

Drinking motives and their associations with alcohol use among adolescents in Sweden

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Abstract

Aims: Previous studies have shown a close association between drinking motives and drinking behaviour among adolescents. However, there is a lack of evidence from the Nordic countries since few studies covering this topic have been carried out in this context. The present study among Swedish adolescents aims to examine (1) the prevalence of different drinking motives, (2) how drinking motives are associated with drinking frequency and heavy drinking frequency, and (3) whether the associations are moderated by sex. **Methods:** A nationally representative sample ($n = 5,549$) of Swedish adolescents (aged 15–16 years) answered a questionnaire in school.

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Of these, 2,076 were drinkers and were included in our study. Eighteen items from the Modified Drinking Motives Questionnaire-Revised (Modified DMQ-R) were used. Bivariate relationships between motives and drinking were examined with correlations. Linear regression models were used to assess the links between motives and drinking. Moderating effects of sex were examined with interactions. **Results:** Most common were social motives, followed by enhancement, coping-anxiety, coping-depression, and conformity motives. Coping-depression motives were slightly more common among girls. Conformity motives were associated with a lower frequency of drinking and heavy drinking while enhancement, social and coping-depression motives were associated with a higher frequency of both outcomes. No associations were found for coping-anxiety motives. No moderation effect of sex was found. **Conclusions:** Approach motives (social/enhancement) are the most prevalent drinking motives among Swedish adolescents. These also have the strongest association for both frequency of drinking and frequency of heavy drinking. This shows that Swedish adolescents drink to achieve something positive, rather than to avoid something negative, raising implications for prevention and intervention.

Keywords

adolescents, alcohol, drinking motives, motivation, youth

Alcohol consumption is a major contributor to the global disease burden and is associated with substantial health loss (Griswold et al., 2018). Alcohol consumption usually begins in adolescence (age 10–19 years) and can harm emotional, cognitive, and psychosocial development in this period (Degenhardt et al., 2016). Among Swedish adolescents (aged 15–19 years), alcohol use is the risk factor that contributes most to disease burden (Institute for Health Metrics and Evaluation (IHME), 2017). Heavy episodic drinking is more common among young drinkers (aged 15–24 years) compared to the total population of drinkers (aged 15+ years) in almost every part of the world (World Health Organization, 2018) and can increase the risk of alcohol problems in adulthood (Kuntsche et al., 2017; McCambridge et al., 2011; Viner & Taylor, 2007).

It has been argued in the literature that drinking motives are the most proximal determinants of drinking patterns and are thus assumed to mediate the impact of more distal factors such as personality (Cooper, 1994; Cox & Klinger, 1988). It is therefore important to examine drinking motives in order to further our

understanding of the drinking behaviours of adolescents (Kuntsche et al., 2005). A common way to understand drinking motives is to divide them into two driving force dimensions and four specific motives. This has become known as the Four-Factor Model (Cooper, 1994), based on the theory of “A motivation model for alcohol use” (Cox & Klinger, 1988). The Four-Factor Model has been further developed into a five-factor version and the model fit has been shown to be better in this later version (Grant et al., 2007).

The two driving force dimensions behind drinking are called source and valence. Source divides motives into either internal or external, i.e., whether the motivation comes from within the individual or from the social environment. Valence refers to drinking to obtain a positive outcome or to avoid a negative one (Cooper, 1994). Others use the terms approach or avoidance motivation (Elliot, 2006) to refer to this dimension (Mackinnon et al., 2017). Motives cross these two dimensions and are classified into: enhancement (internal approach), social (external approach), coping (internal avoidance), and conformity (external avoidance).

