

Association between drinking and victimisation among Finnish adolescents: estimating the extent of the spurious effect

NOORA ELLONEN & MIKKO AALTONEN

ABSTRACT

AIMS – This paper examines how the frequency of adolescent drinking predicts total violent victimisation (while sober or intoxicated) vs. victimisation while sober. **BACKGROUND** – The general correlations between alcohol use and violence among adolescents are well established. However, the nature of the association is less clear. While some findings show that drinking predicts violence in general, others claim that drinking predicts violence only when the offender is intoxicated. If the latter is true, the association appears causal rather than spurious. Recent research led by Felson has examined the issue with respect to adolescent offenders. The purpose of our study is to apply the same methodological approach to adolescent victimisation. **DATA** – The analysis is based on data of 9th graders (N= 5,775) in the Finnish Child Victim Survey 2008. **RESULTS** – Our findings suggest that there are gender differences in adolescents' alcohol use and victimisation. Among frequently-drinking boys the high risk of victimisation is attributable to violent situations while intoxicated. Among girls the connection between the frequency of drinking and victimisation seemed mostly spurious, as the girls who consumed alcohol often were victimised also when sober.

KEY WORDS – adolescents, drinking, victimisation, causal effect, spurious effect.

Submitted 06.04.2011

Final version accepted 29.09.2011

Introduction

The correlations between alcohol and physical violence are well established. Evidence from multiple disciplines suggests that adults (Dingwall 2006, 26–45; Pernanen 1991; Karberg & James 2005; Lehti & Kivivuori 2008) as well as adolescents (White et al. 1999; Mattila et al. 2005; Swahn et al. 2004; Salmi 2009) who commit violent offences or behave aggressively are often intoxicated. The connection between drinking and violent victimi-

sation has been studied less, but there is evidence that alcohol use also correlates with violent victimisation among adults (Boles & Miotto 2003; Wells & Thompson 2009; Moore & Foreman-Peck 2009) and adolescents (Mattila et al. 2005; Swahn et al. 2004).

Despite extensive research, the nature of these correlations is not clear. There is an ongoing discussion about whether the connection between drinking and violent be-

Acknowledgement

This research was funded by the Academy of Finland (252106).

haviour is causal or not. Various explanations of the causal effect have been offered from behavioural, pharmacological and psychological points of view (see Dingwall 2006; Felson et al. 2008b; Kivivuori 2008). Compelling studies suggest that the relationship between alcohol and violent behaviour is spurious rather than causal. These studies are based on the argumentation that alcohol consumption and violent behaviour have shared risk factors which cause *both* alcohol use and violence as well as other risky behaviours (Zhang et al. 1997; White et al. 1993). In criminological studies, this argumentation is usually based on the theory of self-control by Gottfredson and Hirschi (1990, 90–94), where they propose that the shared risk factor is lack of self-control.

A similar discussion about the extent to which the connection between alcohol and violence is causal and the extent to which it is spurious can be found in studies about alcohol and *violent victimisation*. These studies are rarer than those about alcohol use and violent behaviour, and most of the existing research is about alcohol use and sexual victimisation (Gidycz et al. 2007). There are also, however, studies addressing the link between alcohol and other physical violent victimisation (Felson & Burchfield 2004; Shepherd et al. 2006; Browning & Erickson 2009; Mattila et al. 2005). McClelland and Teplin (2001), for instance, argue that drinking leads to provocative and risky behaviour, which may lead to victimisation. Intoxication and victimisation thus happen at the same time, which supports the causal interpretation. Felson and Burchfield (2004) have shown that the risk of victimisation to physical violence is clear among intoxicated drink-

ers but not clear when they are sober.

