

From the Laboratory to Real Life: A Pilot Study of an Expectancy Challenge With “Heavy Drinking” Young People on Holiday

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The Alcohol Expectancy Challenge (EC) is a promising program for changing alcohol expectancies and reducing alcohol consumption in “heavy drinking” young men in a bar-lab setting. In this study the EC was adapted for use in mixed-gender groups in a holiday setting and its feasibility tested in camping resorts in the Netherlands where a lot of binge drinking takes place (summer 2002). Male and female participants (N = 170; mean age, 18.8 years) were randomly assigned to an EC or to an assessment-only control group. One day before the intervention, alcohol expectancies were measured by a Visual Analogue Scale of arousal-sedation expectancies (VAS expectancies questionnaire). At the same time, alcohol use in everyday life and on holiday was assessed by a General Drinking Questionnaire and a 24-hour drinking diary, respectively. Twenty-four hours after the intervention, the VAS expectancies questionnaire was administered again and alcohol use over the previous 24 hours was reported in the drinking diary. Six weeks after the intervention, participants were telephoned and administered oral versions of the VAS expectancies questionnaire and General Drinking Questionnaire. Data were analyzed using mixed ANOVAs. Although the study was hampered by recruitment difficulties, the EC proved feasible in this setting, was well received by youngsters, and effects on their alcohol expectancies may have been present. No effect was found on alcohol use. In conclusion, implementation must be improved and more studies are needed to come to more definite conclusions about the value of the EC in a real-life targeted intervention.

Keywords adolescence; alcohol consumption; alcohol use; binge drinking; Expectancy Challenge; intervention

Introduction

Many young people in the Netherlands binge drink alcohol while going out during the weekend. When on vacation without their parents, binge drinking occurs nearly every day (Lemmers et al., 1998; Pos et al., 2001). This consumption pattern generally lasts their

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entire stay, usually a 1- to 2-week period. These youngsters face many health risks during such “heavy-drinking” episodes. Research by Van de Hoef and colleagues (2001) showed that 45.2% of young men experienced blackouts during their holiday, 32.3% had trembling hands, and 12.2% had been involved in some sort of accident during their stay. Pos and colleagues (2001) interviewed key figures (e.g., campsite managers, bar owners, social workers) about the health problems young people experience when drinking excessively on holiday. Most key figures mentioned dealing with youngsters on holiday who experienced the consequences listed above. In addition, several key figures witnessed cases of alcohol poisoning. Holiday with friends and without parents is seen as a “time-out” situation in which normal behavioral rules do not apply (Pos et al., 2001). It is similar to going out in the weekend but even “better” because school and parents are more than a few days away. With no parents to supervise them, no social responsibilities, and few activities to be done, drinking is the main pastime.

The Dutch National Institute for Disease Prevention and Health Promotion (NIGZ) has launched a “summer campaign” in these seaside communities every year since 1998. Approximately 20,000 young people are reached by the campaign each year. Teams of trained students (“peers”) approach youngsters (15–25 years) to talk about their alcohol consumption and to inform them about alcohol. The theoretical underpinnings of this interpersonal intervention include the Theory of Planned Behavior (Ajzen, 1991). The aims of the summer campaign are to increase knowledge of the risks of excessive alcohol use and of guidelines for safe alcohol consumption. Other aims are to incite young people to think more about their own alcohol use and to talk about it more frequently. Although these goals are met, young people on holiday have not reduced their alcohol consumption (Lemmers et al., 1998). A literature survey showed that the Expectancy Challenge (EC) had promising results in reducing heavily drinking university students’ positive alcohol expectancies and alcohol consumption (Larimer and Cronce, 2002). It was noted that EC procedures might serve as prevention and intervention tools (Goldman et al., 1999; Larimer and Cronce, 2002). This led to the idea to implement and evaluate the EC as an intervention for young people on holiday. The study was initiated by researchers at Maastricht University in close collaboration with colleagues of the NIGZ, who were looking for new intervention methods to improve their summer campaign.

Many studies have shown correlations between alcohol expectancies and alcohol consumption (Goldman et al., 1999). “Heavy drinkers” hold relatively strong positive-arousal expectancies (Goldman et al., 1999). On the basis of this correlation, it was proposed that reducing positive arousal expectancies could lead to a reduction in alcohol consumption (Darkes and Goldman, 1993, 1998). The EC is based on this hypothesis, it is designed to allow young people to find out for themselves that some of their positive alcohol expectancies are unrealistic and flawed.

Studies differ in the exact protocols used, but in the typical EC session, youngsters are brought together in a bar-like room where they are given a glass of vodka tonic or placebo. A game is played during drinking. After everyone has finished drinking, they are asked to identify who had alcohol, based on observations of subjects’ behavior. Usually, many identification errors are made (participants indicate people who drank placebo as having drunk alcohol and vice versa). These errors are used by the session leader to separate expectancy and pharmacological effects of alcohol.