Enhancement motives include drinking for pleasure, excitement, or to enhance mood. Social motives are those that give social rewards, such as getting access to social gatherings or drinking to ease socialisation. Conformity motives include drinking because of social pressure, fear of missing out, being rejected or left out. Drinking to avoid disturbing thoughts, troublesome feelings, and personal problems are considered as coping motives (Cooper, 1994; Kuntsche & Kuntsche, 2009). A distinction has been made between coping with anxiety (worries, tensions), and coping with depression (sadness, pessimistic thinking) (Grant et al., 2007). Social motives have proven most common, followed by enhancement, coping-anxiety, coping-depression, and conformity motives (Grant et al., 2007; Kuntsche et al., 2014; Mackinnon et al., 2017; Mezquita et al., 2016).

The strongest associations are typically between social motives and frequent moderate drinking, enhancement motives and heavy drinking (Kuntsche et al., 2014; Kuntsche et al., 2005; Kuntsche & Kuntsche, 2009), and between coping and adverse consequences (alcohol-related and non-alcohol-related) (Kuntsche et al., 2005; Wicki et al., 2017). Coping-anxiety motives have been shown to relate directly to alcohol-related problems, while coping-depression motives relate indirectly to alcohol-related problems via higher alcohol use (Grant et al., 2007). Conformity motives, on the other hand, have been associated with lower alcohol use (Kuntsche et al., 2014; Kuntsche et al., 2005). This pattern seems relatively consistent internationally (Kuntsche et al., 2014; Kuntsche et al., 2008).

Nonetheless, the distribution of drinking motives appears to differ between countries. For example, social and enhancement motives appear more important to adolescents (aged 11–19 years) in northern than in southern Europe (Kuntsche et al., 2014). Another study found social and enhancement motives to be more common among undergraduate students in individualistic countries compared to collectivistic

countries (Mackinnon et al., 2017). In Sweden, very few studies have been conducted on drinking motives. The Swedish adult population has been shown to primarily drink for enhancement and social motives, and less for coping and conformity motives, than the average among European countries (RARHA, 2016; The Swedish Council for Information on Alcohol and Other Drugs, 2018a). A study of undergraduate students in Sweden showed that social and enhancement motives were most common, and, along with coping motives, were also linked to hazardous drinking (Nehlin & Oster, 2019).

Small moderating effects of sex on motives for drinking have been found (Kuntsche et al., 2015; Lammers et al., 2013; Magid et al., 2007). The link between enhancement motives and alcohol seems slightly stronger among boys, whereas coping motives are more strongly linked to alcohol consumption among girls (Kuntsche et al., 2014; Lammers et al., 2013; Magid et al., 2007). Boys score higher on social, enhancement and conformity motives, and girls on coping motives (Kuntsche et al., 2015). Heavy episodic drinking is more common among boys, but the gap has decreased in recent years (EMCDDA/ESPAD, 2016; World Health Organization, 2018).

To our knowledge, drinking motives among Swedish adolescents have only been examined in two studies (aged 11.8–16.5 years) (Kloep et al., 2001) and (aged 15–22 years) (Comasco et al., 2010). In one, a cross-national study with data from the mid-90s, sociability, companionship, tradition, relaxation, excitement, or peer pressure were reported as reasons for drinking (Kloep et al., 2001). The other study used data from the early 2000s and found that social-enhancement and coping motives correlated with hazardous alcohol use (Comasco et al., 2010). More up-to-date research on drinking motives is needed in Sweden. The data used in the two previous Swedish studies are also qualitative or based on regional samples and thus have limited generalisability. Furthermore, given the decline in adolescent (predominately aged 11–18 years) drinking in recent years

(EMCDDA/ESPAD, 2016; Looze et al., 2015; Pape et al., 2018; Raninen et al., 2014; The Public Health Agency of Sweden, 2019; The Swedish Council for Information on Alcohol and Other Drugs, 2018b) there is a need for updated studies on drinking motives among adolescents. Moreover, neither of the previous Swedish studies used the Four-Factor Model (Cooper, 1994) or the five-factor version (Grant et al., 2007) to enable international comparisons. To our knowledge, there exist no recent nationally representative studies of drinking motives among adolescents in the Nordic countries. Since drinking motives are the most proximal factors for adolescents' (sample aged 13–19 years) alcohol use (Cooper, 1994; Cox & Klinger, 1988) the absence of large-scale and up-to-date evidence means we lack knowledge about one of the most important factors for adolescent drinking in the Nordic countries. A study that provides comparable measures of drinking motives would be useful in a broader international context as well. The present study will contribute such information.

