

Efficacy of a Brief Cognitive Behavioral Therapy Program to Reduce Excessive Drinking Behavior Among New Recruits Entering the Irish Navy: A Pilot Evaluation

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ABSTRACT This pilot study evaluated the efficacy of a brief cognitive behavioral therapy (CBT) intervention program designed to reduce excessive pre-enlistment drinking behaviors in a sample of Irish Navy recruits undergoing a 16-week basic training course. Participants were randomly allocated to either a treatment (TG) or control group (CG) ($N = 13$ each). The program was conducted over four consecutive 1.5-hour weekly sessions. Data were collected at pre and post intervention as well as at a 2-month follow-up. In comparison to those in the control group, participants who received the intervention reported increased scores ($p < 0.05$) in readiness to change drinking at time 2 and reduced scores in binge drinking ($p < 0.05$) at time 3. There were also marginal changes in self-efficacy and risky drinking behavior. This work adds to the evidence of the emerging efficacy of a workplace CBT intervention for unhealthy drinking.

INTRODUCTION

The association between excessive alcohol consumption and related consequences within military settings is well established.¹⁻³ However, what is unclear is the existence of evidence-based interventions within military organizations that lessen drinking behaviors. This article examines the efficacy of a brief cognitive behavioral therapy (CBT) intervention designed to decrease pre-enlistment unhealthy drinking behaviors among Irish Navy recruits.

Emerging work indicates the potential for CBT interventions to reduce drinking in clinical settings.⁴⁻⁶ However, there is still a paucity of data to support the effectiveness of workplace alcohol programs. To our knowledge the potential of the Navy as an occupational environment capable of supporting such interventions has never been tested. Indeed, Fernandez et al.¹ recommended a randomized control trial be conducted to assess the feasibility of brief counseling interventions to reduce at-risk drinking among military personnel. This is particularly important given that sailors work in a rather unique, hazardous, lived-in work setting where alcohol misuse could be construed as an occupational hazard, with binge drinking for some regarded as a default social activity.^{1,7,8}

There is a dearth of research on pre-enlistment drinking within the European military community. This apparent lack of information is important, given that within the U.S. military, Ames et al.⁹ argue that recruits come from a demographic cohort that are already more susceptible to problem drinking in comparison to their civilian counterparts. Taylor et al.³ found a link between patterns of heavy pre-enlistment

alcohol use and negative alcohol-related consequences after recruits completed their basic training. In sum, military personnel having their careers terminated prematurely, as a result of excessive drinking, represents a significant financial loss to the taxpayer.³

There is reason to believe that the drinking behaviors of Irish Navy recruits (age range 17–26 years) accurately reflects the prevailing excessive drinking culture of young adults in contemporary Irish society.¹⁰ However, Irish Navy recruits enter an alcohol prohibitive training regime where opportunities for excessive drinking are severely restricted. We suggest recruit training (16-weeks duration) provides an ideal prolonged window of opportunity for the implementation of a work-based alcohol intervention.

In an effort to gain a better understanding of the various types of drinking behaviors, we used the Alcohol Use Disorders (AUD) dimensions, which is based on the premise that an individual's unhealthy relationship with alcohol is viewed along a problem-drinking continuum.¹¹ Situated at one continuum end is risky drinking (a pattern of drinking that increases the chances of harmful consequences for the individual or for others) with alcohol dependence located at the opposite end.¹¹ Binge drinking (which exists separately from the AUD continuum) is defined in Ireland as a single occasion of excessive drinking that involves consuming six or more standard drinks.¹²

A line of research argues that the effects of alcohol are not simply a factor of alcohol's physiological effects but rather a function of the beliefs one holds regarding these effects.¹³ Such beliefs known as alcohol expectancies (AEs) are representations of alcohol-related reinforcement.¹⁴ However, AEs are not stand-alone predictors of alcohol consumption; a second cognitive set, relating to self-efficacy judgments, has also been hypothesized as central.¹⁵ Oei et al.¹⁶ define drink refusal self-efficacy as one's ability to refuse alcohol at will in high-risk drinking situations. Moos¹⁷ suggests that for changes in