Some studies are more in favour of an opportunity explanation: the link between drinking and victimisation stems from the drinker's association with motivated offenders, whether they are intoxicated during the violent incident or not (Felson & Burchfield 2004; Shepherd et al. 2006; Browning & Erickson 2009). In other words, drinking and violent victimisation share risk factors, and the connection between the two is therefore spurious. Browning and Erickson (2009) also found that the connection between alcohol and victimisation varies between different contexts. The association is strongest in disadvantaged communities. These studies suggest that the connection between alcohol and victimisation can be better interpreted by theories of routine activities and social control than by causal links. The strongest statements of this approach suggest that, particularly among adolescents, the victims and offenders of violence are not distinct groups but rather come from the same subculture, and the same individuals are sometimes victims and at other times offenders due to their lifestyle choices (Fagan et al. 1987; Sampson & Lauritsen 1990). The approach of shared risk factors is particularly emphasised in youth studies (Fagan 1990; Felson et al. 2008b).

Richard B. Felson and his research fellows have published a series of studies related to the discussion about the causal/spurious relation between alcohol and violence (Felson & Burchfield 2004; Felson et al. 2007; Felson et al. 2008a; 2008b; Felson et al. 2011). Mostly, they have analysed the connection between alcohol use and violent behaviour, but they have also

addressed the connection between alcohol use and victimisation. Their is a specific method to elaborate to what extent the connection is causal and to what extent it is spurious. The key assumption is that alcohol use, through acute effects, cannot cause violence while sober. Two equations are compared in the method. The first equation analyses the association between the frequency of drinking and violence while sober. The second equation analyses the association between the frequency of drinking and violence in general (sober or intoxicated). The comparison of these two equations reveals the possible spurious nature of the connections, that is, whether the tendency for drinkers to be violent when sober is similar to the tendency for drinkers to be violent in general. The more similar the coefficients from these models, the more spurious the connection between alcohol use and victimisation. In fact, the connection is probably caused by third factors or selection effects. (Felson & Burchfield 2004; Felson et al. 2007; Felson et al. 2008a; 2008b)

Based on this method, Felson and his research fellows have shown that the connection between adolescents' frequency of drinking and delinquency is partly spurious and partly causal, as the connection varies according to the type of act. Felson and his colleagues' (2008b) study on a nationally representative data of Finnish adolescents has shown that adolescents' frequency of alcohol use is related to their delinquency also while sober in offences such as assaults, fights, vandalism, graffiti spraying, shoplifting, stealing from home and car theft. The connection is especially spurious with non-violent offences. In violent offences there is, however, a causal re-

lation to be found, too. According to their analysis, about half of the relationship between frequent drinking and violence is attributed to a causal effect associated with intoxication. (Felson et al. 2008b.) They have presented similar results based on American data. An analysis of that data suggests that individual characteristics, such as age and race, determine the magnitude of the causal effects of intoxication. (Felson et al. 2008a)

Regarding the connection between alcohol use and the risk of victimisation, Felson and colleagues have applied their method only to adult populations (Felson & Burchfield 2004; Felson et al. 2007). According to their analyses, the connection between adult victimisation and alcohol consumption is mostly causal: adults' drinking patterns do not predict a risk of victimisation while sober. The connection also varies by gender. For men, drinking increases the risk of victimisation more than for women and more for younger adults than for older adults. When the type of victimisation is taken into account, alcohol plays a bigger role in sexual victimisation than in other physical victimisation. (Felson & Burchfield 2004) However, sexual offenders are no more likely to be intoxicated than offenders of other physical assaults. Offenders are, on the other hand, much more likely to be intoxicated when they assault a stranger than when they assault someone they know. (Felson et al. 2007)

