Short Communication

The unique contribution of attitudes toward non-alcoholic drinks to the prediction of adolescents' and young adults' alcohol consumption

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ABSTRACT

Attitudes toward alternative behaviors, such as drinking soda instead of alcohol, might contribute to the prediction of young people's drinking behavior. The current study explored the associations between late adolescents' and young adults' attitudes toward alcoholic and non-alcoholic drinks and their alcohol consumption, and whether these associations were moderated by participants' sex, age and education level. Cross-sectional data were collected among 1012 15 to 25-year-olds. Participants completed an online questionnaire on attitudes toward alcoholic and non-alcoholic drinks, binge drinking and monthly alcohol consumption.

Data were analyzed by employing structural equation modeling in Mplus. After controlling for the shared variance in both attitudes, attitudes toward alcoholic drinks were positively related and attitudes toward non-alcoholic drinks were negatively related to participants' monthly alcohol use and binge drinking. Relations between attitudes towards alcoholic drinks and monthly alcohol consumption were stronger for boys than for girls and stronger for participants with intermediate education background. Relations between both attitudes and binge drinking were strongest for high educated participants. According to our data, non-alcohol attitudes provide a unique contribution to the prediction of alcohol use.

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1. Introduction

Behavioral attitudes, defined as the degree to which people hold favorable or unfavorable appraisals toward behavior, are currently regarded as important predictors of a large variety of human behaviors (Wallace, Paulson, Lord, & Bond, 2005; Kim & Hunter, 1993). The utility of the attitude construct has also been verified in research on adolescent alcohol use. Findings show strong associations between drinking attitudes and alcohol consumption indicating that the more positive young people's attitudes toward alcohol use, the more engagement in heavy alcohol use and the higher their drinking levels (Kilty, 1978; Leigh, 1989; McCarty, Morrison, & Mills, 1983; Schlegel, Crawford, & Sanborn, 1977; Stacy, Bentler, & Flay, 1994). Notably, some of these studies suggest that compatibility between measures of alcohol attitudes and drinking behavior increases the attitude–behavior association (Leigh, 1989; McCarty et al., 1983; Schlegel et al., 1977). McCarty et al. (1983) demonstrated that attitudes toward specific drinking behaviors correlated better with those drinking behaviors than more global attitudes. This is in line with the correspondence principle which suggests that the strength of associations between measures of attitudes and behavior will increase if both measures correspond on dimensions such as the object of measurement, the level of specificity, and the temporal and behavioral context (Ajzen & Fishbein, 1977). Several meta-analyses provided strong empirical support for the notion that attitude and behavioral measures should tap the same target behavior in order to obtain high attitude–behavior correlations (Kim & Hunter, 1993; Ajzen & Fishbein, 1977; Kraus, 1995). However, other evidence indicates that non-corresponding attitudes relate to the target behavior as well. For example, a study on physical activity showed that attitudes toward watching TV were negatively related to participants' intentions and actual performance of physical activities (Rhodes, Blanchard, & Bellow, 2008). Similarly, negative drug-free attitudes were found to be related to higher reported use of marijuana in young adults (Simons & Carey, 2000). These findings suggest that people may base their behavioral decisions not only on attitudes toward the target behavior, but also on attitudes toward relevant alternative behavior(s). In line with these preliminary findings, we hypothesize that young people's alcohol consumption may be associated with both attitudes toward alcoholic and non-alcoholic drinks.

The question whether non-alcohol related attitudes predict adolescents' drinking patterns is important for several reasons. First, despite evidence that attitudes towards behavioral alternatives are related to the target behavior, previous alcohol studies have not
addressed this topic. Second, if attitudes toward non-alcoholic drinks contribute to the explanation of alcohol use, the correspondence principle so important to predict alcohol consumption should be reconsidered. Third, if attitudes toward non-alcoholic drinks are predictive of adolescents’ alcohol use, these non-alcohol attitudes may be interesting targets for intervention programs.

In the present study, we examined the unique contribution of attitudes toward non-alcoholic drinks to the prediction of monthly alcohol consumption and binge drinking by attitudes toward alcoholic drinks in adolescents and young adults. We also tested whether these attitude–behavior associations were moderated by demographic characteristics, i.e. sex, age and educational level.

2. Methods

2.1. Participants and procedure

A total of 1012 participants of an online access panel, aged 15–25 years, were invited to complete an online survey on lifestyle. After completion of the survey, participants received vouchers. The sample included 504 boys (49.8%). Participants’ mean age was 20.25 (SD = 3.02). The vast majority was born in the Netherlands (98.2%). Most of the participants had high and intermediate education (High: 42.5%, Intermediate: 32.8%, Low: 24.7%). More than half of the participants were college or university students (88.9%), 22.5% had a job and 8.6% combined their study with a job.

