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## **Predicting attitudes toward a restrictive alcohol policy: using a model of distal and proximal predictors**

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Predicting Attitudes towards a Restrictive Alcohol Policy: Using a Model of Distal and  
Proximal Predictors

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### **Abstract**

Previous research on attitudes towards a restrictive alcohol policy has mainly focused on variables such as demographics and own drinking as possible predictors. The present paper adds to the existing literature by examining the impact of a set of beliefs and personal experiences with the harm caused by other peoples' drinking. We suggest and test an analytic model in which the predictors are ranked according to their conceptual proximity to attitudes. The data stem from a web survey in the Norwegian adult population (N = 1 951), mapping the respondents' attitudes towards pricing policy and availability restrictions, belief in the harm-limiting effect of such measures, belief in the harm caused by drinking, and personal experiences with harm from others' drinking. In line with the suggested model, belief in the effectiveness of restrictive measures and belief in the harm caused by drinking appeared as the strongest predictors. Attitudes were less strongly related to own drinking, and particularly to demographics. Altogether, 41% of the variance in attitudes was explained. Negative experience with other peoples' drinking was a statistically significant predictor only among young respondents. The strong relationships between proximal predictors, such as belief in the harm caused by drinking and belief in the harm-limiting effect of restrictive measures and attitudes, indicate that support for a restrictive policy may be increased by focusing on awareness of such issues rather than on more distal predictors. However, further research is needed to acquire more knowledge about the mechanisms behind these associations.

*Key words:* alcohol policy, attitudes, beliefs, harm to others, distal and proximal predictors.

## **Predicting Attitudes towards a Restrictive Alcohol Policy: Using a Model of Distal and Proximal Predictors**

Alcohol use is related to a wide range of harm, both for the consumers themselves, their surroundings and society at large (e.g. Babor et al., 2010; Klingemann & Gmel, 2001; Rehm et al., 2010). From a public health perspective, taxation and regulation of the physical availability of alcohol are among the most effective measures to curb such harm (Babor et al., 2010). However, surveys of public opinion about alcohol policy consistently show that these measures are the most unpopular in the population (e.g. Diepeveen, Ling, Suhrcke, Roland, & Marteau, 2013; Giesbrecht, Ialomiteanu, Anglin, & Adlaf, 2007; van der Sar et al., 2012). More positive attitudes towards restrictive pricing and availability measures imply that maintaining a strict alcohol policy may be easier, and that herein lies a potential benefit for public health. If one aims to increase public support and thus the legitimacy of such measures, it is essential to know how attitudes towards alcohol policies are formed and thus, how they can be changed.

With the exception of studies describing how attitudes vary according to own drinking and demographics, we do not know much about which factors that contributes to people's support or lack of support for a restrictive alcohol policy. We attempt to broaden the scope of previous studies by addressing variation in attitudes according to a set of relevant beliefs and experience with the harm caused by other peoples' drinking. These predictors are studied both separately and in a common model.

### **Possible predictors**

Several studies have shown that support for a restrictive alcohol policy is stronger among women than among men, and among older than among younger people (e.g., Greenfield, Yu, & Giesbrecht, 2007b; Ialomiteanu et al., 2010; van der Sar et al., 2012). The findings regarding education level are less consistent (e.g., Holmberg & Weibull, 2013; van

der Sar et al., 2012; Wilkinson, Room, & Livingston, 2009), and warrant further research.

It is reasonable to assume that people with a relatively high consumption of alcohol prefer easy availability, and thus that they are less supportive of restrictive measures than people further down the consumption scale. Accordingly, previous studies have repeatedly shown that support for such restrictions decreases with increasing consumption (e.g., Giesbrecht, Ialomiteanu, & Anglin, 2005; Greenfield et al., 2007b; van der Sar et al., 2012).

Furthermore, one may assume that those who feel bothered by other peoples' drinking are more likely than others to think that it is important to regulate alcohol use in society, and thus have more positive attitudes towards regulations. Consistent with this, a study from the USA found the strongest support for restrictive measures among those who scored high on an index of experienced harm from others' drinking (Greenfield, Yu, & Giesbrecht, 2007a). A Finnish study, which separated between different kinds of harm, indicates that support for restrictive measures is related to experiences of alcohol-related disturbances in public places, but not in private homes (Holmila, Mustonen, Österberg, & Raitasalo, 2009). Thus, it seems to be important to differentiate between harm experienced in the public and private setting.

