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The beliefs about pros and cons of drinking and intention to change among hazardous and moderate alcohol users: a population-based cross-sectional study

Fredrik G. Ansker[1], Asgeir R. Helgason[2,3,4], Kozma Ahacic[2,3]

1 Uppsala Universitet, 751 05 Uppsala, Sweden
2 Department of Public Health Sciences, Karolinska Institutet, Tomtebodavägen 18A, 171 77 Stockholm, Sweden
3 Centre for Epidemiology and Community Medicine, Health Care Services, Stockholm County Council, 171 29 Solna, Sweden
4 Reykjavik University, Iceland

Correspondence: Fredrik G. Ansker, Hagagatan 4, 113 48, Stockholm, Sweden, Tel: +46 (0) 73 63 31790, e-mail: fran3499@student.uu.se

Background: Fundamental to supporting hazardous alcohol users are the rationales for reducing alcohol intake highlighted by the users themselves. This study analyses the relative importance of beliefs about pros and cons of drinking in relation to having an intention to reduce intake among both hazardous and moderate alcohol users. **Methods**: Intention to change was assessed in a representative sample of Stockholm's population ($n = 4278$, response rate 56.5%). Alcohol use was assessed using the Alcohol Use Disorders Identification Test measure. A decisional balance inventory was used to examine various beliefs about the pros and cons of drinking, which covered affect changes, social gains and losses, and possible adverse effects. Independent correlations were determined by logistic regression using a backward exclusion procedure ($P > 0.05$). **Results**: Higher ratings of importance were generally related to intent, whether or not the contrast was with having no intent or already having made a reduction. This was especially true for hazardous users. Only two beliefs were independently correlated with change among hazardous users: 'Drinking could get me addicted' and 'Drinking makes me more relaxed/less tense' (pseudo-R2 < 0.1). Among moderate users, there was no uniform pattern in the relationships. **Conclusions**: Unexpectedly, hazardous users with an intent to change rated pro arguments as more important than those with no intent to change. Of the investigated pros and cons, only a few were independently related to intention to change drinking behaviour. These arguments provide interesting topics in consultations. Little support was found for any rational decision making behind the intention to reduce alcohol intake.

Introduction

Hazardous alcohol users are often identified in primary care.[1] One approach that has been widely used and thoroughly evaluated in these encounters is Motivational Interviewing (MI).[2–5] Advice and brief interventions have been shown to be effective in reducing drinking among hazardous users.[2,3,5]

In these, and other situations where advice or counselling is involved, the sentiments underlying a problem behaviour, i.e. its pros and cons, usually become explicit. It has been suggested that people drink either to enhance positive affects (enhancement motives) or to reduce negative affects (coping motives).[6,7] Drinking to enhance positive affects is a way of augmenting positive aspects and experiences, both socially and emotionally. Drinking to cope with negative affects is a strategy for putting up with or ignoring negative emotions and other negative aspects of life. Drinking based on these decision strategies is associated with higher alcohol consumption than drinking merely from social motives, which has been linked to moderate consumption.[7–9]

Decision making has been seen as involving a comparative conflict between potential gains (pros) and losses (cons), where the person balances the two when coming to a decision. A model based on this idea was developed by Janis and Mann in the 1970s.[10] Their concept was further developed into the decisional balance model,[11] and integrated into a model of behaviour change, the Transtheoretical Model (TTM).[12–14] The model identifies five stages of change. At first, one is not at all ready for change (pre-contemplation). Next, one contemplates change, albeit ambivalently, weighing gains against losses (contemplation). Then, one plans for change, getting ready to bring it into effect in the near future (preparation). When the change is made (action), one strives to adapt to the new situation. Then, the new behaviour has to be maintained (maintenance).