2.2. Measures

2.2.1. Monthly alcohol consumption

Participants reported how often they consumed alcohol in the previous 4 weeks by responding on a 7-point scale ranging from (1) “I do not drink” to (7) “more than 1 day a week” (Lemmens, Tan, & Knibbe, 1992). The mean number of alcoholic drinks in each drinking occasion in those 4 weeks assessed the quantity of alcohol.

2.2.2. Binge drinking

Participants who consumed alcohol were asked how frequently they engaged in binge drinking in the past 6 months. For girls, binge drinking was defined as drinking more than four alcoholic consumptions per occasion and for boys more than six (Monshouwer et al., 2007). Responses were given on a 7-point scale ranging from (1) “never” to (7) “every day.”

2.2.3. Attitudes toward alcoholic and non-alcoholic drinks

Attitudes toward alcoholic drinks were measured by the sum of scores on 5 Visual Analogue Scales (VAS). Answers could be given on a scale ranging from 0 (negative) to 10 (positive). The items were: “For me, alcoholic drinks are: unpleasant–pleasant, bad–good, annoying–fun, foolish–wise and drowsy–sturdy”. Only participants who consumed alcoholic drinks had to answer this question. Internal reliability was α = .79. The 5 similar items as for alcoholic drinks were used to tap attitudes toward non-alcoholic drinks (e.g., soda, water). Internal reliability was α = .84.

2.3. Strategy of analyses

Descriptive statistics and Pearson correlations were calculated for all study variables. We used structural equation modeling in Mplus (Muthén & Muthén, 1998–2008) to examine our research questions and tested the model as depicted in Fig. 1. In this model binge drinking was an observed variable, two indicators defined the latent variable monthly alcohol consumption, and the latent variables attitudes toward alcoholic and non-alcoholic drinks were both defined by five indicators. By modeling both attitudes, toward alcoholic drinks and toward non-alcoholic drinks, the unique contribution of these factors to monthly alcohol consumption and binge drinking could be estimated. We used the MLR estimator (maximum likelihood with standard errors and chi-square test statistics) for our models. Together with the robust chi-square values we used the Root Mean Square Error of Approximation (RMSEA) and Bentler’s Comparative Fit Index (CFI) to examine the fit of the model. The RMSEA should preferably have values less than or equal to .05, but values between .05 and .08 were indicative of fair fit (Kaplan, 2000). For the CFI, values above .95 were preferred (Kaplan, 2000) but should not be lower than .90 (Kline, 1998).

To examine moderation effects of sex and educational level, multi-group analyses were conducted, i.e. we tested whether model parameters were different in males and females and in adolescents with low, intermediate and high educations. The moderation effect of age was examined by adding two interaction terms to the model. The interaction terms were defined as the product of the latent variables attitudes toward alcoholic drinks and attitudes toward non-alcoholic drinks and age. We tested both the main and the interaction effects of age on monthly alcohol use and binge drinking.

3. Results

3.1. Descriptive analyses

Participants consumed on average 33.41 (SD = 60.10) alcoholic drinks a month and most had engaged in binge drinking in the past 6 months (68.2%). The mean score on participants’ attitudes toward alcoholic drinks was 5.57 (SD = 1.34) and the mean score on attitudes toward non-alcoholic drinks was 6.47 (SD = 1.64).

Correlations between the model variables are presented in Table 1. All correlations were significant (p < .001) and ranged from −.24 to .68. Participants’ attitudes toward alcohol showed positive associations with the alcohol consumption variables (frequency of monthly alcohol consumption: r (1012) = .43; quantity of monthly alcohol consumption: r (1012) = .29; binge drinking: r (918) = .31), suggesting that the more positive their attitudes, the more participants engaged in binge drinking and monthly alcohol consumption. Participants’ attitudes toward non-alcoholic drinks showed negative associations with the alcohol consumption variables (frequency of monthly alcohol consumption: r (1012) = −.32; quantity of monthly alcohol consumption: r (1012) = −.30; binge drinking: r (918) = −.36), indicating that the more positive their attitudes were, the less frequently they engaged in binge drinking and the lower their monthly alcohol use. A negative association was observed between the two attitude variables (r (918) = −.24). The two variables on alcohol consumption were positively associated (frequency monthly alcohol consumption–binge drinking: r (1012) = .68; quantity monthly alcohol consumption–binge drinking: r (1012) = .67; frequency monthly alcohol consumption–quantity monthly alcohol consumption: r (1012) = .57).