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alcohol consumption to occur, there must be a reduction in clients' positive AEs and an increase in their self-efficacy to resist alcohol in high-risk social settings. Allied to the expectancies theory is a motivational dimension where individual desire for change is considered an important variable for a successful treatment outcome and thus has implications for interventions.¹⁸

This study aimed to evaluate the efficacy of a brief CBT alcohol intervention in reducing recruits' unhealthy drinking by challenging cognitions and building up skill deficits. We hypothesized that compared to the control group (CG), participants who completed the intervention would at time 3:

- (i) Show a reduction in their mean level of self-reported binge and risky drinking behavior.
- (ii) Demonstrate an increase in their mean readiness to change their drinking.
- (iii) Increase their mean ability to refuse alcohol in high-risk social situations.
- (iv) Decrease their mean alcohol expectancies.

METHODS

A treatment and control pretest, post-test and follow-up randomized experimental design was used in this research piece. Randomization was achieved by participants first placing their name into an unmarked envelope, which was then sealed. A recruit, who was not involved in the study, shuffled the envelopes and subsequently allocated them alternatively into a box marked either treatment group (TG) (for assignment to treatment group) or control group (CG) (for assignment to control group).

Participants

Twenty-six navy recruits (all of whom were of a basic recruit rank) from a class intake of 30, volunteered to participate in this intervention 2 weeks after their enlistment in October 2007. The sample consisted of 24 males and two females. There was not a significant difference between the mean ages (21.46 years [SD = 3.01; range, 18–26]) of both groups, $t(24) = 0.446, p > 0.05$.

Intervention

The intervention protocol used was adapted from a similar treatment protocol used in Australia with a civilian sample of young people.¹⁹ The program conducted over 4 consecutive weeks, was delivered on base during working hours and commenced 1 week after baseline measures were administered. Sessions were of 1.5-hours duration with alcohol education, cognitive restructuring, and social skills training techniques being administered throughout. All sessions began with a review of the previous week's alcohol consumption, homework practice, and contained the following input:

- Session 1: The facilitators collaborated with participants to establish ethical boundaries. Alcohol education on the following issues was imparted: what is binge

drinking and healthy drinking limits and how to calculate the total amount of units in different beverages.

- Session 2: The CBT model of mental health was introduced. Participants were familiarized with the thoughts, feelings, and behavior cycle, which allowed them to access alternative cognitions, which in turn could help to adjust their feelings and behaviors. The consequences of getting drunk were reviewed where participants were requested to share what they perceived to be pleasant and unpleasant about alcohol intoxication.
- Session 3: Cognitive restructuring was implemented by challenging participants to review their beliefs (e.g., "What are some things you might not like so much about reducing or changing the way you use alcohol?"). Participants were also asked questions about the perceived benefits of change (e.g. "What are some good things about reducing or changing your alcohol intake?") Similarly participants were challenged on their positive and negative beliefs on what it meant for them to drink alcohol (e.g., "How could you overcome any personal barriers in expressing your feelings without having to drink alcohol?").
- Session 4: Participants were asked to identify risky drinking scenarios such as a house party in order to formulate healthy drinking plans. Drink-refusal skills were then explained and modeled to participants by the facilitators. Participants subsequently working in pairs, role played their alcohol refusal skills under the facilitators' supervision.

Procedure

- Time 1: The facilitators introduced participants to the study 1 week before the commencement of the intervention. After written consent was obtained, participants completed outcome measures. In week 2 of training, TG participants undertook the first intervention session.
- Time 2: On week 6 following the intervention completion, post measures were administered.
- Time 3: On week 14 follow-up measures were administered.