The pros and cons attributed to health behaviours have been shown to co-vary with stage of change.[15–18] With a decrease in drinking as the change, the importance of arguments in favour of drinking decreases, while the importance of arguments against increases. When alcohol abusers either have undergone change without formal treatment or have decided to seek treatment, the weighing up of pros and cons has been found to be an important aspect.[19–21] The TTM is also used as a tool to evoke motivation to change among patients with problem behaviours, as part of the MI approach.[22]

The TTM has been criticized on a variety of grounds. Important issues are whether transition through the stages of change is unidirectional or whether there are relapses between stages,[13,23] and whether readiness to change does actually predict change.[24,25] Nevertheless, the model implies a distinction that recognizes one basic everyday aspect, which any meaningful dialogue about change with persons with hazardous use of alcohol has to take into account. That is, talking about pros and cons with persons who intend to change is likely to differ from talking with persons who are trying to maintain

Table 1 The examined pros and cons of drinking

The pros of drinking	The cons of drinking
Drinking helps me have fun with friends.	Some people close to me are disappointed in me because of my drinking.
Drinking gives me courage.	I could accidentally hurt someone because of my drinking.
Events with alcohol are more fun.	I can hurt people close to me when I drink too much.
Drinking gives me a thrilling feeling.	Drinking causes me to fail to do what is normally expected of me.
I can talk with someone I am attracted to better after a few drinks.	Drinking could get me addicted to alcohol.
Drinking makes me feel more relaxed and less tense.	Drinking could land me in trouble with the law.
I feel happier when I drink.	I might end up hurting somebody.
I am more sure of myself when I am drinking.	I am setting a bad example for others with my drinking.

change, or who have no intention of changing. Further, it is reasonable to suppose that some specific beliefs about pros and cons stand out, i.e. are more important than others.

The approach has been applied to different treatment populations where excessive use of alcohol has been involved. Therefore, it is unclear whether any of the previously identified arguments are relevant at all to non-problem behaviours, such as when use of alcohol is moderate. It is also unclear whether the relationships of pros and cons to change still prevail if lower cut-offs are set to delimit target groups with less excessive alcohol habits, such as hazardous users in the general population. To the extent that people behave as reasoning actors, the arguments can be expected to have some value in explaining a person's intention to change, i.e. to reduce intake of alcohol. People who are not addicted may also be assumed to act more rationally, even if the arguments are less important.

This study aims to examine the independent relationships of beliefs about various pros and cons (from the decisional balance model) to the intention to reduce alcohol intake in the general population, among hazardous and moderate alcohol users separately.

Methods

Procedure

A cross-sectional randomly selected postal survey of a representative sample of the adult population aged 18–70 years in Stockholm County, Sweden, was conducted in 2003. The response rate was 56.5% ($n = 4278$).

Alcohol use

Alcohol use was assessed using the Swedish self-report version of the Alcohol Use Disorders Identification Test (AUDIT).[26] Recommended cut-offs used in this study to represent hazardous drinking were 8 points for men and 6 points for women.[27] Men with a non-zero but lower AUDIT score than 8, and women with a non-zero but lower score than 6 were considered as moderate drinkers. Missing values ($n = 183$) were excluded.

Stages of change

The subjects were asked whether they had consumed a minimum of one standard glass of alcohol in the past 12 months. If 'no', they were excluded. If 'yes', they were asked to specify which of the following statements was most applicable to their situation: (i) 'I reduced my alcohol use more than 12 months ago'; (ii) 'I reduced my alcohol use 6–12 months ago'; (iii) 'I reduced my alcohol use less than 6 months ago; (iv) 'I intend to reduce my alcohol use within 30 days'; (v) 'I intend to reduce my alcohol use within 6 months'; (vi) 'I do not intend to reduce my alcohol use within 6 months'. This is a staging method that has been used in earlier studies to assess stage of change and alcohol use.[15] Three groups were created to represent the stages of change to be used in the analysis: 'No intention to reduce alcohol use', which was represented by alternative (vi); 'Intention to reduce alcohol use', represented by alternatives (iv) and (v); and 'Already reduced alcohol use', represented by alternatives i–iii. Subjects who did not complete this part of the survey ($n = 237$) were excluded from the analysis.