In this article we make our contribution to this series of empirical studies. As presented earlier, Felson and colleagues have analysed the connection between the frequency of drinking and violent behaviour among adults and adolescents, but the connection between the frequency of drinking

and violent victimisation has only been analysed among adults. In this study, we have applied the method used by the Felson team to analyse the role of the frequency of drinking in adolescents' victimisation. Therefore, we also use concepts of causality and spuriousness, although we are aware that our study as a non-experimental analysis based on cross-sectional data does not enable us to reveal actual causal associations. We analyse whether the connection between the frequency of drinking and adolescents' victimisation is more causal, as the adult-based analysis would suggest, or whether it is more spurious, as the analysis of the frequency of drinking and adolescent delinquency would suggest. We use three different victimisation types in the analysis – physical violence, attempt of physical violence and threat of physical violence – to see whether the connection between the frequency of drinking and victimisation varies between different types of victimisation, as previous research suggests (Felson & Burchfield 2004; Felson et al. 2007). The analysis is done separately for boys and girls to reveal possible gender-based differences, because similar analysis within adult population has suggested different patterns for males and females (Felson & Burchfield 2004; Felson et al. 2007). Finally, we also take individuals' routine activities into account in order to test the importance of factors related to opportunity and lifestyle factors in creating the association between alcohol use and victimisation.

As in studies by Felson and colleagues (Felson & Burchfield 2004; Felson et al. 2007; Felson et al. 2008a; 2008b; Felson et al. 2011), our findings of the causal or spurious nature thus concern the connection

between violence and individuals' drinking patterns, and to what extent this association is caused by intoxicated violence. In other words, even if the connection between drinking and violent victimisation seems to be more causal than spurious, third factors may still have a significant role. In any case, if such association is established, intoxication plays at least an important mediating role in creating the correlation between alcohol use and victimisation. Bearing this in mind, the results will contribute to the theoretical discussion about the nature of the connection between alcohol use and violence as well as to the actual work of preventing adolescents' alcohol-related victimisation, as the analysis is based on a representative data of Finnish 9th graders.

Data

This article is built on the Finnish Child Victim Survey 2008, which examines the volume and nature of violence experienced by children and adolescents. The data was collected among pupils aged 12–13 (6th graders) and 15–16 (9th graders) in January 2008 by the Police College of Finland. The survey was conducted as a computer-aided questionnaire, which the children answered during a school day. Answering the web-based survey was organised by teachers in the schools.

A stratified cluster sampling based on county, the quality of the municipality and the size of the school was used (see more in Ellonen et al. 2008). In this study, we only use the sample of 9th graders. Of them, 64% answered the survey. Some of the missing answers were due to individual refusals to answer, but mostly due to schools not giving the pupils the

opportunity to answer the questionnaire. After the data collection, the representative nature of the data was checked by comparing the data with national statistics and with other representative youth surveys in distributions of questions of gender, parental education and parental unemployment (Ellonen et al. 2008). As a result, the data is a representative sample of mainland Finland and its Finnish and Swedish-speaking 9th graders in the mandatory school system. The final sampling used in this article consisted of 5,775 9th graders. Of these, 50.5% were boys and 49.5% were girls.

Studying violence against children requires careful ethical consideration. Special attention was given to the design of the questionnaire, confidentiality and guidance afterwards. Parental consent was not asked to ensure that children with experiences of family violence would also answer the questionnaire, but voluntary participation and informed consent was emphasised. As a whole, the survey was carried out according to Finnish research ethics guidelines. The detailed practices as well as an analysis of the children's reactions to the survey are presented elsewhere (Ellonen & Pösö 2010).

Measures

The first part of the Finnish Child Victim Survey includes questions of violent experiences by adolescents that are not linked to any specific context or offender. Had the respondents experienced violence or other offences during the previous 12 months, we asked. These questions are based on The Juvenile Victimization Questionnaire (JVQ) by Finkelhor (2007; 2008). JVQ has been used in studies on American adoles-

cents' experiences of violence (Finkelhor 2007; 2008). The idea of the questionnaire is to understand violence against children as a phenomenon that differs a great deal from adult victimisation. It therefore uses concepts suitable for measuring children's experiences and takes into account types of violence which only children experience, such as school bullying, corporal punishment, etc. The original questions in English were translated into Finnish¹ and Swedish.

