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Is Drinking With Parents Associated With High-Risk Drinking Among Adolescents?

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ABSTRACT

Background/aims: What are the implications of drinking with parents (DWP) for adolescents' drinking behaviour? We expanded the meagre body of research on this controversial issue by assessing the association between the frequency of DWP and adolescent high-risk drinking, taking a number of parental factors into account.

Method: Data stemmed from a subsample of 14–17-year-old current drinkers ($N = 7,616$) who participated in a cross-sectional Norwegian school survey (response rate: 84%).

Results: One in four reported DWP during the past year. The higher the frequency of DWP, the higher was the prevalence of high-risk drinking. Parental drunkenness, permissive alcohol-related parenting, and indicators of suboptimal parenting more generally also correlated with DWP. After controlling for these confounders, only *frequent* DWP remained significantly associated with high-risk drinking.

Conclusions: DWP was related to adolescent high-risk drinking, yet the association was in part attributable to parents' drinking and parenting style. The risk of involvement in high-risk drinking was about the same for adolescents reporting no DWP and infrequent DWP, while it was significantly elevated among those reporting frequent DWP. This study thus demonstrated that the frequency of DWP matters and that parents who drink with their adolescent children differ from other parents in important ways.

Key words

Adolescents, Drinking with parents, Underage heavy drinking, Alcohol-related parenting, General parenting style

Introduction

There is a scene in the 2013 award-winning French movie *Blue Is the Warmest Colour* in which the main character, a mid-teen girl, drinks wine with her parents at an ordinary family dinner. This scene would be unthinkable if it depicted everyday family life in many other Western countries. For instance, the minimum legal drinking age is 21 years in the USA, and quite a few states prohibit serving of alcohol to younger persons in private homes — including serving one's own adolescent children [1]. The policy in Europe is generally far more liberal, but the health authorities in countries such as Norway and Sweden have warned against underage drinking in a familial context, claiming that youngsters who drink with their parents are at risk of heavy drinking in unsupervised settings.

However, as we will soon discuss, the research literature addressing this issue is meagre and inconclusive, and the studies have important limitations. The present study overcomes some of these limitations, and examines whether, and if so how, the frequency of drinking with parents (DWP) is related to high-risk drinking among Norwegian adolescents. The age limit for purchasing alcohol is 18 years in Norway, but underage drinking is not illegal neither is parental serving of alcohol to minors. Alcohol is not embedded in everyday life in Norway, but the quantity consumed when drinking occurs tends to be relatively high — especially among young people [2, 3].

The zero-tolerance and the potential harm-reduction approaches to DWP

The question of whether parents should, or should not, consume alcohol with their adolescent children is surrounded by controversy. Two contradictory views are held, and both may be supported theoretically [4, 5].

According to proponents of the zero-tolerance approach, parents demonstrate that they approve of underage drinking by consuming alcohol with their children — which in turn increases the children's risk of heavy drinking. Indeed, there is ample evidence that parental provision of alcohol is related to heavier adolescent drinking [6], as are parental acceptance of underage drinking and permissive alcohol-related rules [7-9]. However, this research has not specifically focused on DWP, and we found no studies that directly supported the zero-tolerance approach to the issue. Moreover, this approach presumes that DWP at *any* frequency signifies parental approval of adolescent drinking in *any* context as well as intake of unlimited amounts of alcohol — which has not been empirically scrutinized.

Two longitudinal studies may still be noted. One of them found that DWP was associated with adolescent drinking at home, which in turn increased the risk of subsequent problem drinking [10]. However, the direct impact of DWP was not reported. The other study showed that late teen girls who were allowed to drink at family meals increased their drinking to a greater extent than those who were not allowed, yet the extent to which DWP

occurred was not assessed [11]. Further, one may assume that girls whose DWP experiences were confined to a few exceptional celebration dinners did not necessarily report that they were ‘allowed to drink at family meals’ – which connotes a *general* parental permission to do so.

The zero-tolerance approach has been countered by scholars whose view is that DWP is likely to reduce adolescents’ risk of heavy drinking [12, 13]. Green et al. [14:746] claimed that “*drinking at home with parents is [...] generally deemed to be a safe and secure environment in which to learn to drink in moderation*” and DWP has thus been described as a harm-reduction approach to underage drinking [15-17]. This approach relies on principles derived from social learning theory [18], presuming that adolescents learn to drink sensibly through parental modelling, and by learning by doing under the guidance of their parents. It also relies on implicit and untested assumptions that parents are modelling low-risk drinking and that the proposed “learning effect” of DWP generalizes to unsupervised drinking outside the family sphere.