In social psychology, beliefs are seen as one of the main building blocks of attitudes in the sense that attitudes are formed and changed as the individual acquires and processes information about the attitude object (Eagly & Chaiken, 1993). As in previous work on opinions about alcohol policy (Rise, 2013), we define attitudes as general, relatively enduring evaluations of various measures and beliefs as an estimate of subjective probabilities that an object will lead to a certain state of affairs (e.g., whether restrictive measures curb harm). Thus, in contrast to attitudes, beliefs are in principle open to empirical evaluation. We expect two kinds of beliefs to be of particular importance for attitudes towards a restrictive alcohol policy, i.e. beliefs about the harm caused by drinking and beliefs about the harm-limiting effect of restrictive measures.

The few studies that have addressed the association between attitudes towards control measures and beliefs about the harm caused by drinking, indicate that attitudes are most positive among people who believe that alcohol contributes to various kinds of harm, and who are concerned about the alcohol use in society and the related harm (Holmberg & Weibull, 2013; Paglia & Room, 1999; Reitan, 2003; Slater, Lawrence, & Comello, 2009). There seems to be less empirical evidence for an association between attitudes and beliefs about the harm-limiting effect of restrictive measures. Two studies from the nineties showed that support for restrictive measures was strongest among people who believed that such measures would affect the drinking level of both themselves and others (Kaskutas, 1993) as well as among heavy drinkers (Paglia & Room, 1999), but these studies did not consider expectations about the harm-limiting effect in itself.

Previous papers based on the same data as our paper, indicate that policy attitudes are associated with both (1) beliefs about the association between alcohol use and harm at the population level, and (2) beliefs about the harm-limiting effect of restrictive measures (Rise, 2013; Storvoll, Rossow, & Rise, 2013). However, these variables were not considered in an overall model in which other relevant predictors were controlled for.

### **A model of distal and proximal predictors**

We are not aware of any previous studies that have explored the relative impact of the above variables on policy attitudes. However, it is reasonable to assume that some of the variables are more strongly related to policy attitudes than others. For example, one might argue that the closer the predictors come to policy attitudes conceptually, the stronger the relationship would be. This idea is quite similar to the principle of compatibility proposed by Ajzen (2005), i.e. variables measured at the same level of specificity or generality are usually strongly correlated. Thus, in this paper we attempt to place the proposed predictors on a continuum from the conceptually most distal to the conceptually most proximal to attitudes

towards alcohol policy.

Demographic variables exist prior to all other suggested predictors. Moreover, variables that concern alcohol are by their very nature more narrow in scope to attitudes towards alcohol policy than demographics. Thus, the predictive ability of demographics is expected to be the weakest, and should be placed as the most distal category in our model.

Among the predictors related to alcohol, we argue that own drinking is conceptually closer to policy attitudes than negative experiences with other peoples' drinking. People who drink alcohol, and particularly those with a fairly high consumption, may fear that a restrictive policy make it difficult to maintain their own drinking habits. One may be less likely to see an association between policy measures and problems related to other peoples' drinking.

Furthermore, belief in alcohol-related harm in general is assumed to be conceptually closer to attitudes than own drinking. As this variable is operationalized here, it mirrors the influence of the total consumption model (for a short description see Rossow, 2008), the prevailing model in Nordic alcohol policy during the last decades, and thus comprises a stable social representation (see Rise, 2013). Belief in the effectiveness of a restrictive policy comes closest to the attitudes by sharing the same object (alcohol policy), and thus is assumed to be the strongest predictor. The suggested model is summarized in Figure 1.

- Figure 1 about here -

### **Aims of the Study**

To sum up, we expect that the relative strength of various predictors on attitudes towards alcohol policy increase the closer they come to the attitudes conceptually. Thus, our predictors are ranged on a continuum from the most distal to the most proximal (cf. Figure 1). In addition to describing the association between attitudes and each of the suggested predictors, the outlined model will provide a more systematic picture of how the effects of prior predictors on the continuum are mediated by the subsequent predictors.