Several ECs have been evaluated to date. Darkes and Goldman (1993) were the first to manipulate alcohol expectancies in their social/sexual expectancy challenge. Using a multiple-session protocol on male university students, they found significant reductions in expectancies and alcohol consumption. Since then, ECs have been adapted for use in

mixed-gender and female-only groups (Corbin et al., 2001; Dunn et al., 2000; Jones et al., 1995; Maddock et al., 1999; Musher-Eizenman and Kulick, 2003; Wiers and Kummeling, 2004), information-only ECs have been conducted (Corbin et al., 2001; Jones et al., 1995), and single-session ECs have been performed (Corbin et al., 2001; Jones et al., 1995; Maddock et al., 1999; Wiers et al., 2005).

Many studies suggest the EC may not be effective in changing women's alcohol consumption (Corbin et al., 2001; Dunn et al., 2000; Musher-Eizenman and Kulick, 2003; Wiers et al., 2003); however, generalization is hampered by differences in protocols used (e.g., experiential vs. information only, multisession vs. single session) (Wiers, 2002). Furthermore, Wiers and Kummeling (2004) did find reduced positive expectancies and a trend toward reduced alcohol use in women in their mixed-gender multisession program. More recently, Wiers et al. (2005) found again a significant reduction in positive expectancies in men and women alike as a result of an EC (although in women no differential effect on drinking was found). In general, multiple-session programs may result in larger effects on alcohol expectancies and consumption than single-session protocols (Darkes and Goldman, 1993, 1998; Wiers, 2002). However, single-session ECs are better applicable in real-life intervention settings.

Performing an EC with young people on holiday is innovative in several respects. First, theories are rarely applied so directly to the intervention practice. To the best of our knowledge, ECs have never been evaluated outside bar-labs of universities. In this study, the EC was performed on various locations near the campsites of heavy drinking youth. It is unique for a targeted intervention to take place in the actual situation in which binge drinking occurs. Second, this is the first time the EC was done with such heavy drinking youth. Earlier evaluations mainly used students who drank heavily on several occasions each week. However, most young people on holiday binge drink every day of their stay.

Because this is a first study of an EC outside the laboratory, the feasibility of an EC on location was first evaluated. Second, we tested whether systematic differences in expectancies arose between the experimental and control group as a result of the EC. Third, we explored if effects on alcohol use were present. Last, we explored gender differences.

Methods

Participants

Young people (mean age, 18.8 years; minimum age, 18.0 years) spending a vacation at a seaside camping site were recruited by trained students ("peers"). The vast majority (88.1%) were on holiday with friends, without their parents or partner. Their circle of friends included 8.2 persons on average (including themselves).

A total of 170 participants was recruited. However, many participants failed to show up for the intervention or could not be reached for the post-tests (Table 1). After filling out a questionnaire and giving informed consent, participants were randomly assigned to one of two conditions, control or EC. Mean consumption at baseline was 23.1 Dutch standard drinks (which contain ± 10 grams of alcohol compared with 14 grams in the United States), per day during vacation, which can be classified as very heavy drinking. Initially, the idea was to include equal numbers of males and females in each condition. However, young women were much more difficult to recruit than young males, which led to an uneven distribution of 84% men ($n = 142$) and 16% women ($n = 28$) at pretest.

Selective Attrition. To examine whether participants who did not complete all measurements differed from those who did, background characteristics of these two categories were

Table 1
Number of participants per questionnaire, time, condition, and gender

	Questionnaire	EC		Control		Total (<i>n</i>)
		Men (<i>n</i>)	Women (<i>n</i>)	Men (<i>n</i>)	Women (<i>n</i>)	
T1	24-hour drinking diary	46	11	68	10	135
	General drinking Questionnaire	33	9	66	10	118
	VAS expectancies Questionnaire	53	11	86	16	166
	Div. background questions	53	11	89	17	170
	T2	24-hour drinking diary	25	9	47	7
T2	VAS expectancies Questionnaire	33	9	63	10	115
	T3	General drinking Questionnaire	29	9	45	9
T3	VAS expectancies Questionnaire	29	9	45	9	92

T1, pretest measurements taken 1 day before the intervention; T2, measurements taken 24 hours after the intervention; T3, telephone interview 6 weeks after the intervention. Background questions addressed parents' drinking, education, peer group size, length of stay, and romantic relationships.

compared on two points in time. First, attrition at the 1-day posttest was analyzed using a logistic regression analysis. Attrition could not be predicted by condition, gender, age, alcohol expectancies, or measures of alcohol use. Second, attrition at the 6-week telephone interview was analyzed. Condition predicted dropout at this point in time (odds ratio = 3.836, $p = .02$). Significantly more control participants did not complete the last measure.