Some cross-sectional studies show that DWP at the most recent drinking event is inversely related to adolescent heavy drinking [19-22], which have been taken as evidence in support of the harm-reduction approach. However, these studies are likely to be biased in favour of demonstrating an apparently protective effect of DWP [23]. Thus, the quantity consumed is generally far lower when adolescents drink with parents rather than

with their peers [19, 20, 24], and the probability of reporting DWP at the last drinking event is elevated among those who drink with their parents relatively often, but rarely in other contexts. Evidence in support of the harm-reduction approach from studies using other measures of DWP appears to be non-existent.

Limitations and unresolved issues

Surprisingly few studies shed light on the zero-tolerance and the harm-reduction approaches to DWP, and high-quality research on the topic is conspicuous in its absence.

Among other things, previous research has failed to examine whether the *frequency* of DWP matters, yet the zero-tolerance approach presumes that no DWP and infrequent DWP are linked differently to adolescent heavy drinking. However, a qualitative study from the USA found that parents who generally enforced strict rules against underage drinking occasionally allowed their adolescent offspring to drink at special events [25]. Thus, rare exceptions may occur, suggesting that infrequent DWP might differ from frequent DWP, but not necessarily from no DWP in terms of parental restrictiveness.

Furthermore, the two main approaches to DWP both rely on assumptions of causality, but few potential confounders have been taken into account in previous research. In this study, we examine whether parental factors that are predictive of adolescent heavy drinking also correlate with the

frequency of DWP. Whether parents who drink with their children differ from other parents in important ways is unknown, but a recent study of Swedish adolescents showed that parental serving of alcohol – which may involve DWP – correlated with permissive parental attitudes towards underage drinking and lower levels of parental control [26]. Focusing specifically on DWP, the present study pursues this issue.

Aims

This study adds to the meagre literature on the link between DWP and adolescent high-risk drinking, and sheds light on the zero-tolerance and harm-reduction approaches to the issue. Due to the paucity of previous research, we address the following questions without having formulated any a priori hypotheses: Is adolescent high-risk drinking associated with both infrequent and frequent DWP, and if so; are these associations attributable to parents' drinking, other parental alcohol socialization factors and indicators for general parenting style?

Methods

Sample and design

In 2004–2006, the Norwegian Institute for Alcohol and Drug Research conducted annual cross-sectional school surveys in 16 municipalities, covering all regions of the country. The main initial purpose was to examine whether a governmentally funded prevention project had succeeded in reducing adolescent substance use and related harm. Nine municipalities had

received funding to participate in the prevention project while seven were included as controls. The latter were selected in order to match the intervention municipalities with respect to factors such as population size and degree of urbanization [27-29]. The evaluation study found no effects on adolescent drinking [28, 29], and the prevalence of DWP was also not affected by the prevention project [29].

We used data from the 2006 survey. There were 91 junior and senior high schools in the 16 municipalities, of which 82 took part in the survey. The response rate at the participating schools was 84%. In some schools, there were whole classes of students that did not participate (because of excursions, etc.) and the response rate reached 86% when they were excluded from the gross sample. The study was conducted in accordance with the national guidelines for research ethics in the social sciences and approved by the Norwegian Social Science Data Services. Design, procedures, and data collection strategies have been described in detail elsewhere [27-29].

Our analyses were confined to 14–17 year-olds. There were nearly 14,000 respondents in this age group, of whom 7% reported that neither of their parents had consumed alcohol in the past 12 months and 38% had not consumed alcohol themselves. These respondents had *ipso facto* not experienced any episodes of DWP in the same period and were therefore excluded. Furthermore, 5% of the remaining sample was excluded due to missing data on DWP and/or

involvement in high-risk drinking. The final study sample comprised 7,616 current drinkers whose mean age was 15.9 years ($SD = 1.02$). A bare majority (54%) were girls, and 92% reported that both parents were born in Norway or in another Nordic country.

Measures

Some of the variables in this study were adapted from previous research, while others – including the items used to assess DWP – were developed in relation the evaluation study [27-29].