Pros and cons of drinking

A 16-item decisional balance inventory[28] was translated from English into Swedish. The inventory investigated various pros (eight items) and cons (eight items) of drinking (table 1). The subjects were asked to rate the importance of each item when deciding when/how much they drank on a 0–4 point Likert scale, where 0 = 'Not at all important' and 4 = 'Extremely important'.

Statistical analyses

The statistical analyses were performed using SPSS v. 20.0. Comparisons of prevalence were made using chi-square tests. All significance levels in the regression models came from Wald's chi-square tests. T-tests were performed to compare ages in the drinking categories and to compare the means of the pros and cons of drinking in the categories. The correlations between the independent variables (the pros and cons of drinking) and the outcome (intention to change) were computed in a series of logistic regression models. The independent variables were treated as linear functions in the regression models.

Intention to change was modelled to enable two alternative contrasts to be made: 'Intention to reduce use' vs. 'Having already reduced use', and 'Intention to reduce use' vs. 'No intention to reduce use'. These models assessed hazardous users and moderate users separately. First, all bivariate associations between the outcomes and the separate pros and cons were modelled one by one. Next, to evaluate the independent relationships, all pros and cons were included in the same model, which was then reduced by stepwise backward exclusion. The exclusion criterion for the stepwise backward model was $P > 0.05$ and the inclusion criterion was $P < 0.10$. The same stepwise backward exclusion procedure was adopted with the pros and the cons kept separate, but it yielded the same results as when they were all taken together, and therefore are not presented in this report. The same applied to the three full logistic regression models that were constructed to assess the arguments; that is, the pros and cons were treated both together and separately. Nagelkerke pseudo r-square was estimated for the reduced models.[29]

Results

The average age of members of the study sample was 43 years, of which 56% were women . Eighteen percent were hazardous drinkers and 70% moderate drinkers. The hazardous drinkers were younger than the moderate drinkers, with an average age of 36 years in comparison with 44 years ($P < 0.01$), and more likely to be men, 54% in comparison with 46% ($P < 0.01$).

Table 2 The distribution of the stages of change among hazardous and moderate drinkers ($n = 3726$)

Stages of change	Hazardous drinkers		Moderate drinkers		*P*-value
	N	%	*n*	%	
Intention to reduce use	127	17.0	66	2.4	<0.001
Already reduced use	266	35.7	741	27.0	<0.001
No intention to reduce use	353	47.3	1936	70.6	<0.001
N	746	100.0	2743	100.0	
Missing	26		211		
Total	772		2954		

Significance levels are given for hazardous drinkers in comparison with moderate drinkers on the basis of Wald's chi-square tests in logistic regression models.

Table 3 Mean scores for various pros and cons of drinking among hazardous ($n = 772$) and moderate ($n = 2954$) alcohol users

The pros and cons of drinking	Hazardous drinkers	Moderate drinkers	*P*-value
	Mean	Mean	
Drinking could get me addicted to alcohol.	2.09	1.61	<0.001
I can hurt people close to me when I drink too much.	2.09	1.63	<0.001
Drinking makes me feel more relaxed and less tense.	2.08	1.22	<0.001
Drinking helps me have fun with friends.	1.95	1.12	<0.001
I feel happier when I drink.	1.93	1.04	<0.001
I might end up hurting somebody.	1.90	1.58	<0.001
Some people close to me get disappointed in me because of my drinking.	1.90	1.31	<0.001
Events with alcohol are more fun.	1.90	0.96	<0.001
I could accidentally hurt someone because of my drinking.	1.80	1.49	<0.001
Drinking could land me in trouble with the law.	1.76	1.51	<0.001
Drinking causes me to fail to do what is normally expected of me.	1.67	1.35	<0.001
I am setting a bad example for others with my drinking.	1.63	1.36	<0.001
I can talk with someone I am attracted to better after a few drinks.	1.42	0.76	<0.001
I am more sure of myself when I am drinking.	1.33	0.68	<0.001
Drinking gives me courage	1.17	0.56	<0.001
Drinking gives me a thrilling feeling.	1.09	0.46	<0.001
N	742–763	2756–2903	
Missing	9–24	51–198	

Among the hazardous drinkers, 17% had an intention to reduce alcohol use (table 2). The corresponding proportion among the moderate drinkers was lower, at just above 2% ($P < 0.01$).