This study aims to examine drinking motives and their association with drinking frequency and heavy drinking frequency in a nationally representative sample of Swedish adolescents aged 15–16 years, and whether these associations are moderated by sex.

Methods

Study sample

This study is based on a nationally representative sample of Swedish adolescents ($n = 5,549$) born in 2001. Data were collected during the first half of 2017 as part of the research project Futura01 (The Swedish Council for Information on Alcohol and Other Drugs, 2020b). The respondents were then in the 9th grade of compulsory school (15–16 years old). Five hundred schools were randomly sampled by Statistics Sweden and one class in each school was randomly selected. The respondents filled out a paper-and-pen questionnaire in school. The response rate at the school

level was 68.8% (344 of 500) and 82.3% at the individual level. Respondents gave informed consent to participate. The study was approved by the Ethical Review Board in Stockholm (Dnr 2017/103-31/5).

Analytic sample

Of the 5,549 in the original data set, those who did not report any alcohol use during the past 12 months (3,473/62.6%) were excluded, leaving 2,076 drinkers. An analytic sample was created based on the requirement of valid answers on all variables included in the study, i.e., a complete case analysis. This resulted in an analytic sample of 1,860 respondents (51.6% girls). Missing answers mostly occurred in questions related to drinking motives. For the five scales of drinking motives, missing values varied from $n = 87$ for social motives to $n = 120$ for coping-depression motives.

Measurements

Drinking frequency was measured with the question "How often do you drink alcohol?". The response alternatives were: "Never", "About once a month", "2–4 times per month", "2–3 times per week", "4 times per week or more often". An annual frequency measure was created from this using the midpoints of categories: Never = 0; About once a month = 12; 2–4 times per month = 36; 2–3 times per week = 130; 4 times per week or more often = 208.

Heavy drinking frequency, defined here as 6+ drinks at a single occasion, was measured with the question "How often do you drink six such 'drinks' or more at the same time?" with a picture of the examples comparing typical beverages, alcohol volume, and amount described above. In the survey, one "drink" contained approximately 12 grams of pure alcohol, equal to 50 cl medium-strength beer (3.5%), 33 cl strong beer (5%), 10–15 cl wine (13%), or 4 cl liquor (40%). Response alternatives were: "Never", "More rarely than once a month", "Every month", "Every week", "Daily or almost

Table 1. Eighteen reasons to drink and corresponding motives dimension with mean values and 95% confidence intervals.

Variable	Motives dimension	Mean value (95% CI)
Most of your friends were drinking?	Social	2.95 (2.86, 3.03)
To be more sociable?	Social	2.86 (2.77, 2.95)
Parties and other social gatherings get more fun?	Social	3.38 (3.30, 3.46)
You liked the feeling?	Enhancement	3.15 (3.07, 3.22)
It was fun?	Enhancement	3.67 (3.59, 3.75)
It is exciting?	Enhancement	2.95 (2.88, 3.02)
To get drunk?	Enhancement	2.65 (2.57, 2.74)
It makes you feel good?	Enhancement	2.28 (2.20, 2.35)
To relax?	Coping-anxiety	2.13 (2.07, 2.20)
To get better self-confidence?	Coping-anxiety	2.18 (2.11, 2.26)
It helps you when you feel nervous?	Coping-anxiety	1.97 (1.90, 2.03)
It cheers you up when you are in a bad mood?	Coping-depression	2.17 (2.09, 2.24)
It helps when you are feeling depressed?	Coping-depression	1.74 (1.67, 1.81)
Forget troublesome/painful memories?	Coping-depression	1.71 (1.65, 1.78)
To be liked?	Conformity	1.77 (1.71, 1.84)
Your friends pressure you to drink?	Conformity	1.33 (1.30, 1.37)
Fit in with a group you like?	Conformity	1.63 (1.58, 1.69)
Others won't kid you about not drinking?	Conformity	1.32 (1.28, 1.35)