## Methods

### Participants and Procedures

The data stem from a web-survey conducted among adults in 2008 commissioned by the Norwegian Directorate of Health from Ipsos MMI (previously Synovate). A sample of 4 673 was drawn from Ipsos MMI's web panel, which comprised about 50 000 demographically mapped persons recruited via telephone (<http://ipsos-mmi.no/web>). The response rate was 44% (N = 2 057). Since the age group 70 years and older was strongly under-represented in the sample, the analyses were limited to 20-69 year-olds (N = 1 956). The data were weighted to reflect the age and gender distribution of 20-69 year-olds in the population in January 2008 (<http://statbank.ssb.no/statistikbanken/>). In the weighted sample, the distribution of the geographical regions the respondents lived in was fairly similar to the distribution in the general population. However, the respondents were more highly educated than was the case for the population. Whereas 48.8 % of the respondents had an education at the university level, 31.2 % of 20-66 year-olds in the population had the same level of education.

### Measures

**Attitudes towards a restrictive alcohol policy.** As argued in the introduction, taxation and regulation of the physical availability of alcohol are among the most effective measures to curb alcohol-related harm. Since these measures also seem to be the most unpopular in the population, it will be of particular interest to study how attitudes towards such measures are formed. This will provide useful information on how such attitudes might be changed. Thus, the attitude index was composed of four statements concerning current policy on restrictive pricing and availability measures (see Table 1). The respondents were asked to indicate to what degree they agreed/disagreed with each statement on a four point scale: totally agree (coded 1), partly agree (2), partly disagree (3), totally disagree (4), and

impossible to answer (missing). Based on the responses, each respondent was given a mean score ranging from 1-4, Cronbach's alpha ( $\alpha$ ) = 0.76. The higher the score, the stronger the support for a restrictive alcohol policy. Due to missing responses for more than one question, 8 persons did not get a score on this index. Consequently, the net sample for the present paper was 1 948.

**Demographic variables.** Males were coded as 1 and women as 2. In Table 2, the sample was divided into three age groups: 20-35 year-olds, 36-55 year-olds and 56-69 year-olds. In the other analyses we used a continuous age variable. Level of education was measured by asking the respondents about their highest completed education. The responses were categorized into two groups: junior/senior high school (coded 1) and university (2). Altogether 9.5 % answered that they were still studying. Since the respondents were 20 years and older, it seems reasonable that the majority of this group studied at the university level. Moreover, they had a similar mean score on attitudes towards a restrictive alcohol policy ( $M = 2.98$  ( $SD = 0.74$ )) as those who had completed an education at this level ( $M = 2.94$  ( $SD = 0.78$ );  $F(1, 1\ 136) = .49$ , n.s.). Thus, those who were still studying were coded as having an education at the university level.

**Experienced harm from other peoples' drinking.** We used two measures representing experienced harm from others' drinking. The first addressed the tendency of feeling unsafe when going out on weekend evenings, and was measured using the following statements: "I feel that it is unsafe to be in the centre of town on weekend evenings" and "I would have been more often in the centre of town on weekend evenings if there had been less drunkenness and violence there". The response categories were: totally agree (coded 4), partly agree (3), partly disagree (2), totally disagree (1), and impossible to answer (missing). Based on the responses to these two items, the respondent were given a mean score ranging from 1-4 ( $r = 0.40$ ). In Table 2, the respondents were divided into three subgroups based on degree of

feeling unsafe when going out on weekend evenings: low (score 1.00), medium (1.01-3.00) and high (3.01-4.00). In the other analyses we used a continuous measure.

The second measure addressed experienced harm from alcohol use among family/friends. The respondents were asked (1) whether they during the last 12 months had experienced that holidays or parties had been spoilt because of friends or family members drinking alcohol and (2) whether they were worried about alcohol use among family or close acquaintances. Respondents who answered yes on both questions were coded 1, and the others were coded 0. The respondents who answered not sure/do not remember for at least one of the questions were coded as missing.

**Drinking frequency.** The respondents were asked how often they drank alcohol. The response categories were: never (coded 0), less than 3 times a year (1), 3-11 times a year (2), 2-3 times a month (3), 1-2 days a week (4), 3-5 days a week (5), and every day (6).

**Belief in the harm caused by drinking in general** was assessed by asking the respondents to what degree they believed that the number of deaths due to disease, murder, suicide and accidents would increase significantly if alcohol consumption per capita increased by one litre of pure alcohol in Norway. The response categories were: to a small degree or not at all (coded 1), to some degree (2), to a fairly high degree (3), to a very high degree (4), and cannot answer (defined as missing).