Measures

Several questionnaires were used to measure whether any changes in alcohol expectancies and alcohol use occurred.

Twenty-Four Hour Drinking Diary. After participants agreed to take part in the alcohol experiment, they were asked to fill out a drinking diary for the past 24 hours. In the drinking diary, they were asked if they had drunk any alcohol in the previous 24 hours and when they had had alcohol, at which times they had drunk, where the alcohol was consumed, and how much standard glasses of alcohol they drank. Twenty-four hours after the EC, participants (both control subjects and EC participants) reported their alcohol consumption of the last day.

General Drinking Questionnaire. To measure alcohol consumption in everyday life, participants answered questions about their alcohol consumption when not on vacation. Research shows that 80% of youngsters' alcohol consumption takes place when going out during the weekend (Knibbe et al., 1991); therefore, we asked how many alcoholic drinks they drank on typical weekdays, frequency of going out in the weekend, number of glasses consumed

Table 2

Test–retest reliabilities and internal consistencies of the arousal and sedation subscales of the VAS expectancy questionnaire in this study compared with Wiers et al. (2005)

	This study <i>N</i> = 105 (71 control subjects)	Wiers et al. (2005) <i>N</i> = 92 (46 control subjects)
Test–retest control subjects only (<i>r</i>)		
Arousal scale	.64	.79
Sedation scale	.70	.53
Internal consistencies (α)		
Arousal scale	.75	.86
Sedation scale	.66	.75

while going out, and number of glasses consumed before going out (at home or at a friend's house). In the Results, a combined measure of drinking while going out and drinking before going out is used.

Visual Analogue Scale of Arousal-Sedation Expectancies (VAS Expectancies). The VAS expectancies questionnaire was used to measure changes in expectancies that occurred after the intervention (Wiers et al., 2005). This questionnaire was chosen because it is relatively short, reduces memory effects that can occur with repeated administrations (Schwartz, 1999), includes equal numbers of items describing desirable and undesirable effects (Leigh and Stacy, 1993), and was previously successful in detecting changes in expectancies as a result of an EC (Wiers et al., 2005). Table 2 shows test–retest reliabilities and internal consistencies of the arousal and sedation subscales in our sample, in comparison with the larger student sample of Wiers et al. (2005). Test–retest reliabilities and internal consistencies are satisfactory.

The VAS expectancies scale consists of 12 arousal-sedation attributes. We modified the VAS expectancies somewhat to specifically target expectations for a high dose of alcohol. Table 3 shows items belonging to each subscale. Participants indicated on a unipolar, unmarked, 11-cm VAS scale to what extent they agreed with each of the 12 statements (e.g., “after drinking 6 or more glasses of alcohol I become energetic” disagree agree). It was expected that VAS arousal score would decrease as a result of the EC and VAS sedation score would increase.

Procedure

The study was conducted as a $3 \times 2 \times 2$ mixed analysis of variance (ANOVA) design (Time [pretest, 1 day postintervention, 6 weeks postintervention] \times Condition [EC, control] \times Gender [male, female]). One meeting was held in the EC condition, and participants in the control condition received assessment only. Participants were recruited by two teams of two peers. Each team of peers consisted of a young man and a young woman. All peers were university students between the ages of 19 and 21. All peers had received a comprehensive 2-day training on the pharmacological and expectancy effects of alcohol, health risks associated with excessive use of alcohol, and other important information on alcohol. In addition, peers received a 1-day training in which they learned about the theoretical background of

Table 3
Items belonging to the arousal and sedation subscales of the VAS expectancies questionnaire

Subscale	
Arousal items	After drinking 6 or more glasses of alcohol I become easy
	After drinking 6 or more glasses of alcohol I become active
	After drinking 6 or more glasses of alcohol I become funny
	After drinking 6 or more glasses of alcohol I become cheerful
	After drinking 6 or more glasses of alcohol I become excited
	After drinking 6 or more glasses of alcohol I become lively
	After drinking 6 or more glasses of alcohol I become energetic
Sedation items	After drinking 6 or more glasses of alcohol I become listless
	After drinking 6 or more glasses of alcohol I become woozy
	After drinking 6 or more glasses of alcohol I become quiet
	After drinking 6 or more glasses of alcohol I become passive
	After drinking 6 or more glasses of alcohol I become relaxed
	After drinking 6 or more glasses of alcohol I become calm
	After drinking 6 or more glasses of alcohol I become sleepy

Items are translations of adapted Dutch questionnaire.