every day". An annual frequency measure was created from this where the response alternatives were coded as follows: Never = 0; More rarely than once a month = 6; Every month = 12; Every week = 52; Daily or almost daily = 260.

Drinking motives were measured with 18 statements from the Modified Drinking Motives Questionnaire-Revised (Modified DMQ-R) (Grant et al., 2007). Not all items from the Modified DMQ-R were included due to limited capacity in the study questionnaire. Initial confirmatory factor analyses were conducted to compare a three-factor model (social-enhancement, coping, conformity), four-factor model (social, enhancement, coping, conformity), and a five-factor model (social, enhancement, coping-depression, coping-anxiety, conformity). Best model fit was found for the five-factor model and further analytic steps were thus based on this model. The question asked was: "If you think about the times you drank in the last 12 months, how often was it because of. . ." followed by the different reasons listed in Table 1. A five-point Likert scale containing the following options was used: "Never = 1", "Rarely = 2", "About half of the time = 3",

"Often = 4", "Always = 5". Composite measures of the five drinking motives were constructed by combining the reasons to drink into mean score scales according to the five drinking motive dimensions. The inter-item reliability (internal consistency) was good for all five drinking motives (Cronbach's alphas 0.77–0.89).

Sex was identified from the respondent's personal identity (civic registration) number, of which the second-to-last digit specifies the assigned biological sex at birth, with an even digit for girls and odd for boys.

Statistical analysis

Mean score values and confidence intervals for each drinking motives scale were first calculated for boys and girls separately. Mann-Whitney U-tests were used to examine possible sex differences in drinking motives. Correlations between drinking motives were then examined using Spearman rank correlations. To examine associations with alcohol use, two separate linear regression models were fitted with the drinking motive dimensions as independent

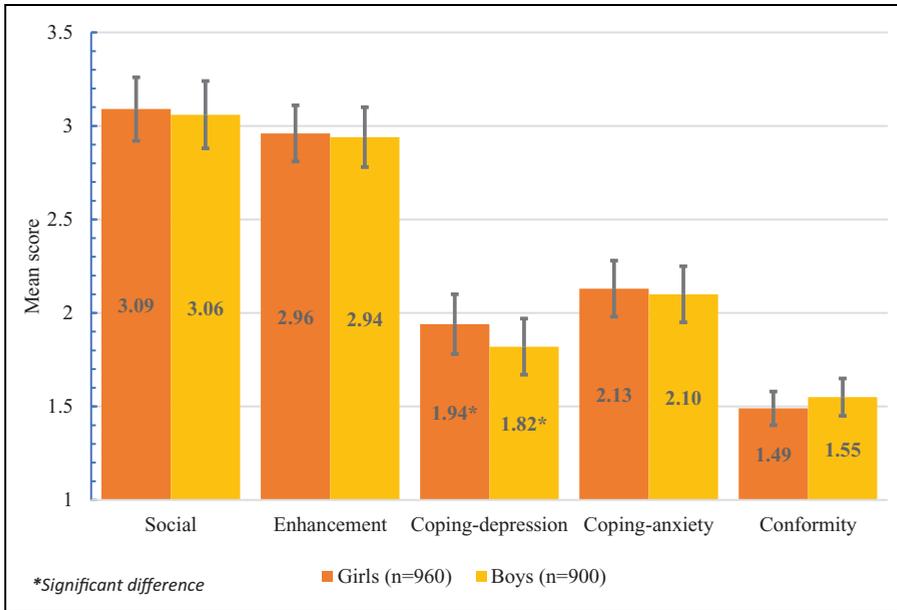


Figure 1. Mean values and 95% confidence intervals of each drinking motives scale for girls and boys.