**Belief in the effectiveness of a restrictive alcohol policy** was measured using the following question: “The aim of Norwegian alcohol policy is to limit the harmful effects of alcohol. To what degree do you think that the following measures can help to limit the harmful effects of alcohol?”. The measures considered in this study were: “high prices/taxes on alcohol”, “wine and spirits are only sold at the Norwegian Wine and Spirits Monopoly”, and “regulations for serving alcohol such as closing times for licensed premises”. The response categories were: to a very high degree (coded 4), to a fairly high degree (3), to some

degree (2), to a little degree or not at all (1), and cannot answer (missing). The answers were added into a mean score ranging from 1-4 ( $\alpha = 0.77$ ). In Table 2, the respondents were divided into five subgroups reflecting the strength of belief in the effect of restrictive measures: low (score 1.00), low/medium (1.01-1.67), medium (1.68-2.50), medium/high (2.51-3.33) and high (3.34-4.00). In the other analyses this variable was continuous.

### **Analytic Strategy and Statistical Analyses**

First, we examined the bivariate associations between attitudes and possible predictors. Group differences in mean scores on the attitude index were tested with ANOVA. Second, the overall effect of the considered predictors was examined in a hierarchical linear regression analysis. The predictors were entered in five steps reflecting the predictor categories presented in Figure 1. This procedure allowed us to estimate the unique contribution of each predictor category, over and above the effect of the predictors already included in the model. The size of the explained variance in each step and for the total model, was evaluated according to Cohen's classification of effect sizes, where small, medium and large effects resemble  $R^2$  of 0.01, 0.09 and 0.25, respectively (Cohen, 1988). Pearson's correlations were used to calculate the bivariate associations between the variables, and were also evaluated according to Cohen's classification where small, medium and large effects resemble  $r$ 's of 0.10, 0.30 and 0.50, respectively. All analyses were conducted using SPSS version 20.

### **Results**

As shown in Table 1, support for the measures included in the sum index of the attitude measure varied considerably. Whereas the majority agreed that alcohol is too expensive in Norway and that wine should be sold in grocery stores, relatively few agreed that it is too difficult to buy alcohol and that spirits should be sold in grocery stores.

- Table 1 about here -

Table 2 shows the mean score on the attitude measure for various sub-groups. Support for a restrictive policy increased with level of education, the tendency of feeling unsafe when going out on weekend evenings, experienced harm from alcohol use among family or friends, a stronger belief in the harm caused by drinking in general, and a stronger belief in the harm-limiting effect of a restrictive alcohol policy. Moreover, support was stronger among females than among males. Finally, support decreased with increased drinking frequency.

- Table 2 about here -

As shown in Table 3, the associations between attitudes and demographic variables were fairly weak ( $r = 0.03-0.15$ ). This was also the case for experienced harm from others' drinking ( $r = 0.07$  and  $r = 0.15$ ). The association between attitudes and own drinking was moderate ( $r = -0.29$ ), whereas the associations between attitudes and belief in the harm caused by drinking in general ( $r = 0.48$ ) and belief in the effectiveness of restrictive measures ( $r = 0.55$ ) were fairly strong. Moreover, the association between belief in the harm caused by drinking in general and belief in the effectiveness of restrictive measures was strong ( $r = 0.46$ ).

- Table 3 about here -

Table 4 presents the findings from a hierarchical regression analysis predicting attitudes. In the first step, the demographic variables accounted for 3.5 % of the variance in attitudes, with gender being the strongest predictor. In the second step, experienced harm from others' drinking added a small, but statistically significant contribution to the explained variance in attitudes (2.2 %), thus explaining a total of 5.7 % of the variance. Gender and feeling unsafe when going out had the strongest impact on attitudes in this step. In the third step, own drinking added 8.6 % to the explained variance, a medium sized change according to Cohen (1988). At this step the model explained 14.3 % of the variance in attitudes, and own drinking was by far the strongest predictor ( $\beta = -0.304$ ). The more the respondents

drank, the lower was the support for a restrictive alcohol policy.