the EC and were able to practice in performing the EC. Peers accosted young people who were spending time in front of their tent on camping sites. They were invited to participate in a study on alcohol. Approximately 35 youngsters declined the offer to participate, and other young adults were then asked to take part in the study. Youngsters who agreed to join were first asked for their age. The minimum age for participation was 18 years, in accordance with the regulations for serving hard liquor that are established in the Dutch Alcohol Licensing and Catering Act. Next, they were assigned to the EC or control group. Informed consent was obtained and preassessments were collected immediately (on the camping site, 1 day before the EC session). Postassessments were done approximately 24 hours and 6 weeks after the EC session (on the camping site and by a telephone interview, respectively). Participants in the control condition were also assessed at these times. The preassessment questionnaire took approximately 10–15 minutes to complete and included the 24-hour drinking diary, General Drinking Questionnaire, VAS expectancies, and several questions about parents' drinking, education, peer group size, length of stay, and romantic relationships. Participants in the experimental group met for the EC session the next day. In total, three groups of 10–15 participants participated in the EC and each session lasted 45 to 60 minutes. All three sessions were led by a different team of two trained students, in accordance with a written protocol. Twenty-four hours later, peers visited the participants again to collect posttreatment measures. Approximately 6 weeks after the EC, participants were contacted by a professional survey agency for the last assessment, which consisted of a telephone interview. For this interview the VAS expectancies was adapted for oral administration (instead of an 11-cm unipolar VAS scale, it was administered as an 11-point Likert-type scale). Furthermore, the last assessment included an oral version of the General Drinking Questionnaire.

Expectancy Challenge. The EC was based on the social/sexual challenge of Darkes and Goldman (1993). We adapted the EC for use in a holiday setting. This included reducing

the number of EC sessions from two to one and shortening and simplifying the theoretical explanation in the EC. Participants received a name tag and a breath analysis upon entering the room. If the breath analysis showed alcohol, they were not allowed to participate in the EC. After this, the intervention started. First, participants were asked to give five associations to the following sentence: “*Alcohol makes me . . .*”. Then, approximately 50% of participants received alcohol, whereas the other participants received a placebo beverage. Active deception was used: All participants were told they would receive alcohol, because balanced placebo research has shown that this works better than telling people in advance that half are getting placebo (Marlatt and Rohsenow, 1980, *cf.* Wiers et al., 2005).

Beverages consisted of 7 oz tonic combined with 1.5 oz vodka (~10 grams of pure alcohol) or 1.5 oz of flat tonic. The rims of all glasses were smeared with vodka and a vodka-soaked lemon wedge was placed on the rim (active deception, Marlatt and Rohsenow, 1980). All beverages were prepared by the “bartender” in full view of participants. To stimulate participants’ thirst, the tables had trays with salted peanuts and potato crisps on them. After the drinks were handed out, the group was split into two teams and a word game that involved drawing clues to a secret phrase (Pictionary) was played. When the game ended (after 10–15 minutes), it was revealed to participants that only half of them had consumed alcohol. Participants were then asked to write down who they suspected had drunk alcohol (or not) and to motivate why they chose these people. The names and motivations were then disclosed on a flip-over. Identification errors were used to give information about the operation of alcohol expectancies and to start a discussion on expectancy effects of alcohol. Expectations of enhanced sociability and sexuality were specifically targeted. Finally, participants underwent a breath analysis to measure their blood alcohol concentration (BAC) and signed a form stating they were aware of having a BAC of ___‰ and would bear that in mind in planning their activities and transportation the next few hours.

Assessment Only. Control participants filled out questionnaires at approximately the same times as experimental participants. No intervention was given to them, nor were there any meetings held.

Results

Initial Characteristics of Participants by Condition

ANOVAs were conducted to determine whether there were any differences between groups at pretest on background characteristics, expectancies, and drinking patterns. Table 4 presents baseline results for participants who completed at least the first two assessments. No significant differences were present between control and intervention group at pretest. Males drank more alcohol on a regular night out than females at pretest (21.1 and 8.2 standard drinks, respectively; $F(1, 115) = 20.73, p < .001$) and also consumed more alcohol on a typical vacation day (25.3 and 12.4 standard drinks, respectively; $F(1, 88) = 6.41, p = .01$).

Feasibility of an EC in a Holiday Setting

Feasibility of Recruitment of Participants. Participants were recruited by trained peers, who were able to answer any questions that emerged when filling out the preintervention questionnaire. It proved more difficult to recruit participants for the intervention group than

Table 4
Means (M) and standard deviations (SD) for demographic and background variables

Variable	EC		Control		Overall Sample		<i>p</i>
	M	SD	M	SD	M	SD	
Age	18.55	.89	18.93	1.50	18.80	1.33	.13
Alcohol consumption in 24 hours before intervention, in glasses	21.57	11.56	24.14	21.97	23.11	18.48	.52
Mean alcohol consumption on a night out, in glasses	16.44	9.33	20.47	13.48	19.03	12.27	.09
Total alcohol consumption from Monday to Thursday, in glasses	4.16	5.12	10.40	25.40	8.21	20.87	.12
Alcohol expectancies, sedation mean score	39.65	16.30	41.72	18.39	40.97	17.61	.55
Alcohol expectancies, arousal mean score	67.01	18.72	64.07	20.13	65.14	19.60	.44
Group size ^a	8.02	3.40	8.31	4.47	8.20	4.07	.70