variables and drinking frequency and heavy drinking frequency as dependent variables. Both drinking frequency and heavy drinking frequency were log-transformed using the natural logarithm to approximate a normal distribution and to reduce the impact of extreme values. To incorporate zeros, +1 was added to all observations before log transformation. The regression models were adjusted for potential cluster effect due to the sampling of schools in the study design. Interaction terms (sex \times drinking motives) were created for all five motives dimensions and were included in a fully adjusted model. For all data analyses, the statistical software Stata version 15.1 was used. A statistical significance level of 5% ($p < 0.05$) was set for all analyses.

Results

Descriptive statistics

For both boys and girls, social motives had the highest mean score, followed by enhancement, coping-anxiety, coping-depression, and

conformity motives (see Figure 1). Using Mann–Whitney U-tests, significant sex differences in mean scores were found for coping-depression motives only. Girls scored higher, but the confidence intervals overlapped somewhat (girls 1.87–2.03/boys 1.75–1.91).

Correlations

The lowest correlations were found between conformity and enhancement motives (0.38) and the highest for coping-depression and coping-anxiety motives (0.69) (Table 2).

Regression analyses

Model 1 in Table 3 shows that conformity motives are significantly associated with a lower frequency of drinking, whilst social and enhancement motives are associated with a higher frequency of drinking. Coping-depression motives are associated with a higher frequency of drinking whilst no significant association was found for coping-anxiety motives.

Table 2. Correlation matrix of drinking frequency, heavy drinking frequency and drinking motives.

	1.	2.	3.	4.	5.	6.	7.
1. Drinking frequency	1						
2. Heavy drinking frequency	0.63	1					
3. Social motives	0.40	0.43	1				
4. Enhancement motives	0.45	0.52	0.67	1			
5. Coping-depression motives	0.35	0.35	0.42	0.57	1		
6. Coping-anxiety motives	0.39	0.38	0.56	0.66	0.69	1	
7. Conformity motives	0.17	0.19	0.48	0.37	0.50	0.48	1

Table 3. Multivariate linear regression models with drinking frequency and heavy drinking frequency as the outcomes.

	Model 1 - Drinking frequency	Model 2 - Heavy drinking frequency
	Estimate (95% CI)	Estimate (95% CI)
Social motives	0.31* (0.24, 0.38)	0.19* (0.13, 0.25)
Enhancement motives	0.35* (0.28, 0.43)	0.39* (0.33, 0.46)
Coping-depression motives	0.13* (0.05, 0.20)	0.11* (0.04, 0.17)
Coping-anxiety motives	0.06 (-0.02, 0.14)	0.02 (-0.05, 0.09)
Conformity motives	-0.23* (-0.33, -0.13)	-0.16* (-0.25, -0.08)
Observations	1,860	1,860
R-squared	0.26	0.27

Notes. Model 1 examined associations between drinking motives and drinking frequency. Model 2 examined associations between drinking motives and heavy drinking frequency.

* $p < 0.05$.

Model 2 in Table 3 also shows that conformity motives are significantly associated with a lower heavy drinking frequency and that social and enhancement motives are associated with a higher heavy drinking frequency. Coping-depression motives are also associated with a higher heavy drinking frequency whilst no significant association was found for coping-anxiety motives. When comparing the relative strength of the five drinking motives (when the influence of the other drinking motives is controlled for), the strongest association is found for enhancement motives followed by social motives. This pattern was found for both drinking frequency and heavy drinking frequency.

In a final model, we included interaction terms between sex and each of the drinking motives (Table 4). No significant interactions were found. This means that the association is not moderated by sex, i.e., in the main model, the association between drinking motives and drinking frequency, and drinking motives and heavy drinking frequency was the same for boys and girls.

