

ORIGINAL ARTICLE

## Changes in attitudes towards restrictive alcohol policy measures: the mediating role of changes in beliefs

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### Abstract

**Aim:** From 2005 to 2009, increased support for restrictive alcohol policy measures was observed in the Norwegian population. This article addresses whether this increase was mediated by changes in belief about the effectiveness of restrictive measures and belief about the harm caused by drinking. **Method:** The data were derived from five surveys conducted during the period 2005–2009 ( $N = 7244$ ). In each survey, we used identical measures of attitudes towards regulation of price and availability, belief in the effectiveness of such measures and belief in the association between overall consumption and harm. **Results:** During the period, there was an increase in support for restrictive policy measures; in belief in the effectiveness of these measures and in belief in the harm caused by drinking. Increased support for restrictive measures was partly mediated by changes in beliefs in terms of statistically significant indirect effects from both belief in the effectiveness of such measures and belief in the harm caused by drinking. Half of the increased support for restrictive measures could be attributed to changes in beliefs. **Conclusion:** Strengthening people's belief in the effectiveness of restrictive measures and in the harm caused by drinking may increase public support for restrictive alcohol policy measures.

### Keywords

Alcohol policy, public opinion, attitudes, beliefs

### History

Received 30 May 2012  
Revised 14 August 2012  
Accepted 6 September 2012  
Published online May 6 2013

### Introduction

Public opinion on alcohol policy issues has received increasing attention from research over the past two decades (Greenfield et al., 2004; Tobin et al., 2011). The importance of knowledge about public opinion in this respect pertains, among other things, to the legitimacy of various measures and priorities (Room et al., 1995). One of the questions raised in the research literature is how and why support for – and thereby the legitimacy of – central alcohol policy measures may change over time. In Norway and Finland, it has been shown that support for restrictive measures increased during the period around and after the millennium (Holmila et al., 2009; Nordlund, 2007; Österberg, 2007; Østhus, 2005; Storvoll et al., 2010a, 2010b), whereas in North America and Australia support for such measures decreased during this period (Giesbrecht et al., 2001, 2007; Greenfield et al., 2004, 2007a, 2007b; Wilkinson et al., 2009). Although changes in attitudes towards restrictive alcohol policy measures have been revealed in different areas and in different periods, we know little about what may bring about such changes.

This article addresses whether changes in attitudes towards restrictive alcohol policy measures in Norway during the period 2005–2009 (Storvoll et al., 2010a, 2010b) can be explained by changes in beliefs. One central idea in social psychology is that beliefs are the main building block of attitudes in the sense that attitudes are formed and changed

as the individual acquires information about the attitude object (Eagly & Chaiken, 1993). Whereas attitudes are seen as general, relatively enduring evaluations of restrictive measures, beliefs are seen as subjective perceptions of whether such measures curb harm and whether alcohol use results in serious harm (see Rise, 2012).

The association between attitudes towards alcohol policy measures and belief in their effectiveness has hardly been addressed in empirical studies (Greenfield et al., 2004). However, a study from the early 1990s showed that support for high prices and warning labels was highest among people who believed that such measures would affect both their own and others drinking (Kaskutas, 1993). Another study (Slater et al., 2009) showed that perception of alcohol-attributable harm and concern about such harm was associated with support for restrictive alcohol policy measures.

Although there is little empirical evidence of an association between attitudes towards restrictive alcohol policy measures and belief in their effectiveness, it has been argued that it is important to increase the population's understanding of which measures are most effective in curbing the harm caused by drinking in order to increase support for restrictive measures (e.g. Greenfield et al., 2007a; Room et al., 1995). Such statements are often based on the observation that the measures that have the greatest potential to limit the harm caused by drinking, such as taxation and regulation of physical availability (cf. Babor et al., 2010), are the ones that are the most unpopular in the population (e.g. Giesbrecht et al., 2007; Holmila et al., 2009; van der Sar et al., 2012; Wilkinson et al., 2009).