^aRespondents reported the number of friends they were spending their holiday with (including themselves).

for the control group. Participants in the EC group needed to come to a community center for the 1-hour intervention. Many participants indicated they were not willing to come to the intervention location, because it was too far away from the camping site. Moreover, many youngsters who promised to take part in the EC failed to show up at the critical moment (Table 1). In addition, participants did not receive any compensation for the time they spent in the intervention, which may have led many people to decline the offer to participate or fail to show up at the last moment. The holiday situation may be another explanation why difficulties in recruitment were present. Young people on holiday are taking a “time-out” from obligations, which means that appointments are not taken as seriously and no agendas are used. Women were much more difficult to recruit for the study than men, and they were less inclined to drink alcohol for the purpose of an “alcohol experiment.”

Feasibility of EC Procedure. The EC sessions were led by a team of two peers. These peers received an 8-hour training on expectancy theory and the EC. Each peer was trained by performing the EC protocol on simulation participants. However, in actual practice, participants were much more noisy and were less willing to listen to the session leaders than in the training. In some cases, some of the participants left before the end. The active deception procedure convinced participants when the protocol was followed. However, in a few cases the drinks were not served ice cold and some participants stated that they did not taste any alcohol. In those cases, identification errors were made, and peers were unable to use discrepancies between predicted and actual drinkers as a starting point for their explanation. This is a point of attention for next studies. The EC was well received among young people, although some participants were a bit disappointed when they learned they had not received alcohol.

Costs of the Study. Most of the money was spent on salaries of peers (\$2,100) and their expenses for travel and accommodation (\$1,500). Because the peers also collected questionnaires, they worked more hours than they would have if no research was attached. Because the purpose of the study was to evaluate the intervention, a professional survey agency was hired for conducting telephone interviews after the holiday was over (\$1,400). Other costs were made for the purchase of vodka, tonic, lemons, posters to decorate the EC location, measuring cups, a few knives, and potato crisps (\$200).

Lessons Learned. There were several points for improvement of implementation. Some of the peers expressed that they should have been trained more thoroughly and had missed guidance when practical problems emerged. There were not enough peers present to be fully in command of the situation, and the locations for performing the EC were too far from the camping sites, which led to high attrition by participants unwilling to show up. For the deception procedure to succeed, it was important that the drinks were served chilled. It can be considered positive that intervention participants were less likely to drop out than control subjects. In addition, young people enjoyed participating in the intervention.

Changes in Expectancies

VAS expectancies were analyzed in a $3 \times 2 \times 2$ (Time \times Condition \times Gender) mixed ANOVA, with Time as within-subject variable and Condition and Gender as between-subject variables. The VAS arousal scale showed a statistical trend for the main effect of Time ($F(2, 83) = 2.99, p = .06$). The Time \times Condition \times Gender interaction was significant ($F(2, 83) = 3.66, p = .03$); therefore, we analyzed the interaction between Time and Condition separately in men and women. In men, the interaction between Time and Condition was not significant ($F(1, 68) = 1.43, p = .24$). The expected decrease in arousal expectancies in the experimental group was not found, although Figure 1 suggests that the EC may have worked to prevent an increase in arousal expectancies observed in the control subjects. In women, the Time \times Condition interaction showed a statistical trend ($F(1, 16) = 2.96, p = .08$), but the difference was only found at pretest ($t(17) = -2.0, p = .07$), in the absence of differences at the two posttests (p 's $> .25$).

On the VAS sedation subscale, a statistical trend was found for Time ($F(2, 83) = 2.45, p = .09$). The Time \times Condition interaction was significant ($F(2, 83) = 3.20, p = .05$). There was no interaction between Time, Condition, and Gender ($p > .80$). Participants in the experimental condition expected significantly more sedating effects from alcohol on the posttests than participants in the control group. However, as shown in Figure 2, sedation expectancies did not increase in the experimental group. The significant effect came from a decrease in sedation expectancies in the control group at the 6-week follow-up.