Hazardous use

Table 3 presents the mean scores for all the pros and cons, beginning with the highest scoring item among hazardous drinkers. All 16 arguments had significantly higher average scores, i.e. were rated as more important among hazardous than among moderate users (table 3).

Intention to change—hazardous users

Among hazardous users, 8 of the 16 beliefs were bivariately related to 'Intention to reduce use' when contrasted with 'No intention to reduce use' (table 4). When contrasted with 'Having already reduced use', three arguments were found to be related to intention to reduce use. Higher ratings of importance were related to intent, regardless of whether the contrast was having no intent or already having made a reduction.

The reduced models in table 4 indicate that only two arguments were independently related to intention to reduce intake: 'Drinking makes me feel more relaxed and less tense' and 'Drinking could get me addicted to alcohol'. Persons who rated these two arguments as more important were more likely to be intent on change than persons who rated them as less important. The results were the same for both the contrasts, i.e. in comparison with those who had no intention to change and with those who had already made a change.

Intention to change—moderate users

Among moderate users, significant bivariate relations with intention to reduce intake were found for 14 of the 16 arguments when the contrast was with 'No intention to reduce use' (table 4). Higher ratings of importance were related to intent for these arguments.

When the contrast was 'Having already reduced use', 10 of the bivariate correlations were significant. Moreover, one argument was inversely related to intent. That is, people who attached higher importance to 'Drinking gives me a thrilling feeling' were less likely to be intent on change and more likely already to have made a change. Otherwise, persons rating the arguments as important were more likely to be intent on change and less likely already to have made a reduction.

Model results—moderate users

The arguments 'I feel happier when I drink' and 'Drinking could get me addicted to alcohol' were independently correlated with the intention to reduce alcohol use, whether the contrast was with 'Intention to reduce use' or 'No intention to reduce use'. Higher ratings of importance were related to intent for these arguments. In both models, two other arguments were independently, but inversely, correlated with the intention to change. Adjusted for the other significant relationships, moderate users who attached higher importance to 'Drinking gives me a thrilling feeling' were less likely

Table 4 Odds ratios (ORs) for the intention to reduce alcohol use for various pros and cons of drinking among hazardous ($n = 772$) and moderate ($n = 2954$) users[a]

Pros and cons of drinking	Hazardous users of alcohol				Moderate users of alcohol			
	Intention vs. no intention to reduce alcohol use[b]		Intention vs. having already reduced alcohol use[c]		Intention vs. no intention to reduce alcohol use[d]		Intention vs. having already reduced alcohol use[e]	
	Bivariate model	Reduced model[f]	Bivariate model	Reduced model[f]	Bivariate model	Reduced model[f]	Bivariate model	Reduced model[f]
	OR	OR	OR	OR	OR	OR	OR	OR
Drinking makes me feel more relaxed and less tense.	1.58***	1.48***	1.36***	1.34***	1.43***	–	1.25*	–
Drinking could get me addicted to alcohol.	1.45***	1.42***	1.23**	1.30***	1.47***	1.70***	1.46***	1.30***
I am setting a bad example for others with my drinking.	1.24***	–	1.18**	–	1.25***	–	1.19**	–
I feel happier when I drink.	1.19*	–	1.14	–	1.54***	1.67***	1.36**	1.56***
Some people close to me are disappointed in me because of my drinking	1.18**	–	1.01	–	1.25***	–	1.17**	–
Drinking causes me to fail to do what is normally expected of me.	1.16**	–	1.07	–	1.17**	–	1.14*	–
I can hurt people close to me when I drink too much.	1.16**	–	0.97	–	1.17**	–	1.11	0.80**
I can talk with someone I am attracted to better after a few drinks.	1.16	–	1.11	–	1.27*	–	1.07	–
I am more sure of myself when I am drinking.	1.15	–	1.06	–	1.40***	–	1.16	–
Drinking could land me in trouble with the law.	1.11*	–	1.04	–	1.16**	0.79**	1.15*	–
I could accidentally hurt someone because of my drinking.	1.10	–	1.03	–	1.17**	–	1.12	–
I might end up hurting somebody.	1.08	–	1.10	–	1.20**	–	1.17**	–
Drinking gives me courage.	1.07	–	1.02	–	1.29*	–	1.03	–
Drinking gives me a thrilling feeling.	1.05	–	0.97	–	0.82	0.58**	0.67*	0.53***
Drinking helps me have fun with friends.	1.05	–	1.07	–	1.27**	–	1.25*	–
Events with alcohol are more fun.	0.99	–	0.96	–	1.19	–	1.11	–
Pseudo r^2		0.11		0.058		0.085		0.12