We used three questions about violent experiences: (1) *Has somebody hit or attacked you during the past 12 months*; (2) *Has somebody tried to hit or attack you during the past 12 months but for some reason not done so*; (3) *Has somebody threatened to hit or attack you during the past 12 months*? The answer alternatives were "yes" or "no". In the follow-up questions, the respondents were asked whether they were intoxicated during the violent situation. Here, we have combined the alternatives *slightly intoxicated* and *intoxicated* to ensure a sufficient number of cases. All three variables are used in the following analysis. There is some, but not complete overlap between the outcome variables, with correlations ranging from 0.27 to 0.32.

The frequency of drinking was measured with a question: *On average, how often have you drunk alcohol during the past 12 months*? To ensure sufficient N in the analysis, the original eight-category variable was re-coded into four groups of drinking intensity. Abstainers are in their own category *never*, and the three groups that drank alcohol during the past year are divided into "*less than 10 times a year*", "*1–3 times a month*" and "*once per week or more*". In the analysis, the groups are

named *never*, *low*, *intermediate* and *high*. Another common way to measure drinking is to separate those who drink to become drunk from those who drink less. Our original question did not tap into binge drinking, but we know from previous research on drinking habits of Finnish adolescents that the drinking style among Finnish adolescents in this age group is mainly drunkenness-orientated (Lintonen et al. 2000). In this sense, our measure also describes binge drinking.

The questionnaire included several questions about adolescents' routine activities and peer groups. In this analysis, we included two variables of interest that, according to routine activity theory, might be related to victimisation risk by increasing exposure to violent situations. The questions were: (1) *How often do you spend time in public spaces such as streets, stations, parks, etc.?* and (2) *Are the friends you spend your free time with older than you are?* These variables were re-coded into dummy variables, where spending time in public places over 4 times a week and spending time with older friends or over 18-year-olds were coded 1.

Methods

First, we apply an ordinary logistic regression model to all three dependent variables to see whether frequent alcohol use increases the risk of overall victimisation (irrespective of drunkenness during the violent situation). However, because we want to disaggregate violent experiences by intoxication, we apply a multinomial logistic regression model to separate victimisation when sober from victimisation while intoxicated. We do all analysis separately for boys and girls, and test the gen-

der-alcohol interactions in all models.

Given that abstainers cannot, by definition, be drunk while victimised, the results for victimisation while intoxicated are inflated when the reference category is set to those who never drink (although there are, perplexingly, a few boys who report being drunk during a violent situation during the previous year despite elsewhere claiming not having been drunk during the previous year). However, this is not a problem because we are mainly interested in comparing sober violence to total violence (for a similar modelling strategy, see Felson et al. 2008b). If these models (sober vs. total) yield similar results in terms of alcohol use, the relationship between alcohol use and victimisation is spurious, because heavy alcohol use cannot explain sober violence with the direct effect of intoxication. On the other hand, if alcohol use does not increase the risk of victimisation while sober, but does while intoxicated, the higher risk of frequent drinkers can be attributed to intoxication effects. Finally, we add variables measuring routine activities into the model to investigate whether they might affect the relationship between alcohol use and sober violence.

Descriptive results

The descriptive results are presented in Table 1. In line with previous studies on Finnish adolescents (National Institute for Health and Welfare 2011; see also Lintonen et al. 2000), the majority (68%) of the 15–16-year-old adolescents in this sample report drinking alcohol during the last 12 months. The sample is almost evenly divided into boys and girls, and alcohol use frequency was also almost similar in both genders (not shown). 172 girls and 160

Table 1. Descriptive statistics (N=5,762).