Changes in Alcohol Consumption

Changes in drinking were explored at two points in time: (1) drinking in the 24 hours after the EC and (2) alcohol consumption on week days and weekend days 6 weeks after the EC (after the vacation was over). To evaluate whether a change in drinking occurred in the 24 hours after the EC, a $2 \times 2 \times 2$ (Time \times Condition \times Gender) mixed ANOVA was conducted with alcohol consumption as a dependent variable. We compared alcohol consumption at pretest with consumption the day after the EC. Unfortunately, many participants could not be reached for the second measurement or failed to fill out the questions about alcohol

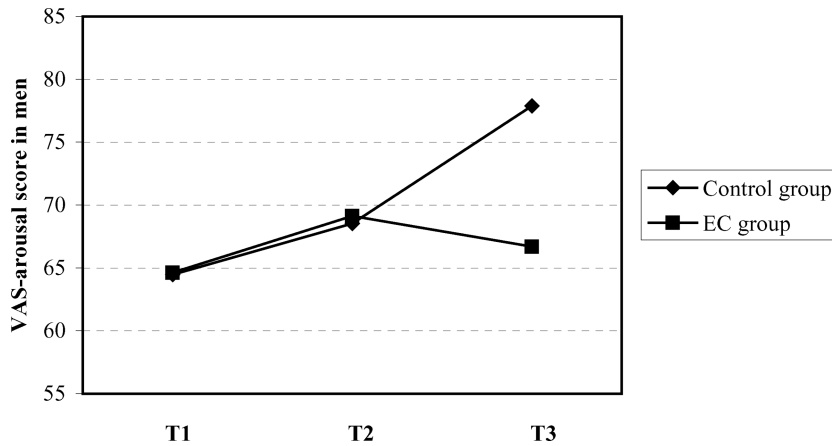


Figure 1. Change in VAS arousal expectancies in men, by condition. Assessments were done a day before the intervention (T1), 24 hours after the intervention (T2), and 6 weeks after the intervention (T3).

consumption, which resulted in high attrition for analyses concerning alcohol consumption (see Methods, Selective Attrition). Alcohol consumption did not change in the first 24 hours after the EC. The effect of Time was not significant ($p > .50$), and no interaction effects were present between Time and Condition ($p > .50$) and Time, Condition, and Gender ($p > .40$).

Alcohol consumption 6 weeks after the intervention was analyzed using $2 \times 2 \times 2$ (Time \times Condition \times Gender) mixed ANOVAs with alcohol consumption during ordinary weekdays and total consumption on a night out as dependent variables. When total alcohol consumption on a regular night out was compared from pre- to posttest, a significant Time effect was found ($F(1, 88) = 3.89, p = .05$). Either alcohol consumption decreased in both EC and control participants at the posttest or perception of alcohol consumption may have differed at home (lighter) versus on holiday (heavier). No Time \times Condition effect was present ($p > .50$), and Gender did not interact with the interaction between Time and

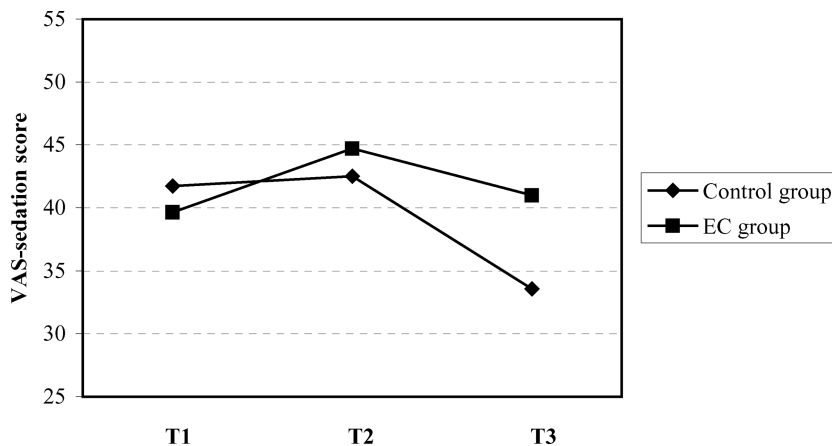


Figure 2. Change in VAS sedation expectancies, by condition. Assessments were done a day before the intervention (T1), 24 hours after the intervention (T2), and 6 weeks after the intervention (T3).

Condition ($p > .50$). Alcohol consumption on weekdays did not show any changes from pre- to posttest. Time and the interaction between Time and Condition were nonsignificant ($p > .30$ and $p > .50$, respectively). Gender did not interact with Time \times Condition ($p > .50$).

We inspected relations between expectancies and alcohol consumption and unexpectedly found no correlations. Pretest VAS arousal and VAS sedation expectancies did not correlate significantly with pretest alcohol consumption on a night out nor with pretest alcohol consumption on holiday (Pearson's correlation VAS sedation score, alcohol consumption on a night out $r = -.03$; VAS arousal score, alcohol consumption on a night out $r = .13$; VAS sedation score, alcohol consumption on holiday $r = .11$; VAS arousal score, alcohol consumption on holiday $r = .11$).

