars, clothes, detergent) and were similar for all ad type conditions. The nonalcoholic beverage advertisements were used to control for the effects of thirst, while the food advertisements controlled for general appetitive effects.

#### *Procedure*

Subjects participated individually in a single, two-part, 2-hour session. Individual subject sessions were conducted by one of several experimenters (4 women, 3 men). Two separate, but adjacent rooms at the Addiction Research Foundation constituted the experimental setting. The first room resembled a television/family room (e.g., couch, chairs, pictures, tables, television, low lighting) and was the same room used in a similar study with normal drinkers (Sobell et al., 1986). The second room was set up to appear like an office.

*Initial instructions.* As in the previous study with normal drinkers (Sobell et al., 1986), the two experimental procedures were presented as unrelated, and two separate consent forms were used. Subjects read the first consent, which indicated that the exact nature and reasons for each of the experimental procedures would be explained at the end of the session, but that they would be informed in advance about the details of each procedure. The first consent also stated that the first set of procedures would ask subjects questions about their past and present drinking and that as part of this first set of procedures they would be asked to respond to some of these questionnaires at a later time. After being given a breath test to ensure that they were alcohol-free, subjects completed the following questionnaires: (1) demographic history; (2) 31-item version of the Situational Confidence Questionnaire (SCQ) (Annis and Davis, 1988); (3) Alcohol Dependence Scale (ADS) (Skinner and Allen, 1982; Skinner and Horn,

1984); (4) Short Michigan Alcohol Screening Test (SMAST) (Selzer et al., 1975); and (5) an abridged (days were classified into categories, e.g., days 1-3 drinks, etc.) version of the Timeline Follow-Back Drinking Questionnaire (Sobell et al., 1979; Sobell and Sobell, in press). All questionnaires were completed in the office-like room. After completing the questionnaires, subjects were thanked and told that the first set of procedures was completed for the time being and that the second set of procedures would be conducted in the television/family room. To make the two sets of experimental procedures appear unrelated, subjects were told at the beginning of the study that they would be paid \$6 for each set of experimental procedures (\$12 in total).

*Instructions for the second set of experimental procedures.* Prior to starting the second set of procedures, subjects read the second consent, which explained that they would be asked to evaluate a prime-time television program. To enhance the credibility of this set of procedures, subjects were asked to review the television program evaluation questionnaire to become familiar with the rating system (6 pages with 30 items, each to be rated using a 5-point scale). After viewing the program, subjects completed the questionnaire giving their impressions of the program that they had just watched. They were then told that the second set of procedures was completed and they were taken back to the first room to finish the first set of procedures. In the office-like room subjects were told "as you recall from the consent form, part of what is involved with the first set of procedures is to answer some of the questions a second time." They were then told that the next two questionnaires were the same as ones that they had filled out earlier. Subjects completed, in reverse order from their original administration, the SMAST and the SCQ. The SMAST was repeated to draw attention away from the fact that the SCQ was administered twice.

*Postexperimental procedures.* After completing the last two questionnaires, the experimenter asked subjects to complete a postexperimental questionnaire that asked about their perceptions of the study and at which point in the study, if at all, they decided the purpose of the study. The experimenter then gave subjects a debriefing form that included a statement that they could retroactively withdraw their participation now that they knew the exact nature of the study (no subject withdrew as a result of the debriefing). The experimenter then asked subjects not to discuss the experiment with other potential participants.

#### *Dependent measures*

*Situational Confidence Questionnaire (SCQ).* As a measure of self-efficacy, the SCQ assesses subjects' beliefs (at the time of administration) that they can resist the urge to drink heavily in a variety of situations. The SCQ generates eight subscales based on Marlatt's (Marlatt and Gordon,

1985) categories of relapse situations. The 100 items forming the original questionnaire were derived from a number of studies investigating determinants of relapse in alcohol abusers. Each item is rated on a 6-point scale ranging from 0% to 100% (each value increases by 20%). To control for individual baseline differences in the ability to resist the urge to drink heavily in situations, a pre-post design for SCQ administration was used.

The 100-item SCQ is a reliable self-report instrument with theory-derived subscales (subscale reliabilities range from  $r = .91$  to  $.97$ ; Annis and Davis, 1988). Shorter versions of the SCQ have been developed and have similar reliability (Annis and Graham, 1988). Since the SCQ was administered as one of several questionnaires in this study, it was shortened to approximate the length and time of administration of the other questionnaires. For this study, Dr. Annis, the developer of the SCQ, created a 31-item version of the SCQ. The 31 questions consisted of the top three items from each of the eight subscales and the remaining seven items from the Urges and Temptations subscale. The reliability coefficient for the top three items from each subscale (24 items total) was  $r = .95$  ( $n = 116$ ), and for all 10 items on the Urges and Temptations subscale was  $r = .93$ . The entire Urges and Temptations subscale (10 items) was included in the 31-item version of the SCQ because, of the eight SCQ subscales, it most directly measures the variable of interest (i.e., likelihood of drinking).