*** $P < 0.01$, ** $P < 0.05$, * $P < 0.1$

a: All abstainers ($n = 329$) were excluded from the models.

b: The contrast between hazardous users with 'intention to reduce use' ($n = 127$) and those with 'no intention to reduce use' ($n = 353$). Hazardous users 'having already reduced use' ($n = 266$) were excluded. Missing values ranged between 3 and 15.

c: The contrast between hazardous users with 'intention to reduce use' ($n = 127$) and those 'having already reduced use' ($n = 266$). Hazardous users with 'no intention to reduce use' ($n = 353$) were excluded. Missing values ranged between 5 and 15.

d: The contrast between moderate users with 'intention to reduce use' ($n = 66$) and those with 'no intention to reduce use' ($n = 1940$). Moderate users 'having already reduced use' ($n = 742$) were excluded. Missing values ranged between 34 and 123.

e: The contrast between moderate users with 'intention to reduce use' ($n = 66$) and those 'having already reduced use' ($n = 741$). Moderate users with 'no intention to reduce use' ($n = 1940$) were excluded. Missing values ranged between 6 and 27.

f: A reduced model using stepwise backwards elimination ($P > 0.05$) of all the pros and cons.

to be intent on change and more likely to have no intention to change. They were also more likely already to have made a change.

After adjustment for the other significant relationships in the model, moderate users who rated 'Drinking could land me in trouble with the law' as important were less likely to be intent on change and more likely to have no intention to change. Here, the adjustment for the other variables reversed the bivariate relationship. This is an indication of the co-variation of the independent variables in relationship to the outcome.

Moreover, after adjustment for the other significant relationships but not otherwise (i.e. the bivariate relationship was non-significant), moderate users who rated the argument 'I can hurt people close to me when I drink too much' as important were less likely to be intent on change and more likely already to have made a change

The arguments in the models explained 6–12% of the variance in intention to reduce intake of alcohol.

Discussion

Our results show that the hazardous users who intended to change generally stressed pro and con arguments more than others, no matter whether these arguments were pros or cons. The relationship shown by the pros, i.e. a peak in argumentation at the acute stages of change rather than a decrease in importance, was unanticipated. However, a variety of curvilinear dependencies between rating of importance and stages of change have been shown previously.[11,15,16]

For hazardous users, the result can be straightforwardly interpreted; those who were in the midst of a process of change attached greater meaning to it than did others. Such an interpretation points towards the opposite direction of causality, i.e. that thoughts about change precede the stressing of any particular arguments. But thoughts about change and arguments may also be intertwined and concurrent.

'Drinking could get me addicted to alcohol' was a belief that was independently associated with the intention to change among hazardous and moderate alcohol users alike.

As well as fear of addiction, the analysis also identified the 'Drinking makes me feel more relaxed and less tense' argument as prominent among hazardous users. All the other arguments' bivariate relationships were explained by their co-variation with these two arguments.

Among moderate users, the 'I feel happier when I drink' argument was identified as an accompaniment to fear of addiction. Two further arguments also exhibited independent relationships among the moderate users in a direction opposite to the other arguments. There was no uniform pattern.

The co-variation between arguments and change was more complex for moderate than for hazardous users. This could have been either due to greater statistical power in the sample of moderate users or to its heterogeneity. That is, some of the people who had effected a change had probably previously been hazardous users. Others may have changed their hazardous habits a long time ago and had no intention of changing further.