Measures

The Alcohol Use Disorders Identification Test [AUDIT]

AUDIT is considered a well-validated reliable questionnaire. Individual questions were scored using a five-point scale (0–4).²⁰ Because of AUDIT's length, several shorter versions exist including AUDIT-C, which comprises the first three questions of the full AUDIT (sensitivity 0.96, specificity 0.70).²¹ Consumption levels in this research piece were assessed using AUDIT-C (range 0–12, with a recommended screening threshold of ≥ 4 for risky drinking).²¹

Drinking Expectancy Profile (DEP)

The DEP was designed as a means of assessing the two key cognitive constructs associated with the development of alcohol

problems, AEs, and drink refusal self-efficacy.²² Part 1 of the DEP is the Drinking Expectancy Questionnaire (DEQ).^{22,23} A recent examination of the DEQ's validity revealed a shorter questionnaire consisting of five factors to be more reliable.²³ These factors are: negative consequences, increased confidence, sexual enhancement, cognitive change, and tension reduction (with the last four classified as positive expectancies). This new revised scoring for the DEQ was found to withstand confirmatory factor analysis and had robust psychometric properties (that other scales may lack) that the original factor structure did not.²³ Consequently, the revised scoring of the DEQ was used in this study with higher scores reflecting stronger expectancies.¹⁴

The second part of the DEP, the Drinking Refusal Self-Efficacy Questionnaire Revised (DRSEQ-R) is a 19-item self-report scale assessing participants' beliefs about their ability to refuse alcohol in certain drinking situations.¹⁴ Correlations between the factors suggest that a total DRSEQ-R score may be used as a general indicator of refusal, with higher scores indicating a stronger confidence in resisting alcohol.¹⁴ A number of tests of validation have shown similar results to those that have been used previously to validate the original DRSEQ.²⁴

Readiness Ruler

A Readiness Ruler similar to the one devised by Miller et al.²⁵ was used to assess participants' readiness to change their drinking. Participants were asked to rate on a scale of 1 to 10 the following question:

“How important is it for you to change your drinking?”
(with 1 being not important and 10 being very important)

Customer Satisfaction Rating Scale

To evaluate the intervention program, TG participants completed a modified 7-question, post intervention satisfaction questionnaire that was originally used by Larsen et al.,²⁶ at time 3.

Data Analysis

To test for the effects of the intervention a series of a split plot analyses of covariance (ANCOVA) were conducted, with

group (TG vs. CG) as a between-groups factor and time (time 2 vs. time 3 scores) as a within-groups factor. Scores at time 1 on the various measures were used as a covariate to control for individual differences. Dependent variables were: frequency of binge drinking, readiness to change drinking behavior, drink refusal self-efficacy, risky drinking behavior, and AE.

Ethical approval to undertake this experiment had been obtained by the Department of Applied Psychology's (University College Cork) Ethics Committee.

RESULTS

It is worth noting that, based on self-reports at time 1, 23% of participants ($n = 3$) in both groups could also be classified as regular binge drinkers who binge drank at least twice weekly before enlistment. The frequency of binge drinking at least once monthly, as well as the degree of risky drinking behavior (both group means were above the screening threshold), were similar for both the TG and CG. Table I shows the mean scores (with standard deviations in parentheses) at times 1, 2, and 3 for both groups for the outcome measures taken.

Analysis of the binge drinking scores indicated a nonsignificant main effect of time, $F(1, 23) = 0.615, p > 0.05$ or group, $F(1, 23) = 0.909, p > 0.05$. There was a significant time–group interaction, $F(1, 23) = 4.827, p < 0.05$, with a moderate effect size (partial eta squared = 0.177).²⁷ Post hoc analyses at time 3 indicated TG participants had significantly lower self-reported binge drinking scores in comparison to the CG scores.

Analysis of the readiness to change drinking behavior scores indicated there was no significant main effect for time, $F(1, 23) = 0.873, p > 0.05$ or group, $F(1, 23) = 2.345, p > 0.05$. The group–time interaction effect was statistically significant, $F(1, 23) = 3.359, p < 0.05$, with a moderate effect size (partial eta squared = 0.127).²⁷ Post hoc analysis indicates that at time 2 those in the TG had significantly higher scores in their motivation to change their drinking.