		N	%	physical violence		
				actual	attempt	threat
gender	boy	2906	50%	21%	11%	23%
	girl	2856	50%	16%	8%	18%
alcohol use	never	1855	32%	10%	4%	11%
	low	2538	44%	18%	9%	22%
	intermediate	1048	18%	27%	15%	27%
	high	332	6%	40%	25%	38%
often spends time in public places	no	4894	85%	17%	8%	19%
	yes	881	15%	27%	18%	27%
spends time with older friends	no	4979	86%	17%	8%	19%
	yes	796	14%	28%	17%	28%
N victimized				1066	545	1172
% victimized				18%	9%	20%
% while intoxicated				20%	21%	12%

boys belong to the group with the highest alcohol consumption. It seems that boys report slightly more violent experiences in all three dependent variables (physical violence, attempted physical violence, threatened with physical violence).

When the bivariate association between the frequency of alcohol use and victimisation with all three outcome variables is examined, it is evident that there is a strong association between the two (Table 1). For instance, 10% of those adolescents who never drink alcohol were victimised during the previous year, whereas 40% of those who drink alcohol weekly report physical violence victimisation. Furthermore, there appears to be a roughly linear dose-response relationship between the frequency of alcohol use and violent victimisation – the more often one drinks, the higher is the likelihood of victimisation. The variables measuring routine activities also show an association with victimisation risk, as expected on the basis of theory. Those youths who often spend time in public places or have mainly older friends

seem to have a higher risk of victimisation on a bivariate level.

Despite the strong association between alcohol use and victimisation, being intoxicated while victimised was relatively rare. In physical violence, both actual and attempted, roughly 20% of victims were intoxicated. In threats, the share was only 12%. The difference between boys and girls was small: both genders were almost as likely to be intoxicated during the last victimisation. It would thus seem that alcohol intoxication could at best only explain a relatively small number of all victimisations. If we compare these results to ones from an earlier article with similar Finnish data on adolescent offending (Felson et al. 2008b), we can see that adolescent offenders (53–60% intoxicated during the latest violent incident) were much more likely to be intoxicated than their victims.

Multivariate analysis

Although a minority of adolescents were intoxicated during the latest violent incident, these incidents might yet explain

Table 2. Association between frequency of alcohol use and victimisation. Odds ratios from models with 1) total (logistic regression) and 2) sober violence (multinomial regression) as outcome variables, ratios calculated using B-coefficients (log OR-sober/log OR-total).

BOYS									
frequency of alcohol use	Physical violence			Attempted physical violence			Threat		
	Total OR	Sober OR	Ratio sob./tot.	Total OR	Sober OR	Ratio sob./tot.	Total OR	Sober OR	Ratio sob./tot.
never									
low	1,80 *	1,63 *	.83	2,30 *	2,10 *	.89	1,95 *	1,86 *	.93
intermediate	3,15 *	2,15 *	.67	3,94 *	2,83 *	.76	2,52 *	2,03 *	.76
high	4,01 *	1.44	.26	6,45 *	2,04 *	.38	2,96 *	1.49	.37
GIRLS									
frequency of alcohol use	Physical violence			Attempted physical violence			Threat		
	Total OR	Sober OR	Ratio sob./tot.	Total OR	Sober OR	Ratio sob./tot.	Total OR	Sober OR	Ratio sob./tot.
never									
low	2,16 *	2,03 *	.92	2,55 *	2,17 *	.83	2,87 *	2,76 *	.96
intermediate	3,77 *	2,53 *	.70	4,49 *	3,45 *	.83	4,05 *	3,18 *	.83
high	9,66 *	3,81 *	.59	10,93 *	7,29 *	.83	9,30 *	5,86 *	.79

* p < 0,05

why those consuming alcohol more often are more prone to violent victimisation. First, we look at the models of total victimisation (incidents sober + intoxicated) to see the gender-specific effects of alcohol-use frequency on victimisation (Table 2, columns "total").