In step four and five, belief in harm in general (15.0 %) and belief in the effectiveness of a restrictive alcohol policy (12.0 %) increased the explained variance by 27.0 %. According to Cohen (1988), this can be considered a large contribution. When including belief in harm in general in the model (Step 4), the impact of all the other predictors were reduced, and particularly the effect of own drinking (beta changed from -0.304 to -0.221). Thus, part of the effect of own drinking on attitudes can be explained by the fact that people with a higher consumption, have a weaker belief in harm of alcohol in general. Nevertheless, belief in harm in general was by far the strongest predictor at this step (beta = 0.403). In the fifth and final step, where belief in the harm-limiting effect of restrictive measures was included in the model, the effect of belief in harm in general was considerably reduced (beta changed from 0.403 to 0.238), reflecting that the two types of beliefs were strongly associated, and that specific harm considerations partly mediated the effect of general harm considerations.

- Table 4 about here -

Altogether, the model explained 41.3 % of the variation in attitudes towards a restrictive alcohol policy. From the final model (Model 5 in Table 4), it can be seen that belief in the effectiveness of restrictive measures (beta = 0.398) was by far the strongest predictor. Belief in harm in general (beta = 0.238) and own drinking (beta = -0.189) were also strong predictors. Moreover, the effects of gender (beta = 0.077) and educational level (beta = 0.086) were statistically significant.

So far we have tested our analytic model in the total sample. However, one may assume that the tendency of feeling unsafe when going out on weekend evenings first and foremost is a relevant predictor among young people. Older respondents are probably less often in the center of their municipality on weekend evenings, and are probably also less likely to respond that they would have been going out more often if it had been less

drunkenness and violence. Thus, we tested the final model separately among young respondents (20–35 year olds,  $N = 519$ ) and among older respondents (36–69 year olds,  $N=184$ ).

Feeling unsafe when going out on weekend evenings was a statistically significant predictor among young respondents ( $B = 0.084$ ,  $SE = 0.032$ ,  $p < 0.01$ ), but not among older respondents ( $B = -0.013$ ,  $SE = 0.020$ , *n.s.*). Moreover, a t-test developed to test the difference between unstandardized regression coefficients in two independent samples (Paternoster, Brame, Mazerolle, & Piquero, 1998), showed that the association between feeling unsafe and attitudes was significantly stronger among young than among older respondents ( $t = 2.57$ ,  $p < 0.05$ ).

There were also two other statistically significant differences in the strength of predictors: Own drinking was a stronger predictor of attitudes among young respondents ( $B = -0.152$ ,  $SE = 0.021$ ,  $p < 0.001$ ) than in the remaining sample ( $B = -0.094$ ,  $SE = 0.013$ ,  $p < 0.001$ ) ( $t = 2.35$ ,  $p < 0.05$ ). On the other hand, gender was a statistically significant predictor of attitudes among respondents over 35 years of age ( $B = 0.153$ ,  $SE = 0.035$ ,  $p < 0.001$ ), but not among 20-35 year-olds ( $B = 0.021$ ,  $SE = 0.052$ , *n.s.*) ( $t = 2.11$ ,  $p < 0.05$ ).

### Discussion

Overall, the findings supported the contention set forth in the introduction that the closer the predictors come conceptually to attitudes towards a restrictive alcohol policy, the stronger the contribution to the explanation of attitudes. Belief in the effectiveness of restrictive measures was by far the strongest predictor, but belief in the harm caused by drinking was also a strong predictor. Attitudes were less strongly related to own drinking, and particularly to gender and educational level, which were also significant predictors in the overall model. The bi-variate effect of experienced harm from others' drinking was totally accounted for by the other variables in the model. However, the tendency of feeling unsafe

when going out on weekend evenings was a significant predictor in post hoc analyses where the model was tested separately for young respondents.

### **Demographics and Own Drinking**

Consistent with previous studies, we found that support for restrictive measures decreased with increased consumption and increased with age, and that it was stronger among women than among men (e.g., Giesbrecht et al., 2005; Greenfield et al., 2007b; van der Sar et al., 2012). The finding indicating that support increased with level of education, is consistent with results from a recent study in Sweden (Holmberg & Weibull, 2013), but deviates from other studies (e.g., van der Sar et al., 2012; Wilkinson et al., 2009). Attitudes and age was only associated when controlling for the effect of other demographics – a finding that probably reflects that the older respondents were less educated than younger respondents.