Discussion

This study examined drinking motives among Swedish adolescents aged 15–16 years and how these were associated with drinking frequency

Table 4. Interaction analysis using a multivariate linear regression models with interaction terms using drinking frequency and heavy drinking frequency as the outcomes (controlled for drinking motives and sex).

	Drinking frequency	Heavy drinking frequency
	Estimate (95% CI)	Estimate (95% CI)
Boys × Social motives	−0.11 (−0.26, 0.04)	0.05 (−0.06, 0.17)
Boys × Enhancement motives	0.01 (−0.16, 0.18)	−0.03 (−0.17, 0.11)
Boys × Coping-depression motives	−0.05 (−0.20, 0.09)	−0.11 (−0.24, 0.01)
Boys × Coping-anxiety motives	0.12 (−0.06, 0.29)	0.13 (−0.01, 0.26)
Boys × Conformity motives	0.13 (−0.06, 0.32)	0.08 (−0.08, 0.24)
Observations	1,860	1,860

and heavy drinking frequency. Social motives were most common, followed by enhancement, coping-anxiety, coping-depression, and conformity motives. This mean score rank order of drinking motives is consistent with previous research (Grant et al., 2007; Kuntsche et al., 2014; Mackinnon et al., 2017; Mezquita et al., 2016). In a comparison with a previous study (Kuntsche et al., 2014) with results from 14- to 16-year-olds in other Nordic countries, the level of social motives (3.09/3.06) in our study was lower than in Denmark (3.42) and similar to Finland (3.02). For enhancement motives (2.96/2.94), we observed lower levels than have been found in the two adjacent countries (3.34 in Denmark, 3.23 in Finland). Our results for coping-depression (1.94/1.82) and coping-anxiety motives (2.13/2.10) were higher than in Denmark (1.54) and broadly similar to Finland (1.97). On conformity motives, the two neighbouring countries have shown both higher mean scores (1.66 in Finland) and lower mean scores (1.40 in Denmark), compared to what we found in Sweden (1.49/1.55).

A similar pattern of associations emerged between drinking motives and the two outcomes for alcohol use. Enhancement and social motives were linked to an increased drinking frequency and heavy drinking frequency.

Coping-depression was linked to increased drinking frequency and heavy drinking frequency, whilst no associations were found for coping-anxiety motives.

Enhancement motives had the strongest association with both drinking frequency and heavy drinking frequency. A strong link between enhancement motives and heavy drinking has been established in many previous studies (Kuntsche et al., 2014; Kuntsche & Kuntsche, 2009; Kuntsche et al., 2017; Kuntsche et al., 2008). Our findings are consistent with a multinational European study that found that heavy alcohol intake is most strongly positively associated with enhancement motives, followed by social and coping motives and negatively associated with conformity motives (Kuntsche et al., 2014). In some studies, social motives have not been linked with heavy drinking among adolescents (sample age 12–19 years) at all (Cooper, 1994; Kuntsche et al., 2008), but in other studies (sample age 13–17 years) social motives have been most strongly associated with heavy drinking, and have been shown to be the only predictor of heavy drinking one year later (Schelleman-Offermans et al., 2011). Thus, there is no consensus regarding the link between social motives and heavy drinking (Van Damme et al., 2013).

Our results deviate somewhat from the general picture of previous results in that drinking frequency typically is most strongly associated with social motives and not enhancement motives (Kuntsche et al., 2014). Social motives were, however, second most strongly associated with drinking frequency in our study. The difference in the estimates between social (0.31) and enhancement motives (0.35) in their associations with drinking frequency was small, and their confidence intervals overlapped (0.24–0.38/0.28–0.43). This finding of similar associations of social and enhancement motives in our study can perhaps partly be explained by the strong correlation (0.67) between these two motives. Adolescents (aged 11–19 years) in northern Europe and undergraduate students (aged 17–30 years) in individualistic countries have furthermore shown higher levels of social and enhancement motives (Kuntsche et al., 2014; Mackinnon et al., 2017). Taken together with the results of the present study this indicates a difference in drinking motives among adolescents from the Nordic countries compared to the usual pattern found in the literature. It seems that in the Nordic countries, the difference between the social and enhancement motives is less clear. These two motives also seem to be the most important of the four/five motives in terms of influencing increased drinking.