For boys, the risk of victimisation among those who drink frequently compared to those who never drink is 4.0 (odds ratio) in physical violence, 6.5 in attempted physical violence, and 3.0 in threatened with physical violence. For girls, the difference between low/intermediate groups when compared to abstainers resembles those of boys, but those girls who drink the most often seem to have an inflated risk (OR's 9.7, 10.9 and 9.3 respectively) when compared to those who never drink. Although the magnitude of the association between alcohol use and victimisation changes somewhat depending on the outcome variable used, it seems that all three measures give roughly similar results.

When tested with a combined model with an interaction term for gender and alcohol use, the interaction was statistically significant in physical violence and threats, indicating that boys and girls differ. For girls, frequent alcohol use seems to be a stronger risk factor for violent victimisation, or at least among boys the risk of violent victimisation is more evenly distributed by alcohol consumption. Second, we compare the coefficients from the total model to those from a multinomial model distinguishing between violence while sober and intoxicated (results omitted), focusing on the difference between total violence and violence while sober. The difference between total violence and sober violence is represented with ratios calculated by dividing the regression coefficient (b / log OR) of each dummy variable, which represents the intensity of alcohol use in sober violence with respective regression coefficient from regression model with total violence as the outcome.

Table 3. Association between frequency of alcohol use, routine activities and victimisation. Odds ratios from models with 1) total (logistic regression) and 2) sober violence (multinomial regression) as outcome variables, ratios calculated using B-coefficients (log OR-sober/log OR-total).

BOYS									
frequency of alcohol use	Physical violence			Attempted physical violence			Threat		
	Total OR	Sober OR	Ratio sob./tot.	Total OR	Sober OR	Ratio sob./tot.	Total OR	Sober OR	Ratio sob./tot.
never									
low	1,77 *	1,61 *	.84	2,13 *	1,95 *	.88	1,92 *	1,85 *	.95
intermediate	3,01 *	2,11 *	.68	3,37 *	2,44 *	.73	2,43 *	2,01 *	.79
high	3,61 *	1,39	.25	4,77 *	1,55	.28	2,72 *	1,47	.39
often spends time in public places	1.16	1.09		1,88 *	1,89 *		1.13	1.05	
spends time with older friends	1,33 *	1.08		1,69 *	1,50 *		1.26	1.01	
GIRLS									
frequency of alcohol use	Physical violence			Attempted physical violence			Threat		
	Total OR	Sober OR	Ratio sob./tot.	Total OR	Sober OR	Ratio sob./tot.	Total OR	Sober OR	Ratio sob./tot.
never									
low	2,00 *	1,92 *	.94	2,26 *	1,97 *	.83	2,75 *	2,65 *	.97
intermediate	3,16 *	2,22 *	.69	3,36 *	2,73 *	.83	3,61 *	2,87 *	.82
high	7,04 *	2,99 *	.56	6,72 *	4,87 *	.83	7,50 *	4,87 *	.79
often spends time in public places	1,45 *	1.31		1,92 *	1,72 *		1,31 *	1.30	
spends time with older friends	1,67 *	1,56 *		1,86 *	1,73 *		1,39 *	1.30	

* p < 0,05

The closer the resulting ratio (sober/total) is to 1, the more spurious the connection between alcohol use and victimisation. When the ratio approaches 0, the role of intoxication is progressively more important (for a similar approach, see, for example, Felson 2008b et al.).

Disaggregating the victimisation experiences into sober and intoxicated violence reveals additional differences between the genders by alcohol use (Table 2, columns "sober"). For boys, there is a consistent difference between abstainers and drinkers, but once a drinker, the intensity of alcohol use does not increase the risk of sober violence linearly. The group with intermediate alcohol use frequency has

generally the highest risk of sober victimisation, but this risk is not statistically significantly different from the risk of the low frequency group, once this is tested in a model where the low frequency group is the reference group (not shown). When compared to other drinkers, the group that most often consumes alcohol has generally the lowest risk to be victimised while sober. Thus, for boys, the increased victimisation risk of those who drink often seems to be largely attributable to violence while intoxicated.