### **The harm caused by other peoples' drinking**

We addressed the relevance of two measures representing experienced harm from others' drinking. Regarding the tendency of feeling unsafe when going out on weekend evenings, we found an association with policy attitude. However, in the overall model where all the other predictors were taken into account, this association became non-significant. Since young people are more likely to go out on weekend evenings, and probably also are more likely to experience drunkenness and related problems in such arenas, we assumed that the tendency to feel unsafe when going out was a more relevant predictor for them than for older respondents. Indeed, separate analyses for 20-35 year-olds showed that the tendency to feel unsafe predicted policy attitudes in this age group – also when all the other predictors had been controlled for.

Concerning experienced harm from drinking of family or friends, we found a weak association, indicating somewhat more positive attitudes towards restrictive measures among those with such experiences – but this association was not significant when controlling for the

effect of own drinking.

Our finding is thus in line with those from a Finnish study indicating an association between attitudes and experienced disturbances due to intoxication in the street or in a public square, but not in private homes (Holmila et al., 2009). It seems reasonable that people are likely to perceive restrictive measures as more relevant for reducing public disturbances than they do for reducing alcohol-related problems among family or friends. In the latter case it may be more common to attribute the problems to characteristics of the perpetrator.

### **Belief in Harm and Effectiveness**

Consistent with theories suggesting that beliefs are one of the main building blocks of attitudes (Eagly & Chaiken, 1993; Rise, 2013), we found that belief in the harm caused by drinking in general and belief in the harm-limiting effect of restrictive measures were the strongest predictors of support for a restrictive policy. Although there are few other studies examining the relative importance of various predictors of such attitudes, some studies indicate that support for restrictive measures are associated with belief in the harm caused by drinking (Holmberg & Weibull, 2013; Paglia & Room, 1999; Reitan, 2003; Slater et al., 2009). Moreover, a couple of studies have shown that policy attitudes are associated with belief in the effect of various measures on drinking level (Kaskutas, 1993; Paglia & Room, 1999), but we did not find any studies addressing the association with belief in the harm-limiting effect per se. However, a recent focus group study concluded that skepticism about the effectiveness of a minimum pricing policy is likely to represent the most significant barrier for public support for such a policy (Lonsdale, Hardcastle, & Hagger, 2012).

Taken together, the results from this study suggest that public support for a restrictive alcohol policy might be most effectively increased by targeting the predictors most proximal to attitudes, i.e. by increasing awareness of the harm caused by drinking and the measures that are most effective to curb harm, rather than targeting more distal variables. Such variables

might also be relatively less challenging to modify. However, further research is needed to understand the mechanisms behind the revealed associations between beliefs and attitudes. Both longitudinal studies and experiments would be useful in this respect.

### **Methodological Considerations and Possible Avenues for Future Research**

The data used in this study provided an opportunity to address predictors of attitudes towards a restrictive alcohol policy that have hardly been studied previously. However, the study also has some limitations that warrant attention. Although the weighted sample resembled the population with regard to gender, age and living area, the level of education was higher than for the target population. Because the survey was conducted in an established panel of internet users, and the response rate was relatively low (44%), we cannot rule out the possibility that the sample also deviates from the population with respect to other variables. However, a study from New Zealand suggests that attrition may not constitute a severe problem when studying policy attitudes (Maclennan, Kypri, Langley, & Room, 2012).

The measures of belief in the harm caused by drinking in general and effectiveness of restrictive pricing and availability measures are assumed to be fairly reliable (c.f. Rise, 2013). However, we could also expect other beliefs (e.g., negative effects of high taxes, such as increased shopping in other countries) to be relevant for policy attitudes. Thus, a useful step in future studies would be to identify other salient beliefs related policy attitudes. Since beliefs selected as the most important characteristics of an attitude object are found to be more strongly related to attitudes than beliefs regarded as less important (van der Pligt, de Vries, Manstead, & van Harreveld, 2000), it would also be important to know which of the revealed beliefs that are regarded as important.

In a recent review of studies addressing public acceptability of governmental intervention to change various kinds of health behaviours, including alcohol use, it was argued that public support for regulations could be increased not only by targeting the beliefs

that underlie the attitudes, but also by activating the core values which acceptability judgements are based on (Diepeveen et al., 2013). The latter was based on observations in moral psychology, indicating that such judgements are influenced by a series of core values (e.g. fairness). Thus, such variables should also be explored in further studies aiming to understand how attitudes to alcohol policy are formed.