With respect to its validation, since the SCQ is a state measure, stability would not necessarily be expected or predicted. However, since the SCQ is a measure of self-efficacy as related to relapse, scores on the SCQ or on similar measures of self-efficacy would be predicted to correlate with drinking behavior (i.e., low scores indicating little confidence to resist the urge to drink heavily would be associated with greater drinking as compared to higher scores which are suggestive of higher self-confidence). In this regard, several studies, including ones that have used the SCQ, have shown that low self-efficacy scores are associated with increased ethanol consumption (e.g., Brown, 1985; Burling et al., 1989; Sitharthan and Kavanagh, 1991; Solomon and Annis, 1990). One recent study has also provided some clinical validation of the scale, reporting that clients who had been abstinent for 1 year had higher SCQ scores than those who had only recently become abstinent (Miller et al., 1989). The SCQ was used as an alternative to allowing subjects access to alcohol (it was not deemed ethically justifiable to assess actual drinking of clinical subjects for the purpose of this study).

## Results

### *Manipulation checks*

To obtain usable data on 96 subjects, a total of 118 subjects completed the experimental procedures. Twenty-two

subjects (18.6%, 22 / 118) were excluded because they correctly indicated on the postexperimental questionnaire the general nature of the study (e.g., the two experimental procedures were related, or the study was examining urges to drink). The 22 subjects were compared on the background and drinking history variables listed in Table 1 with subjects in their respective groups (i.e., detoxification or outpatient) who did not correctly guess the nature of the study. No statistically significant ( $p > .05$ ) differences were found for any of these variables for the detoxification subjects. Only one of the 17 variables in Table 1 (mean number of days drinking) was significant for outpatient subjects ( $p < .05$ ). Given the number of variables examined, this finding was probably spurious.

When the current study is compared with other studies that report such results, the proportion of subjects excluded for possibly guessing the hypothesis in this study is not unusual. While very few studies in the alcohol field that have included a deception manipulation (e.g., balanced-placebo design) have reported asking subjects about the manipulation or reported the number of subjects excluded on that basis, the number of subjects excluded in the present study parallels the number of subjects excluded in a similar study with normal drinker subjects (Sobell et al., 1986). In another recent study where subjects subjectively rated their levels of intoxication using a balanced-placebo design it was reported that 40% guessed the nature of the manipulation (Martin et al., 1990).

### *Drinking history severity*

One purpose of the study was to evaluate whether subjects' responses to alcohol-related cues were a function of drinking history severity. Although subjects were recruited from two different treatment programs and showed significant differences on variables related to drinking history, it was decided that drinking history severity could be classified more accurately by using a standardized assessment measure rather than by program designation. The Alcohol Dependence Scale (ADS) (Skinner and Allen, 1982; Skinner and Horn, 1984), which subjects completed at the first interview, was used to categorize subjects' drinking history. Based on norms developed at the Addiction Research Foundation, subjects were divided into two groups: (1) ADS scores below the 50th percentile reflecting low to moderate dependence on alcohol ( $ADS \leq 21$ ,  $n = 53$ ) and (2) ADS scores reflecting higher dependence on alcohol ( $ADS > 21$ ,  $n = 43$ ).

### *SCQ scores*

The total SCQ score (31 items) and the full Urges and Temptations subscale score (10 items) constituted the two main dependent variables. A 2 (scene type)  $\times$  3 (ad type)  $\times$  2 (ADS score;  $\leq 21$  versus  $> 21$ ) analysis of covariance

TABLE 2. Observed (Time 2) and adjusted (ANCOVA) mean ( $\pm$  SD) total SCQ scores for subjects with low and high alcohol dependence scale (ADS) scores across the six experimental conditions<sup>a</sup>