For girls, the linear relationship between alcohol use and violence remains in sober violence, too, indicating that, when compared to boys, the association between

girls' drinking and victimisation seems mostly spurious. In physical violence, however, the sober/total ratio is smaller, indicating some causality. On the whole, the girls who drink most often also have the highest risk of being victimised while sober, and it appears that intoxicated violence cannot explain why girls who drink often are victimised more often. It could thus be that the increased risk of sober violence in girls having consumed alcohol could be attributed to differences in routine activities and lifestyles. Next, we add variables measuring routine activity patterns to the model.

When variables measuring routine activities are controlled for in the model, an association between the frequency of alcohol use and sober violence for both genders remains. For boys, the effect of routine activities is slightly weaker, whereas for girls the original association between alcohol use and sober violence decreases more. However, frequent alcohol use remains a stronger risk factor for girls' sober violence than for that of boys.

Additionally, to confirm the results of the earlier analyses, we also created two combined variables from all three dependent variables. If a person was sober in at least one of the latest incidents, we code the person as experiencing sober violence in the first variable. The second variable was created similarly, only the state of being intoxicated in at least one of three dependents was used as the condition. These variables were not mutually exclusive, but could instead be used in separate logistic regressions for both sober and intoxicated violence. This analysis (not shown) replicated the earlier results.

Discussion and conclusions

Given the rather weak link between the frequency of drinking alcohol and sober victimisation for boys, it seems that the effect of alcohol use on victimisation among boys is indeed caused by an increased risk of victimisation while intoxicated. This implies a causal rather than a spurious association between alcohol use and victimisation. Although there are traces of a causal association among girls as well, the spurious portion seems much greater, which in turn implies a third variable explanation for the link between alcohol use and victimisation. (Drunken violence was, unsurprisingly, strongly associated with the frequency of alcohol use.) The results are thus in accordance with the adult-based analysis of Felson and Burchfield (2004), where they suggested that the connection between the frequency of drinking and violent victimisation is more causal than spurious. Our analysis supports a similar gender-based difference as their study, suggesting that drinking increases the risk of victimisation more for men (in general) than women. In our analysis, the gender difference is largely caused by different patterns of victimisation in the group with the highest alcohol consumption: if this group were excluded from the analysis, boys and girls would in fact appear rather similar. The group with the highest alcohol consumption, especially girls, would thus be an interesting group for closer analysis.

Our results have a closer resemblance to victimisation studies made among the adult population than to studies of drinking and adolescent delinquency, where a spurious connection has been the most often reported finding. This is interesting

in the light of both the statements concerning lifestyle choices as a risk factor of both violent behaviour and victimisation in adolescence (Fagan et al. 1987; Sampson & Lauritsen 1990) and of the theory on self-control (Gottfredson & Hirschi 1990, 90–94). Combining our results with previous research on the relation between the frequency of drinking and violence, we conclude that there are differences in the connection between drinking and delinquency, on the one hand, and drinking and victimisation, on the other. Previous research on the frequency of drinking and violence suggests that the nature of the connection, that is, to what extent it is causal and to what extent spurious, varies according to the type of violence (Felson et al. 2008; Felson & Burchfield 2004). In the case of victimisation, differences were found between sexual victimisation and victimisation involving other kinds of physical violence (Felson & Burchfield 2004). In this analysis, three different types of victimisation were used, but there were no significant differences between them. It is, however, noteworthy that the types of violence compared in our analysis did not differentiate so much from each other as, for example, sexual violence and some other kinds of physical violence do. It would therefore be interesting to conduct a similar analysis of adolescents' sexual victimisation and other kinds of physical violence to see whether these types would differ more from each other regarding the question of drinking.