In previous studies, coping motives, and not social motives, have been second most strongly associated with heavy drinking among adolescents (sample age 12–19 years) (Cooper, 1994; Kuntsche & Kuntsche, 2009). Similar to previous results showing an association with higher typical quantity consumed per drinking occasion for coping-depression motives but not for coping-anxiety motives (Grant et al., 2007), we found that the two coping motives differed in their link with both heavy drinking frequency and drinking frequency. Previous Swedish studies have also identified links between coping motives and alcohol outcomes (Comasco et al., 2010; Nehlin & Oster, 2019). Other studies that have used the five-factor model (Mezquita, 2016) have, however, not found a link to

drinking between any of the two coping motives dimensions.

Conformity motives were found to be associated with lower drinking frequency and heavy drinking frequency, which is in line with previous research (Cooper, 1994; Kuntsche et al., 2014; Kuntsche et al., 2015). The association of conformity motives was somewhat more prominent regarding drinking frequency (–0.23) than with heavy drinking frequency (–0.16). These negative associations suggest that peer pressure does not increase drinking when other motives are controlled for. Lack of perceived pressure is, however, not the same as a lack of peer influence. Findings from a Swedish qualitative study showed that adolescents (girls aged 15–16 years) who discussed heavy drinking in positive terms either denied the influence of peer pressure or denied its mere existence, whereas those who emphasised moderate drinking confirmed that peer pressure is common, but that it was a reason for them to abstain. Moreover, both groups described peer pressure as a cause of other people's drinking, rather than something that affected their own drinking (Bernhardsson, 2014). Another qualitative study on drinking motives in adolescents (aged 13–19 years) in Sweden found that peer attitudes were described as important in younger years, but that peer pressure to drink alcohol can be handled in later ages (Nehlin, 2020).

No sex differences were observed in our study, with the exception of small differences in mean score on coping-depression motives. This drinking motive was significantly more common among girls, in line with previous findings (Kuntsche et al., 2015). In previous studies, moderation by sex has foremost been found regarding enhancement and coping motives (Kuntsche et al., 2014; Lammers et al., 2013; Magid et al., 2007). These differences in results may relate to the reduced popularity of alcohol among adolescents (predominately aged 11–18 years) in Sweden – what was once a majority behaviour has now become relatively uncommon (EMCDDA/ESPAD, 2016; Looze et al., 2015; Pape et al., 2018; Raninen

et al., 2014; The Public Health Agency of Sweden, 2019; The Swedish Council for Information on Alcohol and Other Drugs, 2018b). Drinking has also declined more among boys than among girls in Sweden and nowadays there are no apparent sex differences in drinking in this age group (15–16 years old) (The Swedish Council for Information on Alcohol and Other Drugs, 2020a), which may have altered the links between motives and drinking and the differences in these associations between the sexes.

Several limitations need to be kept in mind when interpreting these findings. This study is based on self-reported survey data, which can make the alcohol intake estimates inaccurate. Underreporting of alcohol consumption is common, but it is less severe for respondents engaging in heavy drinking (Comasco et al., 2009; Livingston & Callinan, 2015). The cross-sectional design does not allow any causal inferences. Reverse causation, i.e., that drinking motives can be shaped by alcohol use, cannot be ruled out but is unlikely, as longitudinal studies contradict that notion (Schelleman-Offermans et al., 2011). However, any associations between exposure and outcome observed in data from a single timepoint may well be temporary. The study sample is further restricted to those who were present at school and participated in the survey. Those who were absent that day, e.g., due to truancy, may be a group with more problem behaviours, who drink more than others. The sampling and data collection were, however, carried out in the same way as the annual school surveys performed by the Swedish Council for Information on Alcohol and Other Drugs (2020a) and the prevalences of different drinking measures between the surveys are similar (The Swedish Council for Information on Alcohol and Other Drugs, 2020b) indicating that our survey produced similar results to those of a contemporary anonymous survey. The five drinking motives were also highly correlated and thus not entirely distinct. The present study found correlations between 0.38–0.69, which is similar to previous