Analysis of the drink refusal self-efficacy scores of the participants indicated that there was no significant main effect for time, $F(1, 23) = 1.573, p > 0.05$ or group, $F(1, 23) = 1.873, p > 0.05$. The group–time interaction effect was not statistically significant, $F(1, 23) = 1.736, p > 0.05$, with a moderate

TABLE I. Group Means (With Standard Deviations in Parentheses) at Three Assessment Points

Measure	N = 13					
	Time 1		Time 2		Time 3	
	TG	CG	TG	CG	TG	CG
Drink Refusal Self-Efficacy	77.23 (11.28)	88.69 (13.19)	81.92 (14.84)	83.85 (21.20)	91.08 (13.63)	88.31 (15.67)
Increased Confidence Factor	45.50 (3.01)	55.38 (9.98)	39.17 (3.01)	37.85 (7.98)	37.33 (7.06)	36.38 (6.36)
Negative Consequences	27.61 (6.10)	25.70 (6.10)	32.70 (5.81)	28.61 (5.36)	31.15 (6.53)	30.31 (9.86)
Increased Sexual Interest	12.61 (2.40)	12.46 (1.71)	12.15 (1.72)	12.23 (1.54)	11.77 (1.83)	12.38 (2.14)
Cognitive Enhancement	6.31 (1.60)	4.77 (1.79)	5.54 (1.71)	5.15 (1.90)	6.77 (2.44)	5.46 (1.61)
Tension Control	8.08 (2.99)	7.15 (2.19)	7.61 (2.36)	7.27 (2.36)	7.69 (2.81)	7.46 (2.73)
Readiness to Change Drinking Behaviors	4.92 (2.90)	3.77 (2.24)	7.23 (2.86)	4.31 (2.66)	5.77 (3.27)	5.08 (2.69)
Frequency of Binge Drinking (Range 0–4)	1.77 (1.17)	1.54 (0.97)	1.69 (0.75)	1.46 (1.12)	1.31 (0.95)	1.77 (0.83)
Risky Drinking Behavior (Range 0–12)	6.85 (3.08)	6.38 (2.27)	5.77 (1.83)	5.62 (2.90)	5.31 (2.60)	6.08 (2.25)

effect size (partial eta squared = 0.07).²⁷ However, an inspection of the means indicate that the trend is in the predicted direction at time 3.

Analysis of the risky drinking behavior scores indicates a non significant main effect of time, $F(1, 23) = 0.618, p > 0.05$ or group, $F(1, 23) = 0.981, p > 0.05$. There was not a significant time–group interaction, $F(1, 23) = 1.618, p > 0.05$, with a medium effect size (partial eta squared = 0.066).²⁷ Nevertheless, an inspection of the means would indicate that TG participants’ scores at time 3 were lower and this trend is in the predicted direction.

Analysis of the AEs factor scores indicated that there were no significant effects. In the interests of brevity the analysis for total AEs is reported here, rather than individual factors. This analysis indicates that there was no significant main effect for time, $F(1, 23) = 0.196, p > 0.05$, or group, $F(1, 23) = 0.271, p > 0.05$, or interaction effect, $F(1, 23) = 0.150, p > 0.05$.²⁷ This is an unexpected result.

Customer Satisfaction Questionnaire

The vast majority of participants provided positive feedback on the benefits of the intervention, the evidence of which is displayed in Table II below.

DISCUSSION

This pilot study aimed to examine the efficacy of a brief CBT alcohol intervention for Irish Navy recruits. TG participants changed their self-reported alcohol consumption levels such that they decreased their self-reported binge drinking in tandem with an increase in their readiness to change their drinking behaviors. There were marginal changes in self-reported risky drinking behavior and self-efficacy in the predicted direction. These results provide preliminary evidence that a CBT group intervention can have positive benefits in reducing excessive pre-enlistment alcohol consumption for Irish Navy recruits.

An examination of the data shows that TG participants reduced their self-reported binge drinking frequency at time 2. Although encouraging, such scores represent a reduction within a frequency range of binge drinking, rather than a

step change into a lower frequency category. In contrast CG participants actually increased the regularity of their self-reported binge drinking from their original baseline scores. There was a similar trend in relation to the results of TG participants’ self-reported risky drinking behaviors, in that they also decreased their self-reported risky drinking levels, while the CG increased theirs. It is important to note that Christmas fell between times 2 and 3, where participants returned home for 2 weeks of annual leave. In Ireland as in many other countries the festive season is associated with heavy drinking; evidence of this can be seen in data from the CG. It is encouraging to note the intervention was able to counter this cultural imperative. Although the self-reported reduction in risky drinking behavior represents a medium statistical effect size, TG participants at time 3 were still drinking at a level above the cutoff point for risky drinking. This modest reduction represents an important first step in curtailing Irish sailors’ unhealthy drinking behavior. Although the follow-up was of short duration, there is evidence that such decreases maintain over a longer time period.^{5,6} Such a lowering of alcohol intake, within a larger population, would lessen the burden of drink-related repercussions.^{1–3,10}