The Norwegian surveys that indicated increased support for restrictive alcohol policy measures during the period 2005–2009 also revealed an increase in the level of the belief that such measures could limit alcohol-related harm and the belief that there is an association between overall consumption and harm (Storvoll et al., 2010a, 2010b). While aggregate changes were described in these studies, their interconnections were not addressed. Thus, one may ask whether the increased support for restrictive measures could – at least partly – be explained by changes in the two types of belief.

To sum up, this article examines whether increased support for restrictive alcohol policy measures in Norway during the period 2005–2009 is mediated by (1) changes in belief in the effectiveness of such measures when it comes to curbing harm and (2) changes in beliefs about the association between overall consumption and harm.

## Methods

### Participants and procedure

The data were collected from five surveys commissioned by the Norwegian Directorate of Health from Synovate during the period 2005–2009. For each survey, new respondents were drawn from Synovate's web panel, which comprises demographically mapped individuals who are recruited via the telephone. In 2009, the panel comprised about 60 000 individuals. All surveys were conducted via the Internet. The overall response rate was 46%, whereas the response rate for each survey varied from 41% to 55%.

The surveys were conducted among adults (20 years+,  $N = 7510$ ). Since those who were 70 years or older were strongly underrepresented in the sample, the analyses were limited to 20–69 year olds ( $N = 7244$ ).

To ensure that the findings were reliable, the samples from each survey were weighted to reflect the age and gender distribution in the actual population in 2007 (www.ssb.no). The weighted samples had the same composition with regard to the geographical regions the respondents lived in ( $\chi^2$  (16,  $N = 7244$ ) = 17.98, n.s.), and the distribution was fairly similar

to the distribution in the general population (www.ssb.no). The samples also had the same composition with regard to educational level ( $\chi^2$  (16,  $N = 7242$ ) = 19.64, n.s.). However, the level of education was higher in the samples than in the general population (www.ssb.no). There were no statistically significant differences in average monthly drinking frequency in the five subsamples ( $F$  (4, 7212) = 3.29, n.s.).

### Measures

*Attitudes towards restrictive alcohol policy measures* were assessed by asking the respondents to what degree they agreed/disagreed with four statements (see Table 1). The response categories were totally agree (coded 1), partly agree (2), partly disagree (3), totally disagree (4), and impossible to answer (defined as missing (0.4–0.7%)). Based on the responses to each item, we calculated a mean score ranging from 1 to 4 (Cronbach's  $\alpha = 0.78$ ). The higher the score was, the stronger the support for a restrictive policy.

*Belief in the effectiveness of restrictive alcohol policy measures* was assessed 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 contribute to limiting the harmful effects of alcohol?" The measures considered are shown in Table 1, and 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 (0.8–1.4%)). The scores for each item were summed and a mean score ranging from 1 to 4 was calculated (Cronbach's  $\alpha = 0.77$ ).

*Belief in the harm caused by drinking* 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 1 L 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 (6.7%)).

The time-elapsing variable was coded as years after the first data collection: August 2005 (coded 0), December 2005 (0.33),

Table 1. Changes in attitudes and beliefs during the period 2005–2009.

Year	2005 Aug	2005 Dec	2006 Oct	2008 Jul	2009 Feb	Change? OR
Attitudes: the proportion who totally/partly disagreed with the following statements (lowest $N = 7191$ )						
Alcohol is too expensive in Norway	26	30	28	40	41	1.23*
It should be possible to buy wine in grocery stores	30	33	29	38	39	1.14*
It should be possible to buy spirits in grocery stores	74	78	78	81	82	1.12*
It is too difficult to buy alcohol	76	81	79	84	80	1.10*
Beliefs in effectiveness: the proportion who believed that the following measures to a very/fairly high degree could contribute to curb alcohol-related harm (lowest $N = 7143$ )						
High prices/taxes on alcohol	25	28	28	32	33	1.11*
Wine and spirits are only sold at Vinmonopolet <sup>a, b</sup>	31	32	32	36	40	1.10*
Rules for serving alcohol such as closing times of licenced premises	35	44	40	43	46	1.08*
Belief in the harm caused by drinking: the proportion who to a very/fairly high degree believed that the following statement is true ( $N = 6758$ )						
Increased per capita alcohol consumption will result in a significant increase in deaths due to disease, murders, suicide and accidents	38	45	39	48	50	1.13*

Notes: \* $p < 0.001$ .