Adolescent high-risk drinking. We used two dichotomous measures of risky drinking behaviour in the previous 12 months as outcomes. Frequent heavy episodic drinking was operationalized as drinking to the point of feeling clearly intoxicated [cf. 30] twice a month or more often, which was reported by 19.5%. Further, data on alcohol-induced blackout (“been somewhere without remembering how you got there”) and motor impairment (“been so drunk that you could not stand upright”) were used to construct a dichotomous measure of recurrent episodes of severe drunkenness. The former item is included in Rutgers Alcohol Problem Index [31]. Respondents who had experienced either of these symptoms for a total of 5+ times (10.1%) were classified as high-risk drinkers while those who reported no or fewer such drunkenness episodes were not. The correlation between the two drinking outcomes was moderate ($r = 0.40$, $p < 0.001$).

Drinking with parents (DWP). Recall cues are likely to increase the accuracy of respondents’ reports [32], and we assessed the frequency of DWP during the past 12 months in two different contexts; (i) at home and (ii) somewhere else. There were six response options: No times, once, 2-4 times, 5-10 times, 11-20 times and more than 20 times. The two items were used to construct a dichotomous variable (0 versus 1+) as well as a graded measure with four frequency categories: no, one, 2-4 and 5+ episodes of DWP. Some respondents reported DWP at home once and somewhere else 2-4 times, or vice versa ($n=194$), implying that their total frequency of such drinking episodes was 3, 4 or 5 times. However, it is more likely that they had experienced 3 or 4 rather than 5 DWP episodes, and we categorized them accordingly. A similar ambiguity applied for respondents who reported DWP 2-4 times at home and equally often somewhere else ($n=175$). They were included in the 5+ category.

Parental alcohol socialization factors. Separate questions about exposure to maternal and paternal intoxication were asked, using a response scale ranging from 1 (never) to 5 (some times a week). As in previous research [33], we merged the two items without changing the scale. That is, for respondents who had seen one parent intoxicated more often than the other, priority was given to the one with the highest frequency. We also applied a dichotomous measure on frequent exposure (i.e., monthly or weekly) to parental intoxication. Further, the

respondents were asked about the frequency of parental provision of alcohol for unsupervised drinking during the previous 12 months, applying these six response options: Never (coded 0), once (1), 2–4 times (3), 5–10 times (7.5), 11–20 times (15.5), and more than 20 times (25). Moreover, alcohol-related rule setting was captured through questions about parental permission to drink at home with peers and to arrange unsupervised parties at home (adapted from van Zundert et al. [34]). The items were added together, yielding a scale ranging from 0 (not allowed to do any of these things) to 2 (no restrictions). The respondents were also asked to what extent the following statement agreed with their impression or experiences: “My parents would accept my getting drunk once in a while.” The response options ranged from 1 (corresponds very poorly) to 4 (corresponds very well).

General parenting style. The respondents reported whether they were allowed to stay out late in the evening without telling their parents where they were, and whether they had any time limits for being out at night during the weekend. The items were added up to construct an indicator for unrestrictive parenting, with values ranging from 0 (not allowed to do any of these things) to 2 (no restrictions). The respondents also reported the extent to which four statements about parental monitoring and knowledge (adapted from Wichstrøm, [35]) agreed with their impressions or experiences, including statements such as “My parents often ask me who I have been with and where I have been when I

have been out” and “My parents usually know where I am and what I do in my spare time.” The response scale ranged from 1 (corresponds very poorly) to 4 (corresponds very well). The four items were added up and averaged (Cronbach’s $\alpha = 0.75$). Another eight items were averaged to construct an index of perceived parent–child relationship quality (Cronbach’s $\alpha = 0.89$), with examples such as “My parents often tell me or show me that they love me”, “My parents understand my problems and worries”, “I can talk with my parents about (almost) everything,” and “I love my parents.” Again, the response scale ranged from 1 (corresponds very poorly) to 4 (corresponds very well).