3.2. The structural equation model

Results of the structural equation modeling analyses are presented in Fig. 1. The fit of the initial model was satisfactory (χ² (df = 58, n = 1012) = 222.69, p < .001; CFI = .96; RMSEA = .05). Indicators measured the latent variables of attitudes and alcohol use adequately. The factor loadings of the latent variables were on average .66, ranging between .37 and .93. Attitudes toward alcoholic drinks were positively associated and attitudes toward non-alcoholic drinks were negatively associated with binge drinking and monthly alcohol consumption. These findings clearly reveal that a) attitudes toward non-alcoholic drinks are distinguishable from attitudes toward alcoholic drinks and b) attitudes toward non-alcoholic drinks have a unique contribution to the prediction of alcohol use, apart from those toward alcoholic drinks.
3.3. Moderating variables

The parameter estimates of the structural model differed between boys and girls \((\Delta \chi^2 (df=4, n=1012) = 9.74, p = .05)\). There was a marginally significant difference in the associations between the attitudes toward alcohol and monthly alcohol consumption \((\Delta \chi^2 (df=1, n=1012) = 3.50, p = .06)\). The associations were stronger for boys than for girls (unstandardized: Boys: \(\beta = .52\), Girls: \(\beta = .44\)). Results showed that age did not moderate the 4 associations between attitudes and alcohol consumption. The parameter estimates of the structural model differed between the three educational levels \((\Delta \chi^2 (df=8, n=1012) = 23.75, p < .001)\). Specifically, differences were found in all associations, those between the attitudes toward alcoholic drinks and binge drinking \((\Delta \chi^2 (df=2, n=918) = 7.72, p = .02)\) (unstandardized: Low: \(\beta = .43\); Intermediate: \(\beta = .57\); High: \(\beta = .53\)), between attitudes toward alcoholic drinks and monthly drinking \((\Delta \chi^2 (df=2, n=918) = 7.00, p = .03)\) (unstandardized: Low: \(\beta = .31\); Intermediate: \(\beta = .24\), High: \(\beta = .35\)), and between attitudes toward non-alcoholic drinks and binge drinking \((\Delta \chi^2 (df=8, n=1012) = 23.75, p < .001)\) (unstandardized: Low: \(\beta = -.16\); Intermediate: \(\beta = -.23\)). These three associations were strong for intermediate or high educated participants, however, all these three associations were weak for low educated participants.

4. Discussion

According to our findings, both attitudes toward alcoholic drinks and attitudes toward non-alcoholic drinks were related to monthly alcohol use and frequency of binge drinking. When controlling for the shared variance in both attitude types, we found that both concepts uniquely contributed to the prediction of participants’ alcohol consumption. Our findings further showed a stronger relationship between attitudes toward alcoholic drinks and monthly alcohol consumption for boys than for girls. Moreover, associations between attitudes and alcohol consumption were moderated by participants’ education level.

Although relations between attitudes toward alcoholic drinks and alcohol use were somewhat stronger, attitudes toward non-alcoholic drinks still showed a strong link with alcohol consumption. In the light of the correspondence principle \((Aizen & Fishbein, 1977)\), it is remarkable that we found such strong relations between non-corresponding attitudes and the target behavior. A possible explanation may be that current study did not include past drinking behavior. Associations with attitudes toward non-alcoholic drinks may be stronger for light drinkers. In addition, young people with low alcohol consumption may have developed more positive attitudes toward non-alcoholic beverages, suggesting that drinking patterns also predict attitudes toward non-alcoholic drinks.

The present study shows several limitations which could be addressed in future research. Due to the lack of longitudinal data, we cannot draw conclusions about causality and the direction of the attitude–behavior relations. Moreover, we only included alcohol consumption patterns as outcome measures. For a complete understanding of the processes related to adolescent alcohol use, it is important to know how attitudes relate to both the consumption of alcoholic and non-alcoholic drinks.

Table 1

<table>
<thead>
<tr>
<th>Item</th>
<th>M</th>
<th>SD</th>
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<th>3</th>
<th>4</th>
<th>5</th>
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<td>3. Binge drinking</td>
<td>3.29</td>
<td>1.39</td>
<td>.31</td>
<td>-36</td>
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<td>.43</td>
<td>-32</td>
<td>.68</td>
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<tr>
<td>5. Quantity monthly alcohol consumption</td>
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<td>3.58</td>
<td>.29</td>
<td>-30</td>
<td>.67</td>
<td>.57</td>
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Note: All Pearson correlations were significant at \(p < .001\).
References