<sup>a</sup>Vinmonopolet is the state-owned wine and spirits monopoly.

<sup>b</sup>In 2005 the wording was "Alcohol is only sold at Vinmonopolet".

October 2006 (1.17), July 2008 (2.92) and February 2009 (3.50).

### Analytic strategy and statistical analyses

First, we described changes from 2005 to 2009 in the proportion of respondents with a positive attitude towards each of the restrictive alcohol policy measures and a strong belief in their effectiveness and in the harm caused by drinking. We used logistic regression analyses to test whether the observed changes were statistically significant.

Second, we tested whether changes in attitudes towards restrictive alcohol policy measures were mediated by changes in (1) belief in the effectiveness of such measures and (2) belief in the harm caused by drinking. For this purpose, we used an SPSS macro for assessing and comparing indirect effects in multiple mediator models (Preacher & Hayes, 2008). As recommended, we tested the statistical significance of indirect effects using the bootstrapping method (Hayes, 2009; Preacher & Hayes, 2008). We used Pearson's correlations to calculate the bivariate associations between the variables included in the mediation analyses.

We used SPSS version 19 and the above-mentioned macro for the statistical analyses. Due to the large sample size and a fairly large number of comparisons, we used the 1% level of statistical significance in the analyses.

## Results

### Changes in attitudes and beliefs during the period 2005–2009

As shown in Table 1, the proportion of respondents who supported the use of regulation of price and restriction of availability increased in Norway during the period 2005–2009. An increase in the proportion of respondents who believed that such measures could contribute to a high degree to limit alcohol-related harm was also observed. Similarly, an increasing proportion of respondents believed that an increase in overall alcohol consumption would lead to an increase in the number of deaths.

### Mediation analyses

The correlations between the predictors, mediators and dependent variables are shown in Table 2. Whereas the associations between the time-elapsed variable and the attitude and belief

Table 2. Correlations among predictors, mediators and dependent variables (lowest  $N = 6648$ ).

	Time elapsed	Attitudes	Belief in effectiveness	Belief in harm from drinking
Time elapsed	–			
Attitudes	0.129*	–		
Belief in effectiveness	0.080*	0.561*	–	
Belief in harm from drinking	0.074*	0.488*	0.482*	–

Note: \* $p < 0.001$ .

variables were fairly weak, the associations between attitude and the belief variables were fairly strong.

The positive association between the time-elapsed variable and attitudes towards restrictive policy measures (i.e. increased support for restrictive measures over time) was reduced when the effect of beliefs was controlled for ( $B = 0.047$ ,  $SE B = 0.006$ ,  $p < 0.0001$ ) compared to the bivariate association ( $B = 0.090$ ,  $SE B = 0.008$ ,  $p < 0.0001$ ). The statistically significant total effect shown in Table 3 (BCa 99% CI: 0.031–0.055) indicates that the increased support was partly mediated by changes in beliefs. When the other mediator in the model was controlled for, the indirect effects of both belief in the effectiveness of restrictive measures (BCa 99% CI: 0.018–0.035) and belief in the harm caused by drinking (BCa 99% CI: 0.010–0.022) were statistically significant. The indirect effect of belief in effectiveness was significantly stronger than the effect of belief in the harm caused by drinking (BCa 99% CI: 0.003–0.019). The findings did not change when percentile confidence intervals and bias corrected confidence intervals were considered.

## Discussion

To sum up, the analyses showed fairly strong associations between attitudes towards a restrictive alcohol policy and belief in both the harm caused by drinking and the effectiveness of restrictive measures to curb harm. Moreover, increased support for restrictive alcohol policy measures during the period 2005–2009 was partly mediated by changes in beliefs. It was a unique indirect effect of both variables, but the effect was strongest for changes in belief in the effectiveness of restrictive measures.