Statistical analyses

First, we conducted simple logistic regression analyses to examine whether both infrequent and frequent DWP were associated with the two dichotomous measures on high-risk drinking. To find out whether the observed associations were attributable to parental alcohol socialization and general parenting style, we then examined whether these potential confounders, in addition to age and gender, were related to both DWP and the two outcomes. Variations in proportions were assessed using cross-tabulations with Pearson’s χ^2 test while analyses of variance with F-tests were used to assess differences between means. Subsequently, we assessed the correlations (Pearson’s r) between all the confounding factors. Finally, shared correlates of DWP and high-risk drinking were taken into

account in multiple logistic regression analyses. Both drinking outcomes were modelled in a two-step manner, that is, demographic covariates were included in the first block, while parental factors were added to the equation in the second block. Due to the large sample size and the high number of comparisons undertaken, we chose 1% as the level for statistical significance.

The conventional use of no exposure (i.e. no DWP) as reference group implies that the results of the logistic regression analyses are directly relevant in context of the zero-tolerance approach to DWP. We also examined whether frequent and infrequent DWP were differently related to high-risk drinking, which is of potential interest in relation to the harm-reduction approach. More precisely, we tested differences between regression coefficients using T-test.

Results

The prevalence of DWP was 16% in the full sample of 14-17 year-olds and 26% in the study sample of current drinkers. All subsequent analyses were restricted to the latter group. Table 1 shows that the higher the frequency of DWP, the greater were the proportions reporting frequent heavy episodic drinking and recurrent episodes of severe drunkenness. Compared with respondents who had not consumed alcohol with their parents, those who had done so once, 2–4 times, or 5+ times all had statistically significantly increased odds of high-risk drinking. Thus, the two

drinking outcomes were associated with both infrequent and frequent DWP.

Table 1 about here

Table 2 shows that age and gender, as well as all the parental factors were associated with the frequency of DWP and with both drinking outcomes.

Table 2 about here

Age, being male, frequent exposure to parental intoxication, the frequency of parental provision of alcohol for unsupervised drinking, permissive alcohol-related rules, parental acceptance of getting drunk, and unrestrictive parenting more generally were positively related to the frequency of DWP and to high-risk drinking. In addition, parental monitoring and the perceived quality of the parent–child relationship were both inversely related to DWP and to the two drinking outcomes.

The intercorrelations between the confounding factors were generally quite weak (Table 3). The strongest correlation was observed for the link between the quality of the parent–child relationship and parental monitoring/knowledge ($r = 0.46$). No other correlations coefficients exceeded 0.40.

Table 3 about here

Table 4 shows how the association between DWP and high-risk drinking was modified when the confounders were accounted for. Compared with respondents who had not consumed

alcohol with their parents, those who had done so once, 2-4 times and 5+ times all had significantly elevated odds of reporting frequent heavy episodic drinking and recurrent episodes of severe drunkenness – irrespective of their age and gender (block 1). These associations are only slightly lower than those observed when no confounders were taken into account (see Table 1). However, when we added parental factors to the equation (block 2), the associations declined markedly. Only frequent DWP (5+ times) was still statistically significant while infrequent DWP was not. Moreover, we compared the results for infrequent DWP (2-4 times) and frequent DWP and found that the latter group had significantly higher odds of reporting frequent heavy episodic drinking ($T=2.27$, $p < 0.05$) and recurrent episodes of severe drunkenness ($T=3.73$, $p < 0.001$). It may also be noted that almost all the other study variables were independently associated with both drinking outcomes.

Table 4 about here

Discussion

Although the potential implications of DWP on adolescents' risk of heavy drinking have been subject to much debate, very few studies have focused specifically on the issue. Our study of underage drinkers in Norway expanded the meagre research literature by assessing how the frequency of DWP was associated with two different indicators

for high-risk drinking, taking parental factors into account.

Bivariate analyses showed that the prevalence of risky drinking behaviour increased markedly with the frequency of DWP. However, infrequent DWP was no longer significantly associated with high-risk drinking when parental alcohol socialization factors and indicators for general parenting style were accounted for. Previous research has applied dichotomous measures of DWP, and our study is the first to demonstrate that the frequency of such drinking episodes matters. It also provides new insights by assessing a range of parental correlates of DWP.

We found that frequent exposure to parental intoxication, frequent provision of alcohol for unsupervised drinking, permissive alcohol-related attitudes and rules, and unrestrictive parenting more generally all correlated with DWP, as did lower levels of monitoring and lower parent-child relationship quality. In Norway, DWP thus seems to be embedded in a pattern of suboptimal parenting, which was particularly conspicuous in the group reporting frequent DWP. A previous study of Norwegian adolescents found a similar pattern, yet it relied on a global measure for the frequency of parental provision of alcohol [36]. Our findings also concur with those reported by Strandberg et al. [23], who found that permissive parental attitudes towards underage drinking and weak parental control predicted parental serving of alcohol.