TV scene type	Ad type			TV scene condition mean
	Beer	Nonalcoholic beverage	Food	
LOW ADS SCORE ( $\leq$ 21)				
Alcohol scenes				
Observed	71.2 $\pm$ 17.7	64.6 $\pm$ 25.3	58.1 $\pm$ 25.6	64.4 $\pm$ 23.0
Adjusted	62.4 $\pm$ 4.9	56.3 $\pm$ 3.1	53.9 $\pm$ 7.7	57.4 $\pm$ 6.6
No alcohol scenes				
Observed	56.0 $\pm$ 17.0	76.5 $\pm$ 16.5	61.5 $\pm$ 16.5	64.5 $\pm$ 18.2
Adjusted	55.4 $\pm$ 4.5	57.4 $\pm$ 2.5	59.4 $\pm$ 6.9	57.5 $\pm$ 5.1
HIGH ADS SCORE ( $>$ 21)				
Alcohol scenes				
Observed	35.9 $\pm$ 27.3	56.9 $\pm$ 25.4	46.3 $\pm$ 10.1	46.4 $\pm$ 23.4
Adjusted	52.5 $\pm$ 9.0	56.7 $\pm$ 8.2	51.5 $\pm$ 5.2	53.7 $\pm$ 7.7
No alcohol scenes				
Observed	38.0 $\pm$ 21.1	55.7 $\pm$ 28.3	53.8 $\pm$ 25.2	48.9 $\pm$ 25.3
Adjusted	57.4 $\pm$ 9.3	58.5 $\pm$ 6.1	60.6 $\pm$ 6.2	58.7 $\pm$ 7.2
ALL ADS SCORES				
Alcohol scenes				
Observed	55.7 $\pm$ 28.1	61.2 $\pm$ 24.8	53.7 $\pm$ 21.5	56.9 $\pm$ 24.6
Adjusted	58.1 $\pm$ 8.4	56.4 $\pm$ 5.6	53.0 $\pm$ 6.8	55.8 $\pm$ 7.2
No alcohol scenes				
Observed	47.0 $\pm$ 20.7	66.1 $\pm$ 24.8	58.1 $\pm$ 20.4	57.1 $\pm$ 23.0
Adjusted	56.4 $\pm$ 7.2	58.0 $\pm$ 4.6	60.0 $\pm$ 6.4	58.1 $\pm$ 6.2
Ad condition mean				
Observed	51.4 $\pm$ 24.7	63.7 $\pm$ 24.5	55.9 $\pm$ 20.7	57.0 $\pm$ 23.7 <sup>b</sup>
Adjusted	57.2 $\pm$ 7.7	57.2 $\pm$ 5.1	56.4 $\pm$ 7.4	57.0 $\pm$ 6.8 <sup>b</sup>

<sup>a</sup>SCQ scores could range from 0 to 100. Higher scores indicated that subjects were more confident in their ability to resist the urge to drink heavily.

<sup>b</sup>Grand mean ( $\pm$  SD).

(ANCOVA), with the covariate being the pretest SCQ score, revealed no significant main effects for either the total SCQ or the Urges and Temptations subscale. However, two significant interactions were found for the total SCQ score (ADS score by scene:  $F = 3.99$ , 1 / 88 df,  $p = .049$ ; ad type by scene:  $F = 3.40$ , 2 / 88 df,  $p = .038$ ). Table 2 presents the observed and adjusted means and standard deviations for the total SCQ scores for subjects by low, high and all ADS scores across the six experimental conditions.

Scheffé post hoc pairwise comparisons of scene type with ADS score revealed that subjects with the higher ADS scores were significantly ( $p = .014$ ) less confident in their ability to resist the urge to drink heavily after viewing the program with alcohol scenes. This interaction is shown in Figure 1 using adjusted means. Scheffé post hoc pairwise comparisons of scene type with ad type interaction yielded two significant differences. The first revealed that scene type conditions differed significantly within the food ad condition ( $p = .004$ ). Subjects in the food ad condition, who had viewed the alcohol scenes in the television program, were less confident in their ability to resist the urge to drink heavily compared with subjects who had viewed the program without the alcohol scenes. The second significant post hoc comparison shows that, within the alcohol scenes condition, subjects who viewed the beer ads differed significantly ( $p = .031$ ) from those who viewed the food ads. Subjects who viewed the television

program with alcohol scenes and beer commercials were more confident in their ability to resist the urge to drink heavily compared with subjects who viewed the same program with food commercials.

## Discussion

Under the conditions tested in this experiment, a major finding was that severity of drinking history interacted with exposure to alcohol cues such that more severely dependent alcohol abusers reported being less confident in their ability to resist the urge to drink heavily after watching a television program with alcohol scenes. This finding, while restricted to the more severely dependent alcohol abusers, is consistent with research showing that alcohol abusers, in contrast to nonproblem drinkers, are more responsive to environmental than to internal alcohol-related stimuli (noted in Sobell et al., 1986). It is also consistent with conditioned appetitive motivation approaches which predict that more severely dependent individuals (i.e., stronger conditioning history) will be more likely to experience urges to drink in response to alcohol cues (Sherman et al., 1988). While effects similar to those for television programs were not found for beer commercials only, one possible explanation rests on the observation that alcohol cues in television programs are more subtle and less obvious than those in commercials. Cognitive