Table 3. Mediation of the effect of time elapsed on attitudes towards regulation of price and restriction of availability through belief in the effectiveness of such measures and the harm caused by drinking ( $N = 6576$ ).

	Point estimate	Product of coefficients		Bootstrapping					
		SE	Z	Percentile 99% CI		BC 99% CI		BCa 99% CI	
				Lower	Upper	Lower	Upper	Lower	Upper
Indirect effects									
Effectiveness	0.027	0.003	8.19	0.019	0.036	0.019	0.035	0.018	0.035
Harm from drinking	0.016	0.002	7.16	0.010	0.022	0.010	0.022	0.010	0.022
Total	0.043	0.005	9.16	0.031	0.054	0.031	0.055	0.031	0.055
Contrasts									
Effectiveness vs. harm from drinking	0.011	0.003	3.58	0.003	0.019	0.003	0.019	0.003	0.019

Note: BC, bias corrected; BCa, bias corrected and accelerated, 5000 bootstrap samples.

### Changes in beliefs and changes in attitudes

Our finding that the increase in support for restrictive alcohol policy measures to a significant extent could be attributed to changes in beliefs is consistent with both theoretical assumptions and empirical observations. The idea that beliefs are the main building block of attitudes implies that changes in beliefs will affect changes in attitudes. Empirically, our finding is in line with a few previous studies; i.e. our finding of an association between belief in the effectiveness of policy measures and support for these measures mirrors that of Kaskutas (1993), while our finding of an association between belief in the harm caused by drinking and support for restrictive measures is in line with the finding of Slater and co-workers (2009).

We may then ask: Are there any likely explanations for the observed changes in beliefs over this relatively short period? In 2004, the Directorate of Health carried out a national media campaign to increase people's awareness of alcohol-related harm and effective measures to curb such harm. Before/during this media campaign and in the following years, the Directorate also made efforts to increase media attention to these topics. An evaluation of the 2004 campaign showed that both belief in the effectiveness of restrictive alcohol policy measures and support for them had increased shortly after the media campaign (Rise et al., 2005). The authors suggested that these changes could be related to the agenda-setting function of the campaign (cf. McCombs & Shaw, 1972) in terms of increased awareness and interest in, as well as exploration of, alcohol policy issues. However, they underlined that it was difficult to isolate the effect of the campaign from other factors that may have influenced the population's beliefs and attitudes, for example other media coverage of the topic. In the same vein, it is difficult to ascertain to what extent the attention of the media to alcohol-related harm and effective alcohol policy measures increased in response to the Directorate's efforts after 2004, and if so, whether this led to the observed changes in beliefs (Storvoll et al., 2010a).

### Additional possible explanations of increased support

As increased support for regulation of price and restriction of availability was only *partly* mediated by changes in beliefs in the population, additional explanations are also of interest. Broadly speaking, these may be of two kinds: (1) specific changes in alcohol policy and/or the importance of the policy and (2) a more general change in value orientation. In this context, it should be kept in mind that the increase in support of restrictive measures since 2005 seems to be part of a trend that started around the millennium (Nordlund, 2007; Østhus, 2005).

First, let us consider specific changes of relevance here. Compared to many other countries, Norway has exercised restrictive alcohol policy measures in terms of high excise duties and significant restrictions on the availability of alcohol (Brand et al., 2007), yet these measures have been considerably liberalised during the past 10 years. The number of on-premise outlets and Norwegian Wine and Spirits Monopoly outlets in relation to the population has increased (Edland-Gryt, 2011; Rossow, 2010). Also, opening hours for sale and serving of alcohol have been extended. In addition, the price of alcohol has

increased less than wages and salaries, and therefore alcohol has become considerably "cheaper" during this period (Edland-Gryt, 2011; Rossow, 2010). Thus, support for regulating price and restricting availability may have increased because the impact of these measures on people's access to alcohol has become less, and therefore people's opposition to them has become less. In line with this, a comparative study from the United States and Canada showed that there was greater support for curtailing access to alcohol in the jurisdiction with less restrictive measures on a particular policy (Giesbrecht & Greenfield, 1999). Here, we have focused on how changes in the Norwegian alcohol policy may have influenced the public opinion on restrictive alcohol policy measures. However, the public opinion may also have something to say for the policy decisions – at least in a longer perspective (Holder et al., 1998; Saglie, 1996; Wagenaar et al., 2000).