All the parental factors that we gauged were also significantly related to risky drinking behaviour, which agrees with previous research [6-9]. When we adjusted for these factors, adolescents reporting no DWP and those reporting infrequent DWP were approximately equally likely to report frequent heavy episodic drinking and recurrent episodes of severe drunkenness. Hence, our results did not support the zero-tolerance approach to the issue. The inclusion of parental factors in regression models also implied that the statistical impact of frequent DWP on both drinking outcomes attenuated, yet it remained statistically significant. This finding calls for an explanation.

Considering that we assessed ordinary high school students and that the quantity of alcohol consumed with parents is typically low [19, 20, 24], it is unlikely that frequent DWP correlated with high-risk drinking because these drinking episodes often involved adolescent drunkenness. It is possible, however, that our measure of parental intoxication, as well as some of the other parental factors that we assessed, were too crude to capture nuances of importance. The persistent statistical effect of frequent DWP on adolescent high-risk drinking may also reflect influences of a different nature than those captured in our study.

A conspicuously high proportion of the respondents who reported frequent DWP was exposed regularly to parental intoxication, and the parents' actual frequency of getting drunk was probably higher than that observed by their

adolescent children. In some cases, this may indicate severe parental alcohol problems. There is ample evidence that children whose parents drink excessively are at risk of problem drinking themselves, which in part may reflect genetic susceptibility [37, 38]. Moreover, parental alcohol problems often co-occur with other risk factors for adolescent heavy drinking, such as family dysfunction, maltreatment and neglect, and other adverse childhood experiences [39, 40]. There is also evidence that the more the parents drink, the greater is the availability of alcohol at home [41, 42], which has been identified as another risk factor for adolescent heavy drinking [43].

Our results further pertain to the question of whether infrequent and frequent DWP may be qualitatively different, as the study by Friese et al. [25] seems to suggest. In families where DWP is a rarity, one may assume that such drinking events typically occur on special occasions where the parents, as an exception, allow their offspring to drink in moderation. Frequent DWP, on the other hand, may to a greater extent include less regulated and less responsible drinking practices. If so, parents of those who reported infrequent DWP are the ones who are most likely follow the recommendations by advocates of the harm-reduction approach – whether this is intended or not. According to Epstein [44], the key question is whether adolescents who drink sensibly with their parents in appropriately supervised settings are less likely to adopt a risky drinking pattern. Admittedly, we did not assess whether DWP occurred in such

settings, but infrequent DWP was not associated with less high-risk drinking. Hence, our results did not lend support to the harm-reduction approach to the issue.

The cultural context

A recent study of adolescents in 25 European countries showed that the proportion reporting DWP at the last drinking event varied from less than 15% (Norway, Iceland, Estonia) to about 40% (Italy, Cyprus) [24]. Within Europe, there are also significant cross-national variations in per capita consumption of alcohol, the drinking pattern, the use of alcohol by youth [2, 3], and the extent to which drunkenness is considered deviant [45]. The norms that regulate alcohol-specific parenting probably also show substantial variation.

In societies where DWP is prevalent and alcohol is integrated into ordinary family life, it seems likely that parents who drink with their adolescent children are unremarkable with respect to other parenting practices. In such societies one may hypothesize that the association between DWP and underage high-risk drinking differs from that observed in our study of Norwegian adolescents.

Methodological considerations and avenues for future research

While previous research has relied in dichotomous measures on DWP, we assessed the frequency of such drinking episodes and could consequently examine potential differences between no DWP and infrequent DWP – which is

particularly interesting in relation to the zero-tolerance approach. Furthermore, the data set stemmed from a large general population survey with a high response rate, and allowed us to adjust for a range of parental factors.

However, our cross-sectional design implies that the temporal order of DWP and high-risk drinking remains unknown, and the potential causal mechanisms underlying the observed associations could not be pursued. Evidence that parenting practices and the parent-child relationship may be adversely affected if adolescents drink heavily [46-48] is relevant in this respect. Bidirectional associations between parental and adolescent drinking have also been found, implying that parents may increase their drinking when their children start using alcohol [49]. One can also not disregard the possibility that associations between DWP and heavier adolescent drinking may reflect bidirectional influences. To assess this complexity in relation to the topic at issue, longitudinal data are required.