Since harm caused by others' drinking was not a central part of the study where our data was collected, the measures on such experiences were fairly crude. They covered only a few aspects of the harm usually included when studying this phenomenon (e.g., Huhtanen & Tigerstedt, 2012; Laslett et al., 2011), and only a few response categories were given when mapping harm among family/friends. Consequently, the associations between attitudes and experiences of harm from other peoples' drinking were probably underestimated. More studies are required to conclude on this issue.

The addressed variables explained 41% of the variance in respondents' attitudes – which may be considered as a large proportion. Nevertheless, it is important to explore other relevant predictors. As argued above, one could study other relevant beliefs and values that are assumed to be relevant for policy attitudes. Moreover, one could include other variables that have been found to be associated with attitudes towards a restrictive alcohol policy, such as religious affiliation (Greenfield et al., 2007b; Saglie & Nordlund, 1993) and political preferences (Holmberg & Weibull, 2013; Wagenaar, Harwood, Toomey, Denk, & Zander, 2000). Another approach that may increase our understanding of how attitudes are formed and changed is to study the association between the actual policy and public opinion at the aggregate level. This may be done by comparing attitudes in different geographical areas (Giesbrecht & Greenfield, 1999; van der Sar et al., 2012) and by studying the dynamics between attitudes and policy over time (e.g., Rossow & Storvoll, 2013; Saglie, 1996).

As argued in the introduction, more positive attitudes towards a restrictive alcohol

policy imply that maintaining a strict alcohol policy is easier, and thus may contribute to curb the harm caused by alcohol at the population level. Whether there is a potential to change individual behavior by changing policy attitudes, e.g., in terms of own alcohol use, is an open empirical question and should be explored in further studies.

### **Conclusions**

This paper adds to the literature on attitudes towards a restrictive alcohol policy by including predictors other than own drinking and demographics. We suggested and tested a model where the various predictors were ordered according to their conceptual proximity to attitudes. In line with the suggested model, attitudes were strongly associated with belief in the harm-limiting effect of restrictive measures and belief in the harm caused by drinking in general. We also found own drinking, gender and level of education to be significant predictors, albeit far less strongly related to attitudes. Our findings indicate that support for a restrictive policy is more likely to be increased if proximal predictors are targeted rather than more distal ones. However, further research is needed to acquire more knowledge about how attitudes towards restrictive measures are formed and how they can be changed. Amenable variables such as beliefs are of particular interest in this respect.

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*Table 1*

*The proportion that totally agreed, partly agreed, partly disagreed and totally disagreed with the following statements*

Statements	N	Totally agree	Partly agree	Partly disagree	Totally disagree
Alcohol is too expensive in Norway	1 935	27	33	18	22
It is too difficult to buy alcohol	1 937	4	12	22	63
It should be possible to buy wine in grocery stores	1 944	30	32	14	24
It should be possible to buy spirits in grocery stores	1 949	7	12	17	64

Table 2

*Mean score on Attitudes towards a restrictive alcohol policy (scale 1–4) for various sub-groups*

Groups	N	%	M	SD	F
All	1 948		2.88	0.78	
Gender					47.96***
Male	988	50.7	2.76	0.81	
Female	960	49.3	3.00	0.72	
Age					2.41
20–35 year-olds	605	31.1	2.87	0.78	
36–55 year-olds	867	44.5	2.85	0.76	
56–69 year-olds	475	24.4	2.94	0.80	
Level of education					20.95***
Junior/senior high school	810	41.6	2.78	0.77	
University	1 138	58.4	2.94	0.78	
Tendency of feeling unsafe when going out on weekend evenings (missing = 58)					24.77***
Low	514	27.2	2.70	0.76	
Medium	1 212	64.1	2.91	0.78	
High	164	8.7	3.14	0.70	
Experienced harm from alcohol use among family/friends (missing = 42)					8.45**
Low	1 771	92.9	2.86	0.78	
High	135	7.1	3.06	0.73	
Own drinking (missing = 8)					39.08***
Never	101	5.2	3.75	0.42	
Less than 3 times a year	126	6.5	3.18	0.74	
3–11 times a year	414	21.3	2.96	0.73	
2–3 times a month	503	25.9	2.80	0.72	
1–2 days a week	546	28.1	2.80	0.76	
3–5 days a week	213	11.0	2.56	0.80	
Every day	36	1.9	2.44	0.81	
Belief in the harm caused by drinking in general (missing = 156)					169.61***
No/very low	193	10.8	2.21	0.67	
Low	737	41.1	2.69	0.72	
Medium	562	31.4	3.11	0.67	
High	300	16.8	3.44	0.60	
Belief in the effectiveness of a restrictive alcohol policy (missing = 10)					203.45***
Low	181	9.4	2.11	0.70	
Low/medium	451	23.3	2.48	0.67	
Medium	590	30.5	2.85	0.67	
Medium/high	539	27.8	3.25	0.63	
High	176	9.1	3.60	0.55	