Consistent with the liberalisation of alcohol policy, alcohol consumption has increased significantly (Edland-Gryt, 2011; Rossow, 2010), which in turn has led to an increase in various types of alcohol-related harm (Rossow, 2010). Thus, one may assume that more people have experienced the dark side of alcohol – both due to their own and other people's drinking. This may have resulted in a change in the perception of the importance of a restrictive alcohol policy, in terms of more people seeing the necessity to regulate consumption, and hence greater support for a restrictive policy. However, a recent Canadian survey indicated that people were more negative to restrictive measures when alcohol problems in a community were worse, a finding which apparently runs counter to our reasoning (Macdonald et al., 2011). More precisely, analyses of aggregated data showed that in provinces with higher rates of alcohol-related morbidity people were less likely to endorse increased alcohol taxes.

Now, we turn to more general changes in values as a possible explanation for changes in attitudes towards alcohol policy. Surveys in the Norwegian population from 2001 to 2007 suggest that people's values have changed in several respects. Norwegians have become more idealistic, less materialistic, more radical and less conservative. Moreover, over the years and to an increasing extent, Norwegians have expressed trust in society's institutions and satisfaction with Norwegian society at large (Hellevik, 2008). Thus, increased support for a restrictive alcohol policy may in part also reflect a more general change in value orientation. Finally, the explanation for increased support for a restrictive alcohol policy in Norway at the beginning of this century should probably not be sought in one single factor, but should rather be seen as the result of several concurrent and synergic processes.

### Methodological considerations

Although the samples were representative of the population with regard to age and gender (weighted) and geographic region, the respondents were more highly educated. This may be because the surveys were conducted via the Internet. As attitudes to alcohol policy measures are associated with education level, this may have resulted in an upward biased level of support for a restrictive policy (Storvoll et al., 2010a, 2010b). Because the surveys were conducted in an established panel of

internet users and the response rate was fairly low (46%), it is possible that the samples also deviate from the general population in other respects. Such sample biases may affect the level of the outcome variable. However, as the socio-demographic composition of the samples did not differ over time, we may assume that such sampling bias has not affected the observed associations between attitudes and beliefs over time. Furthermore, the use of identical measures contributes to the validity of the changes in attitudes and beliefs.

### Implications

If one aims to increase public support for restrictive alcohol policy measures, the findings of our study suggest that it may be possible to achieve this by strengthening people's beliefs in effective policy measures to curb alcohol-related harm and their belief in the harm caused by drinking. The most efficient way to reach the whole population with such messages is probably through the media. As discussed earlier, the study by Rise et al. (2005) indicates that it is possible to influence such beliefs and attitudes through media. A quasi-experimental evaluation of a community action project in New Zealand is also interesting in this respect. In cities that were exposed to mass media campaigns, the inhabitants' attitudes towards restrictive alcohol policy measures remained fairly stable during the project period. In the reference cities, however, the support of such measures decreased significantly, thus suggesting that mass media campaigns had succeeded in stemming the national trend towards support for liberalisation (Casswell & Gilmore, 1989; Casswell et al., 1989). Changes in beliefs were not addressed.

Given the scarcity of empirical studies in this area, it is important that the findings of our study are confirmed in further studies, preferably in different types of jurisdiction. Moreover, it is important to explore the mechanisms underlying media exposure, beliefs and attitudes.

### Conclusion

The results indicate that increased support for restrictive alcohol policy measures in Norway during the period 2005–2009 was partly mediated by changes in beliefs in the effectiveness of such measures and changes in beliefs in the harm caused by drinking. However, more research is needed to confirm these results.

### Acknowledgements

The data were commissioned by the Norwegian Directorate of Health from Synovate. However, the Directorate is not responsible for the presented analyses or the interpretation of the findings. The authors are grateful for the access to this data set.

### Declaration of interest

The authors report no conflicts of interest.

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