Discussion

This study examined whether an EC procedure that has been shown effective in (male) heavy drinkers could be transferred from a (bar-) lab setting to a targeted intervention in the field. Performing the EC in a real-life setting proved feasible, and the EC was well accepted by our target group. However, the current study had several limitations: high attrition, high percentage of missing values, and less-than-perfect performance by the peers. Recruitment and attrition problems need to be tackled, for instance, by recruiting youngsters the same day the EC takes place, performing the EC at the actual camping site, or providing transportation to the EC location. The peers performing the EC may need to be trained more extensively, and on-the-spot supervision should be present during the ECs. Presence of a third peer would aid in better performance of the EC. It is important to capture youngsters' attention by using appealing examples. Further studies should consider conducting the EC in a holiday setting with men only, because males proved easier to recruit and drank much heavier than females and may therefore decrease their drinking more after an intervention.

The intervention did not change expectancies exactly as predicted: A *decrease* in arousal expectancies was not found (*cf.* Wiers et al., 2005), and an *increase* in sedation expectancies was not found (both were found with the same instruments in "heavy drinking" college students in a longer EC in a bar-lab; Wiers et al., 2005). However, it is possible that the intervention countered natural changes in expectancies that may have occurred after the holiday was over. The EC may have countered the decrease in sedation expectancies that took place in the control group but not in the intervention group.

In summary, we found some indications of effects of the EC on expectancies in heavy drinking men and women. Although these effects were not exactly as predicted, the EC group may have benefited from the intervention. No effects on alcohol consumption were observed in the 24 hours after the EC, and a decrease was not observed on weekdays or during nights out at the 6-week follow-up.

In an attempt to explain our results, we inspected correlations between expectancies and alcohol use in our data. These correlations were low here (not significant) compared with previous studies (Goldman et al., 1997; Leigh and Stacy, 1993; Wiers et al., 1997, 2005). Five possible explanations for the low correlations between expectancies and alcohol consumption were examined. First, it is possible that expectancies were measured inaccurately. Because expectancies were measured in a holiday environment (e.g., a tent on a camping site), it is easy to conceive how error can arise. However, test-retest scores on expectancies were sufficiently good in the control group, which suggests expectancies were measured reliably (see Method). Second, we examined test-retest reliabilities of alcohol consumption on week, weekend, and vacation days in the control group over time.

These were satisfactory (r 's $> .60$), which suggests alcohol consumption was well measured. Third, within-subject variation in alcohol consumption could be high over different drinking moments due to situational influences. In our study, we found indications of the opposite: Alcohol consumption during a regular night out correlated moderately with alcohol consumption on holiday ($r = .64$), which suggests that individual characteristics determine consumption rather strongly, irrespective of the situation. Fourth, the absence of significant correlations between expectancies and alcohol use can be seen as support for criticism of the hypothesized causal role of expectancies in alcohol consumption (*cf.* Jones et al., 2001). However, considering that many studies have confirmed a significant correlation between expectancies and consumption (Goldman et al., 1999), also with the instruments used here (Wiers et al., 2002), we suspect specific features of the situation or target group may have caused our results to differ. Fifth, the insignificant results may be the result of "restriction of range": All included participants were heavy drinkers and expectancies may only correlate with drinking in mixed groups of young people (i.e., light and heavy drinkers). This is an issue for future research.

Why were only limited effects on expectancies found? First, one could argue that the questionnaire that was used to measure expectancies was inappropriate. It cannot be ruled out that effects would have been found with other expectancy measures; however, the VAS expectancies questionnaire was previously successful in detecting differences in expectancies in an EC (Wiers et al., 2005) and had many advantages that made it suitable for our research design. Second, another reason for the limited effects on expectancies may be the less-than-perfect implementation of the EC. Results of the intervention could improve after implementation flaws are tackled. Third, duration of the EC session (45–60 minutes) may have been too short for large changes to occur (the EC in Wiers et al., 2005, lasted several hours and all other effective ECs used multiple sessions on different days; Wiers, 2002). Similarly, changing drinking behavior may require more extensive information than the peers were able to provide in this short time. Perhaps a somewhat longer EC (± 90 minutes) or an EC followed by a single-session motivational interview (Wiers et al., 2003, 2005) could achieve larger changes in alcohol expectancies and consumption.

In conclusion, the present study indicates that an EC with young people on holiday is feasible and generally well accepted among young people. Some effects on expectancies may have been present in men and women; however, no effect on alcohol use was present. Further studies in which implementation of the intervention is optimized are needed to come to more definite conclusions about the value of the EC for interventions in binge-drinking youth.