\*  $p < 0.05$ , \*\*  $< 0.01$ , \*\*\*  $p < 0.001$ .

Table 3

*Correlations among attitudes towards a restrictive alcohol policy and predictors (N = 1 703)*

	Att.	Gender	Age	Edu.	Unsafe	Family	Drinking	Harm
Gender	0.153***	-						
Age	0.034	-0.018	-					
Education	0.105***	0.045	-0.110***	-				
Feeling unsafe	0.149***	0.056*	0.065**	-0.024	-			
Family/friends	0.067**	0.098***	-0.031	-0.042	0.094***	-		
Own drinking	-0.294***	-0.103***	0.135***	0.139***	-0.104***	-0.055*	-	
Harm in general	0.475***	0.102***	0.063*	0.059*	0.130***	0.101***	-0.198***	-
Effectiveness	0.554***	0.069**	0.093***	0.077**	0.205***	0.050*	-0.158***	0.459***

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ .

Table 4

Summary of hierarchical regression analysis for variables predicting attitudes towards a restrictive alcohol policy ( $N = 1\,703$ )

Variable	Model 1		Model 2		Model 3		Model 4		Model 5	
	$B (SE)$	$\beta$	$B (SE)$	$\beta$	$B (SE)$	$\beta$	$B (SE)$	$\beta$	$B (SE)$	$\beta$
Gender	0.229 (0.037)	0.149***	0.210 (0.036)	0.137***	0.164 (0.035)	0.107***	0.124 (0.032)	0.081***	0.118 (0.029)	0.077***
Age	0.003 (0.001)	0.048*	0.002 (0.001)	0.041	0.005 (0.001)	0.088***	0.003 (0.001)	0.048*	0.001 (0.001)	0.017
Level of education	0.161 (0.037)	0.104***	0.169 (0.037)	0.109***	0.243 (0.036)	0.156***	0.180 (0.033)	0.116***	0.133 (0.030)	0.086***
Feeling unsafe (going out)			0.121 (0.021)	0.137***	0.093 (0.020)	0.105***	0.060 (0.018)	0.068**	0.011 (0.017)	0.012
Neg. exp. family/friends			0.138 (0.070)	0.047*	0.117 (0.067)	0.040	0.020 (0.061)	0.007	0.026 (0.055)	0.009
Own drinking					-0.172 (0.013)	-0.304***	-0.125 (0.012)	-0.221***	-0.107 (0.011)	-0.189***
Belief in harm in general							0.347 (0.018)	0.403***	0.205 (0.018)	0.238***
Belief in effectiveness									0.373 (0.020)	0.398***
$R^2$		0.035***		0.057***		.143***		0.293***		0.413***
$\Delta R^2$		-		0.022***		.086***		0.150***		0.120***

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ .

*Figure 1*

*Predictors of attitudes towards a restrictive alcohol policy ranged on a continuum from the most distal to the most proximal predictors, and operationalization of predictors*

Continuum	Most distal predictors			Most proximal predictors	
Predictor category	Demography	Experienced harm from other peoples' drinking	Own drinking	Belief in the harm caused by drinking in general	Belief in the effectiveness of a restrictive alcohol policy
Variables	Gender	Tendency of feeling unsafe when going out on weekend evenings	Frequency of drinking	Belief in the association between total consumption and harm	Belief in the harm-limiting effect of high prices and restriction of availability
	Age	Negative experiences with alcohol among family/friends			
	Educational level				