Other important issues could also not be pursued. For instance, the situational context of DWP, the quantity imbibed at these drinking events, and the parents' motives for consuming alcohol with their underage offspring were not assessed. Obviously, additional research, including qualitative studies, is needed to reveal the stories behind our results. Another suggestion for future research is to examine the potential implications of DWP on adolescent drinking behaviour in a cross-cultural context.

The present study collected data on DWP by asking only the adolescents, but there is evidence that parents may be reluctant to answer honestly to questions about alcohol-related parenting practices [25, 50]. Moreover, compared with adolescents' reports, parents typically report less approval of underage drinking, stricter alcohol-related rules and higher levels of monitoring [11, 51]. There is also evidence that parenting practices predict adolescent drinking behaviour better when they are reported by the adolescents rather than by their parents [52-54].

Conclusions

We found that DWP was embedded in a pattern of sub-optimal parenting and that frequent DWP was independently related to adolescent high-risk drinking. Moreover, adolescents with no DWP experiences and those who reported few such drinking episodes were about equally likely to engage in risky drinking behaviour. Hence, the zero-tolerance approach to DWP was not supported. The results did also not support the view that adolescents may learn to drink sensibly by consuming alcohol with their parents. The paucity of studies on the issue, as well as the present research findings, suggest that the zero-tolerance and the harm-reduction approaches to DWP both should be rejected. None of them rely on empirical evidence, and both fail to take the complexity of the issue into account.

DWP is fairly uncommon in Norway, and our results cannot readily be generalized to other countries and

drinking cultures. Limitations due to our cross-sectional study design should also be kept in mind. The potential causal mechanisms underlying the observed associations remain uncertain, and additional research is required to make evidence-based recommendations for policy and prevention. However, our results may be taken as an indication that infrequent DWP does not *per se* increase the risk of adolescent heavy drinking, and that other parental practices may be more important to target.

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Disclosure Statement

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Table 1. Associations between the frequency of drinking with parents (DWP) and indicators of high-risk drinking. Percentages and crude odds ratios (99% CI).

Freq. of DWP	<i>N</i> (%)	Frequent heavy episodic drinking		Recurrent drunkenness	
		%	OR (99% CI)	%	OR (99% CI)
No times	5494 (73.6)	15.5	ref.	7.1	ref.
Once	829 (11.1)	20.0	1.36 (1.06–1.73)	10.0	1.47 (1.06–2.03)
2–4 times	775 (10.4)	27.9	2.11 (1.68–2.65)	14.6	2.25 (1.67–3.02)
5+ times	815 (6.5)	48.5	5.14 (4.02–6.57)	35.4	7.19 (5.47–9.45)

Table 2. Variations in demographics and parental characteristics by A) the frequency of drinking with parents, B) frequent heavy episodic drinking, and C) recurrent episodes of severe drunkenness. Means (SD) and percentages.

	A) Frequency of drinking with parents				B) Frequent heavy episodic drinking		C) Recurrent drunkenness	
	No times	Once	2-4	5+	No	Yes	No	Yes
Mean age (range: 14-17)	15.8 (1.02)	15.9 (1.04)	16.0 (0.97)	16.2 (0.96)	15.8 (1.04)	16.2 (0.85)	15.9 (1.02)	16.1 (0.93)
Boys (%)	45.3	46.1	47.6	58.9	45.3	51.6	45.4	55.5
Frequent exposure to parental intoxication ¹ (%)	6.8	9.9	12.2	23.2	6.8	16.9	7.4	20.9
Mean frequency of parental alcohol supply (0-25) ²	0.39 (1.96)	1.12 (3.17)	2.35 (5.02)	7.51 (9.33)	0.64 (2.57)	3.23 (6.86)	0.79 (2.96)	4.41 (8.09)
Mean score for parental acceptance of drunkenness (1-4) ²	2.08 (1.05)	2.45 (1.08)	2.73 (1.06)	3.01 (1.09)	2.12 (1.06)	2.76 (1.09)	2.19 (1.07)	2.75 (1.15)
Mean score for permissive alcohol-related rules (0-2) ²	0.32 (0.60)	0.53 (0.72)	0.68 (0.79)	1.06 (0.85)	0.36 (0.62)	0.73 (0.82)	0.39 (0.66)	0.77 (0.83)
Mean score for unrestrictive parenting (0-2) ²	0.72 (0.77)	0.87 (0.79)	0.94 (0.80)	1.12 (0.81)	0.72 (0.76)	1.05 (0.83)	0.75 (0.77)	1.10 (0.84)
Mean score for parental monitoring (1-4) ²	3.44 (0.57)	3.35 (0.62)	3.33 (0.64)	3.13 (0.84)	3.44 (0.57)	3.23 (0.74)	3.43 (0.57)	3.07 (0.82)
Mean score for parent-child relationship quality (1-4) ²	3.18 (0.61)	3.16 (0.60)	3.17 (0.61)	3.05 (0.81)	3.20 (0.59)	3.03 (0.73)	3.20 (0.60)	2.89 (0.78)
Lowest N	5449	812	760	497	6053	1446	6743	754