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RÉSUMÉ

Le 'Expectancy Challenge' (challenge de l'attente) sur l'alcool est un programme très prometteur destiné à modifier les attentes de l'alcool et à réduire la consommation d'alcool

des jeunes, buveurs excessifs, dans un bar-laboratoire. Dans cette étude, le EC a été adapté pour être appliqué à des groupes comprenant des personnes des deux sexes, dans un contexte de vacances, et sa faisabilité a été testée dans des chaînes de campings aux Pays-Bas où beaucoup de soirées où la consommation d'alcool est excessive ont lieu (été 2002). Les participants masculins et féminins ($N = 170$; d'âge moyen, 18.8 ans) ont été désignés au hasard pour participer à ce EC ou pour permettre une simple évaluation de contrôle du groupe. Un jour avant l'intervention, les attentes de l'alcool ont été mesurées au moyen d'une Echelle analogue visuelle, les attentes d'effets excitants ou calmants ont été mesurées par un questionnaire (questionnaire sur les attentes au moyen d'une échelle analogue visuelle). Dans le même temps et respectivement, la consommation d'alcool quotidienne et pendant les vacances était enregistrée au moyen d'un questionnaire sur la consommation générale d'alcool et par un journal de bord de la consommation alcoolique sur 24 heures. 24 heures après l'intervention, le questionnaire sur les attentes à échelle analogue visuelle était soumis aux participants une seconde fois et la consommation d'alcool des dernières 24 heures était notée dans le journal de bord de consommation alcoolique. Six semaines après l'intervention, les participants recevaient un appel téléphonique et devaient répondre oralement au questionnaire sur les attentes de l'alcool, à échelle analogue visuelle, et au questionnaire sur la consommation générale d'alcool. Les données ont été enregistrées en appliquant des ANOVA mélangées. Bien que l'étude ait rencontré quelques obstacles en raison de la difficulté de recruter des participants, le EC s'est révélé faisable dans sa forme; il a été bien accueilli parmi les jeunes gens et a peut-être eu des incidences sur les attentes de l'alcool. Mais aucune modification n'a été constatée sur leur consommation d'alcool. En conclusion, l'application doit être améliorée et davantage d'études doivent avoir lieu pour obtenir des conclusions plus définitives sur la valeur du EC dans une intervention implémentée dans la vie courante.

Mots clés adolescence; consommation alcoolique; consommation excessive d'alcool en une seule soirée; Expectancy Challenge (challenge de l'attente); intervention

RESUMEN

El desafío a la expectativa del consumo de alcohol es un programa promisorio que se realiza habitualmente en un marco de laboratorio-bar para cambiar las expectativas del consumo de alcohol y reducir el consumo del mismo entre jóvenes de sexo masculino. En este particular estudio el EC se adaptó para usarlo en grupos mixtos en un contexto vacacional y su viabilidad se sometió a prueba en campings en Holanda donde es habitual el consumo elevado de alcohol. Tanto a los participantes femeninos como a los masculinos ($N = 170$; edad promedio, 18,8 años) se les asignó un EC o un grupo de control de evaluación. Un día antes de la intervención, se midieron las expectativas del consumo de alcohol por medio de una escala visual análoga de expectativas de reacción-sedación (cuestionario de expectativas medidas por medio de una escala visual análoga-o VAS, del inglés-). Al mismo tiempo, se determinó el consumo de alcohol en la vida diaria y durante las vacaciones mediante un Cuestionario de Patrones de Bebida y un Registro del Consumo de Bebidas durante 24 horas. Pasadas veinticuatro horas después de la intervención los participantes volvieron a rellenar el cuestionario de expectativas VAS y a registrar su Consumo de Bebidas en el Diario. Seis meses después de haber sido efectuada la intervención, se llevó a cabo una versión telefónica del cuestionario de expectativas VAS y del Cuestionario de Patrones de Bebida. Los datos obtenidos fueron estudiados usando diferentes análisis de varianzas. Aún teniendo en cuenta las dificultades para encontrar personas dispuestas

a participar en este experimento, el EC fue viable en este marco, fue bien recibido por los jóvenes e incluso es probable que haya habido efectos en las expectativas del consumo de alcohol. No se encontró ningún efecto en el consumo de alcohol. En conclusión, es necesario mejorar la implementación e incrementar el número de estudios para llegar a conclusiones más definidas respecto al valor del EC en intervenciones en la vida real.

Palabras claves: adolescencia; consumo de alcohol; consumo elevado de alcohol; desafío a la expectativa; intervención

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Glossary

Arousal Expectancies: When people anticipate that they will become easy-going, funny, cheerful, excited, lively, energetic, etc. after drinking alcohol.

Binge Drinking: In the Netherlands, a standard drink contains approximately 10 grams of pure alcohol (vs. 14 grams in the United States). For women, we consider five or more standard drinks on one occasion to be a binge, whereas for men a binge is defined as six or more standard drinks on one occasion. Binge drinking often occurs among young people during the weekend and on holiday without their parents.

Expectancy Challenge: Intervention designed to change unrealistic positive expectancies by allowing young people to experience for themselves that some of their alcohol expectancies are flawed.

Sedation Expectancies: When people anticipate that they will become relaxed, sleepy, woozy, quiet, calm, listless, etc. after drinking alcohol.

Time-Out Situation: Circumstances in which normal behavioral rules do not apply. Young people consider holiday without their parents a time-out situation, which is characterized by being unsupervised and having few social responsibilities.

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