studies (Cooper, 1994; Mackinnon et al., 2017). Not all items from the Modified DMQ-R were included in the questionnaire; nevertheless, the internal consistency for the five drinking motives in our study was good (Cronbach's alpha 0.78–0.89).

This study provides evidence and estimates of drinking motives from the Nordic countries that can be compared in a broader international context. Using a large nationally representative sample of Swedish adolescents, we bridge a knowledge gap in the existing literature. Our findings are important since drinking motives also seem to operate in the same way in the Nordic countries where drinking frequency usually is low, but heavy drinking is relatively common in comparison to other European countries (Kuntsche et al., 2017). Adolescent drinking has furthermore declined sharply over the last two decades, warranting a contemporary study of drinking motives and their association with drinking (EMCDDA/ESPAD, 2016; Looze et al., 2015; Pape et al., 2018; Raninen et al., 2014; The Public Health Agency of Sweden, 2019; The Swedish Council for Information on Alcohol and Other Drugs, 2018b), but this study indicates that drinking motives and their associations with drinking remain stable and essentially follow a similar pattern as was summarised 15 years ago (Kuntsche et al., 2005).

Our results show that Swedish adolescents (aged 15–16 years) drink mainly due to approach motivation, from both internal and external sources. For example, the three most common reasons for drinking were “it was fun” (enhancement), followed by “parties and other social gatherings get more fun” (social), and “you liked the feeling” (enhancement). Social and enhancement motives consist of reasons to achieve a positive outcome, rather than to avoid a negative one (Cooper, 1994). It is plausible that someone who drinks for these reasons does so because drinking adds something desirable, probably linked to positive feelings. If so, they are mainly driven by pleasure, rather than being driven by pain or fear. Consequently, positive

feelings reward this behaviour, which also may increase the motivation to engage in this activity. Future studies should examine whether the total level of motivation (sum score of all motives) is a stronger determinant of alcohol use than the relative associations (mean score) between motives dimensions and drinking.

Prevention efforts that aim to prevent highly approach-motivated Swedish adolescents (aged 15–16 years) from drinking can be met with resistance since these efforts also prevent an activity linked to fun, pleasure, and socialisation. Therefore, it is important that adolescents' need for social and rewarding activities can be satisfied in ways that do not harm their health. To ensure this, appealing leisure activities that do not include or encourage the use of alcohol should be made available to them. Policymakers and prevention efforts are advised to provide alternatives that fulfil adolescents' need for activities that offer fun, pleasure, and socialisation with peers without the use of alcohol. Thus, we need to keep in mind why adolescents drink, what their actual drinking motives are, and what they aim to achieve by the activity. Protective behavioural strategies can also be useful as they can prevent drinking motives from leading to heavy alcohol use (Labrie et al., 2011). Awareness and acknowledgment of the motives behind drinking are critical in communication about alcohol consumption.

Conclusions

The most common drinking motives reported by Swedish adolescents are social motives, closely followed by enhancement motives. This result is similar to what has usually been found when studying drinking motives among adolescents. Among Swedish adolescents' approach motives (social/enhancement motives) are also the strongest driving forces for both frequency of drinking and frequency of heavy drinking. The importance of enhancement motives for how often adolescents drink differs from previous research. Swedish adolescents drink to

achieve something positive, rather than to avoid something negative.

Declaration of conflicting interests

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