In all the types of violence used in this analysis, the gender difference was similar. Among girls the connection between the frequency of drinking and victimisation seemed mostly spurious, as they were

victimised also when sober. This suggests that there is a need for more research on possible common risk factors for drinking and victimisation. As presented earlier, several empirical studies have attempted to determine the spuriousness of the relationship between alcohol consumption and adolescent delinquency by controlling for a set of common risk factors, such as low academic achievement or mental health problems (Wei et al. 2004; Kerner et al. 1997; Fergusson et al. 1996). The same should be done for victimisation, and gender also needs to be taken into account. That these variables have a somewhat stronger role in girls' sober violence indicates that the spurious connection between alcohol use and victimisation may be linked to differential risks or exposures by lifestyle. However, controlling for these variables does not affect the role of alcohol use to a great extent, casting doubt over the claim that the residual association between alcohol use and sober violence would be attributable to different routine activities and lifestyles only.

Because this analysis is built on cross-sectional self-report data, some possible limitations should be taken into account. As the data comes from self-reporting, it is possible that there are gender differences in admitting intoxication while victimised, and under- or over-reporting of one's own intoxication is generally possible. However, there are no great differences in the overall level of intoxication during the latest violent incidents between boys and girls. It should be noted that if substantive under-reporting exists, the causal effect should on average grow. If those who reported being sober were actually drunk during the latest violent situation, we

underestimate the share of drunken incidents. Consequently, if this was the case, we would find the causal relationship between alcohol use and intoxicated victimisation weaker than it is in reality.

Routine activities were measured here by spending time in public places or with older friends. The results suggested that for boys the effect of these variables is for the most part rather weak, whereas for girls it is stronger. It is noteworthy that we used only two variables to describe routine activities, and there is a chance that our variables do not measure routine activities very well, and the unexplained association could still be related to different lifestyles and routine activities which in turn are related to alcohol use. It may be that girls who drink frequently differ from other girls more than frequently drinking boys differ from other boys, and thereby are a more selected group in terms of several third factors not measured here.

In addition, although we have demonstrated that the higher risk of frequent drinkers is attributable to violence while intoxicated particularly among boys, and is in that sense causal, we cannot naturally say anything about the situational dynamics that actually cause the violence. It should also be noted that the share of incidents while intoxicated was only 20%. It is thus evident that alcohol can at best only explain a small part of the variation in victimisation experiences. However, we feel that disaggregating the outcome variable into sober and intoxicated violence is a good way to analyse the effect of alcohol consumption on victimisation, particularly if the alternative is simply controlling for confounding variables in an observational setting without any sensitivity to

intoxication on a situational level. The list of confounders is always bound to be incomplete, and the relationship between the predictor of interest and outcome may still be confounded by unobserved heterogeneity. However, we do not mean that confounders do not matter: it is clear that many individual characteristics affect both drinking and victimisation. Our argument is that intoxicated situations play a key role in translating heavy alcohol use to higher victimisation risk, and because of this, alcohol has at least an important mediating role in explaining variation in victimisation among adolescent boys.

If alcohol use were only a marker for individual characteristics that affect victimisation irrespective of alcohol use, there should be a strong link to sober violence as well. As this is found only for girls, it appears that frequently drinking boys' increased victimisation risk is strongly connected to situations involving alcohol use. To sum up, our results warrant the claim that alcohol use does not increase the risk only because of differences in individual characteristics between abstainers and drinkers, but there appears to be a more direct causal pathway from high alcohol consumption through intoxication to increased risk of violent victimisation, for adolescent boys in particular.

Declaration of Interest None.

Noora Ellonen, Researcher
Police College of Finland
PO Box 123, FIN-33721 Tampere
E-mail: noora.ellonen@poliisi.fi

Mikko Aaltonen, Planning Officer
National Research Institute of Legal Policy
PO Box 444, FIN-00531 Helsinki
E-mail: mikko.e.aaltonen@om.fi

NOTE

- 1 <http://www.poliisiammattikorkeakoulu.fi/poliisi/poliisioppilaitos/home.nsf/pages/05456D9A303DDD31C225770B0032F2C7>

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