As would be expected, the TG’s readiness to change their drinking was higher than that of the CG at time 2. Such scores suggest an approximate readiness to moderate drinking levels.²⁵ However, this change was not evident at time 3. It is critical to maintain this motivational shift as young people are considered an ambivalent subgroup when it comes to making changes around unhealthy alcohol use.¹⁷ From an intervention perspective, it could suggest the requirement for the use of regular booster sessions to maintain individual shifts in readiness to change drinking from the initial program.

Notwithstanding the changes in self-reported drinking behavior, we did not observe any changes on AEs and thereby failed to find evidence to support Moos’s contention.¹⁷ However, there were marginal increases in self-efficacy scores. This may, however, suggest that such minimal adjustments may be reflective of the motivational ambivalence of this cohort. In addition, the decrease in readiness to change drinking at time 3 may indicate that for enduring change to be effective there needs to be a modifying of AEs and

TABLE II. Participants’ Evaluation of the Intervention

Question	Yes Definitely, %	Yes Generally, %	No Not Really, %	No Definitely Not, %
Has this program been personally beneficial?	7.7 (n = 1)	76.9 (n = 10)	15.4 (n = 2)	0
Would you recommend this program to a fellow recruit?	7.7 (n = 1)	76.9 (n = 10)	15.4 (n = 2)	0
Has the psychoeducation part of the program been personally relevant?	23.1 (n = 3)	69.2 (n = 9)	7.7 (n = 1)	0
Has the program helped you to refuse alcohol in previously personal high-risk drinking situations?	0	53.8 (n = 7)	46.2 (n = 6)	0
Has the program helped you to challenge personal alcohol expectancies?	7.7 (n = 1)	46.2 (n = 6)	30.8 (n = 4)	15.4 (n = 2)
Is there merit in including this program on all future Navy recruit training syllabi?	53.8 (n = 7)	46.2 (n = 6)	0	0

self-efficacy. An obvious strategy would be to increase the program duration such that positive AEs in particular could be challenged more thoroughly. Nevertheless, the effectiveness of having a skills-based element to an intervention program in reducing alcohol use is consistent with earlier findings.²⁸

Limitations of this study include its reliance on self-report measures of alcohol consumption. The internal validity of the experiment could have been compounded, as participants may have been tempted to under-report their consumption levels due to their fear of potential career consequences. The relatively modest sample size and short-term follow-up may also limit our ability to comment on the study's generalizability. Finally, the sample used was drawn from a primarily male population (93%) and as such no conclusions can be drawn as to its efficacy for female naval personnel, albeit that within the study sample the female participants did not differ significantly on any of the scores. Despite these considerations, it was a randomized controlled trial with three assessment occasions, where the sample accurately reflects the gender difference that exists within the Irish Navy. Customer satisfaction data indicates strongly how personally beneficial the program had been for participants, as well as containing a unanimous endorsement for the inclusion of this intervention on all future recruit syllabi.

In summary, this innovative study is the first ever to have evaluated the feasibility of a CBT alcohol intervention within military settings. Evidence of self-reported pre-enlistment drinking has been presented and findings suggest this intervention could enhance retention by effectively curtailing recruits' excessive alcohol use at their service commencement. Further research involving a larger sample size within the Irish Navy is required to ascertain the effectiveness of this promising intervention.

In conclusion the prevalence of unhealthy drinking in Ireland is the cause of major societal concern.¹⁰ We echo Taylor et al.'s assertion of the naivety of expecting recruits to decrease their drinking once enlisted, given what the evidence suggests^{3,7,9} without an appropriate alcohol intervention. The present intervention represents one such feasible option.

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