¹Monthly or more often ² Scale range

Note: Variations in percentages were assessed using cross-tabulations with Pearson's χ^2 test and analyses of variance with F-tests were used to assess differences between means. All associations were statistically significant ($p < 0.001$ or lower).

Table 3. Correlations between factors that confound the association between DWP and high-risk drinking.

	Gender	Exposure to parental intoxication	Parental supply of alcohol	Parental acceptance of drunkenness	Permissive alcohol-related rules	Unrestrictive parenting	Parental monitoring / knowledge	Parent-child relationship quality
Age	0.02	0.06	0.11	0.32	0.21	0.30	0.05	0.07
Gender (girls=0, boys=1)		0.05	0.06	0.16	0.06	0.20	-0.11	-0.03
Exposure to parental intoxication			0.21	0.19	0.20	0.14	-0.19	-0.17
Parental supply of alcohol				0.27	0.34	0.17	-0.12	-0.07
Parental acceptance of drunkenness					0.40	0.34	-0.08	0.02
Permissive alcohol-related rules						0.31	-0.09	<0.01
Unrestrictive parenting							-0.21	-0.05
Parental monitoring / knowledge								0.46

Note: All correlation coefficients (Pearson's r) above 0.05 and below -0.05 are statistically significant ($p < 0.01$ or lower).

Table 4. Adjusted odds ratios (99% CI) for the associations between the frequency of drinking with parents (DWP) and high-risk drinking, adjusting for age, gender (block 1), parental alcohol socialization factors, and indicators for general parenting (block 2). Statistically significant ($p < 0.01$ or lower) odds ratios appear in bold type.

		Frequent heavy episodic drinking	Recurrent drunkenness
Block 1	Frequency of DWP (ref: no times)		
	Once	1.32 (1.02-1.70)	1.45 (1.03-2.02)
	2-4 times	1.95 (1.54-2.47)	2.15 (1.59-2.92)
	5+ times	4.48 (3.46-5.82)	6.99 (5.26-9.27)
Block 2	Once	0.97 (0.75-1.28)	1.12 (0.78-1.58)
	2-4 times	1.21 (0.93-1.57)	1.38 (0.99-1.93)
	5+ times	1.73 (1.27-2.37)	2.79 (1.96-3.97)
	Age	1.40 (1.27-1.54)	1.40 (1.27-1.54)
	Gender (ref: female)	0.98 (0.83-1.17)	0.98 (0.83-1.17)
	Exp. to parental intox. (ref: never)		
	A few times	1.33 (1.08-1.64)	1.26 (0.94-1.68)
	Some times a year	1.80 (1.38-2.34)	1.60 (1.13-2.26)
	Some times a month	2.42 (1.73-3.38)	1.73 (1.12-2.65)
	Some times a week	2.17 (1.36-3.45)	3.02 (1.80-5.09)
	Parental supply of alcohol	1.06 (1.04-1.08)	1.06 (1.04 -1.09)
	Parental acceptance of drunkenness	1.28 (1.17-1.40)	1.21 (1.07 -1.35)
	Permissive alcohol-related rules	1.25 (1.10-1.41)	1.10 (0.93-1.29)
	Unrestrictive parenting	1.11 (0.99-1.24)	1.15 (0.99-1.34)
	Parental monitoring / knowledge	0.81 (0.70-0.94)	0.69 (0.58-0.83)
Parent-child relationship quality	0.75 (0.64-0.86)	0.64 (0.53-0.77)	