Both the arguments identified alongside fear of addiction were affect statements, indicating the presence of cognitive processes and self-reflection about behaviours that precede change. They fit into a motivational model of drinking, where the former reflects a coping strategy, the latter an enhancement strategy.[7] In this model, both enhancement and coping are strategies attributable to excessive use of alcohol.

According to our findings, 'drinking to cope' is relevant to the intention to reduce alcohol intake among hazardous users, whereas 'drinking to enhance' is relevant to those with an intention to reduce intake among moderate users.

The question of whether beliefs about the pros and cons are of any use in enhancing motivation to change in settings of advice or counselling is interesting, but the answer is less clear. The low degree of explained variance and the high number of arguments without an independent explanatory value among hazardous drinkers raise questions about the merit of assuming a rational decisional process behind change. Less than a tenth of the variance in intention to change was explained by the relative importance of the chosen arguments. Thus, there was little evidence of any rational decisional process.

According to an inventory of prevention campaigns in Sweden,[30] fear of addiction has been used to provoke thinking about drinking behaviour. Another focus has been on the acute risks that follow intoxication, something not fully covered in this study.

Otherwise, our primary goal was to identify the beliefs about pros and cons that are of greatest value in talks with hazardous drinkers, e.g. in primary care. It would be of great interest to further assess the arguments we have identified. Fear of addiction may be a hallmark of the specific socio-political environment in Sweden today. Which arguments correlate with change in other countries would be interesting to investigate.

Ultimately, the decisional balance model suggests that, somewhere within the process of change, the cons' accumulated importance will exceed that of the pros.[11] This aspect was not addressed in the present study, but would be interesting to pursue.

A distinctive trait of our study is that we used a broad population-based sample. The concepts, measures and inventories for stages of change and decisional balance with regard to alcohol, were first developed for high-risk, heavy drinkers, and it was uncertain how they would work among drinkers at lower risk. Although hazardous drinkers tend to stress both pros and cons more than their moderate counterparts, only a few of the arguments examined here seem to be independently related to an intent to reduce alcohol intake, at least among hazardous and moderate users in the general population.

Limitations

The inventory of the pros and cons was developed for heavy episodic drinking among U.S. college students.[28] It may be that other arguments are more relevant for other age groups, drinking cultures, and countries.

Our population of hazardous drinkers included 92 subjects who would qualify as harmful or excessive drinkers, with AUDIT scores of 15 or higher for men, and 13 or higher for women. However, additional calculations excluding these subjects showed similar results.

The non-response rate was rather high (44%), and high consumers are known to be over-represented among non-responders.[31–33] It is unclear whether non-response bias influenced our results.

Conclusions

There was little evidence of any rational decision making behind the intention to reduce the intake of alcohol, at least on the basis of the arguments examined here. In the general population, little of the variation in intention to reduce alcohol intake seems to be explained by the importance attached to these different arguments for and against drinking. A minority of the examined arguments were independently related to change. Fear of addiction was identified as an incentive for change among both hazardous and moderate users of alcohol. Hazardous users who found that drinking made them feel more relaxed and less tense were also more intent on change.

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F.A. performed the background research and statistical analysis, and drafted the manuscript. K.A. conceived of and designed the study, and provided intellectual support in drafting the manuscript. A.R.H. is an expert in the area of MI-based counselling. All three authors revised the draft critically for important intellectual content, and they have all read and approved the final manuscript.

Conflicts of interest: None declared.

Key points

- This is the first report to examine the beliefs about pros and cons of drinking and their supposed relations to stages of change among hazardous and moderate alcohol users in a broad population.
- Of the investigated beliefs about pros and cons of drinking, only a few were independently related to an intention to reduce intake of alcohol, and have only weak explanatory value.
- This report gives new insight into the counselling of hazardous alcohol users in primary care. It highlights the fear of addiction among alcohol users with an intention to change, but gives little support for the idea that there is any rational decision-making process behind the intention to reduce alcohol intake.

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