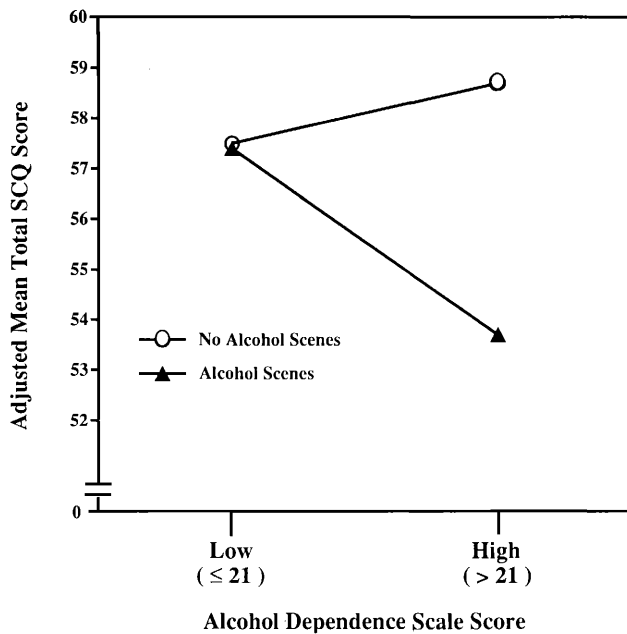


FIGURE 1. Program scene interaction in subjects with low and high Alcohol Dependence Scale (ADS) scores using adjusted mean total Situational Confidence Questionnaire (SCQ) scores

response theory (Petty et al., 1981) suggests that when subjects receive a persuasive message with which they disagree (i.e., self-identified alcohol abusers in treatment would oppose a message urging alcohol), they may cognitively counterargue against the message, thereby negating its effects. Thus, beer commercials may not have affected subjects' self-efficacy ratings because cues in these advertisements are readily identifiable as encouraging drinking. In fact, counterarguing might account for the fact that subjects who viewed alcohol scenes with beer commercials reported being more confident in their ability to resist urges to drink heavily compared to subjects who viewed alcohol scenes paired with food commercials.

The conclusions from the present study, as with an earlier study of normal drinkers (Sobell et al., 1986), must be considered in the context of where and how the study was conducted. First, while attempts were made to make the home environment appear realistic, viewing took place in the context of a study, subjects viewed the program in isolation rather than in a social context and the study was conducted during the day rather than the evening when prime-time programs are broadcast. Second, since confidence to resist urges to drink heavily was assessed immediately subsequent to viewing a single program, it is possible that more powerful effects might follow repeated exposures to such programs. Third, the present study did not represent a thorough test of conditioning theory. For example, more sensitive instruments for assessing urges as well as other ongoing changes may be important to consider in future research. Fourth, since subjects were screened for

not being committed to abstinence, generalization to subjects committed to abstinence remains to be investigated. In this regard, however, two studies suggest that long-term abstinent subjects would not report being affected by alcohol cues in television programs or advertisements. The first study (Mathew et al., 1979) examined self-reported characteristics of craving and found that craving was inversely related to the duration of abstinence from alcohol. The second study involves alcohol abusers who had recovered on their own (Sobell et al., 1992). In the second phase of this longitudinal study subjects were asked, if they were to see television commercials for beer or wine or programs showing people drinking alcohol, how likely would it be that those portrayals would at that time affect their desire to drink alcohol. Of the 80 long-term abstinent subjects (mean  $[\pm SD] = 13.3 \pm 6.0$  years abstinent) interviewed to date, nearly all indicated that alcohol cues in both television programs and commercials would have absolutely no effect on their desire to drink (mean rating for television commercials =  $3.93 \pm 0.78$ ; mean rating for television programs =  $3.98 \pm 0.27$ ; 7-point rating scale: 1 = very much decrease my desire to drink, 4 = no effect, 7 = very much increase my desire to drink).

The interaction between scene type and ad type found in this study is perplexing and not readily explainable. It is particularly curious that food advertisements should interact with alcohol cues in a television program to decrease subjects' self-efficacy, while advertisements for nonalcoholic beverages (e.g., coffee, soft drinks) did not have a similar effect.

Watching television is a frequent leisure activity for most people. For severely dependent alcohol abusers, however, viewing alcohol-related cues in television programs might make them more vulnerable to drinking. If this is so, then viewing such programs, especially repeatedly or in concert with other high-risk situations, could contribute to relapses. The concern about alcohol cues in television programs cannot be taken lightly, as a recent review shows that most prime-time television programs not only continue to include many drinking-related acts (8.1 per hour), but also portray the inappropriate use of alcohol (e.g., drinking as a coping response; Wallack et al., 1990).

Since this is the first study of its kind to use alcohol abusers as subjects and to present results suggesting that alcohol cues in television programs might increase the likelihood of relapse, additional research is needed. However, until such research is forthcoming, the implications for clinical service providers, particularly those who treat more severely dependent alcohol abusers, would be to help their clients recognize and prepare to deal with the possible influence on their drinking of alcohol-related cues in television programs. It may be that simply informing clients of the potential risk is sufficient to minimize its impact.

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