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Article

Parental education differentially predicts young adults' frequency and quantity of alcohol use in a longitudinal Swedish sample

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ABSTRACT

Background: Alcohol consumption contributes to health inequalities, but few studies have examined how socially differentiated alcohol use develops across the life course. In this study, we examine how one aspect of childhood socioeconomic position (parental education) relates to two often-conflated young adult drinking patterns: drinking frequency and quantity per occasion. Using a life course perspective, we also explore whether parental drinking patterns or young adults' own educational attainment might account for such associations.

Methods: This study used longitudinal data from the nationally representative Swedish Level of Living Surveys (LNU). Young adults' (aged 20–28, n = 803) drinking patterns and educational attainment were determined through the LNU 2010 and official registers. A decade earlier, parents self-reported their education and drinking patterns in the LNU 2000 and Partner-LNU 2000.

Results: Logistic regression models showed that high parental education predicted young adult frequent drinking, while low parental education predicted young adult high quantity drinking. Drinking patterns were associated inter-generationally, but parental alcohol use did not account for differences in young adult drinking patterns by parental education. Young adults' own education similarly predicted their drinking patterns but did not account for differences in drinking frequency by parental education. Differences in drinking quantity by parental education were no longer significant when young adults' own education was included in the final model.

Conclusions: Findings suggest that parental education constitutes an early-life structural position that confers differential risk for young adult drinking patterns. Young adults whose parents had low education were less likely to drink frequently but were more likely to drink heavily per occasion, a drinking pattern that may place more disadvantaged young adults at a greater health risk.

1. Introduction

Alcohol is a cause of more than 60 medical conditions, but alcohol-related health problems disproportionately affect disadvantaged socioeconomic groups (Hemström, 2002; Room, Babor, & Rehm, 2005; Östergren, Martikainen, & Lundberg, 2017). Reducing inequalities in the alcohol-related disease burden may require a focus on the 'causes of the causes,' that is, an emphasis on how socioeconomic position relates to alcohol use and the development of alcohol-related health problems across the life course (Marmot, 2005).

Alcohol is thought to contribute to health inequalities through two main pathways: socially differential exposure and vulnerability (Diderichsen et al., 2012; Schmidt, Mäkelä, Rehm, & Room, 2010). The former refers to the process whereby some groups are more likely to engage in risky or harmful alcohol consumption; the latter describes how some groups are more likely to experience poor health given the same alcohol consumption. While both pathways are relevant, they may be more or less important at different life stages (Kuh, Ben-Shlomo, Lynch, Hallqvist, & Power, 2003; Nordahl et al., 2014). That is, differential exposure to alcohol consumption may be especially relevant in early life, i.e., in adolescence and young adulthood, before the development of many alcohol-related health problems. These are also life stages when substantial cognitive development and identity formation coincides with uptake of risky behaviors (Viner et al., 2012). Young adulthood, in particular, is a stage characterized by both important changes in living conditions (e.g., leaving home, pursuit of higher education, start of an occupational career) and some of the highest lifetime alcohol consumption, which can be a danger to young adults' short-term health, their socioeconomic pursuits, and – if the drinking behavior becomes a long-term pattern – a danger to their adult health

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(Casswell, Pledger, & Pratap, 2002; Skogbrott Birkeland, Leversen, Torsheim, & Wold, 2014). From a health inequalities perspective, young adulthood represents an important early life phase, where better knowledge of socially differentiated alcohol use could aid in curbing the unequal development of alcohol-related health problems across the life course.

A substantial body of literature has been devoted to assessing predictors and consequences of young adult alcohol use, particularly within a U.S. college context (see, e.g., Ham & Hope, 2003). By comparison, surprisingly few studies have examined the relationship between socioeconomic position and young adult alcohol use outside of a university setting, and those that do present mixed results. For instance, though not explicitly focused on young adults, reviews from Hanson and Chen (2007), Wiles et al. (2007), and Kwok and Yuan (2016) find no or inconsistent support for an association between childhood socioeconomic position and young people's alcohol use. Stone, Becker, Huber, and Catalano (2012) was the only review we found that focused on young adults, and they report only six studies addressing the relationship between childhood socioeconomic position and young adult alcohol use. These studies also reflect mixed findings. That is, while some articles report no association, some find a positive association (i.e., higher socioeconomic position associated with more alcohol use), and others an inverse association (i.e., lower socioeconomic position associated with more alcohol use). Taken as a whole, it is unclear whether childhood socioeconomic position influences alcohol use in young adulthood.

This lack of consensus may be due in part to important differences in measurement of alcohol use. For instance, there is little consistency in the literature, and not all measurements indicate risky or harmful use, which is relevant from a public health perspective. Moreover, the majority of studies measure alcohol use as some combination of drinking frequency and drinking quantity per typical occasion, which could obscure socioeconomic differences in different drinking patterns. Of course, while frequent high quantity drinking is likely the most harmful drinking pattern, it is still important to differentiate between drinking frequency and quantity as occasional high quantity drinking (i.e., binge drinking) is associated with more health risks than low quantity frequent drinking (Jennison, 2004; Stolle, Sack, & Thomasius, 2009; Tolstrup et al. 2006). Furthermore, we can see that frequency and quantity represent different drinking patterns in how they trend over the life course: Casswell et al. (2002) found that drinking frequency increases through the 20s while drinking quantity per occasion peaks around age 21 before declining. Moreover, drinking frequency and quantity may have different associations with young adult socioeconomic position, i.e., drinking frequency is positively associated while drinking quantity per occasion is inversely associated (Casswell, Pledger, & Hooper, 2003). If extended to childhood socioeconomic position, this may explain why conflating the two drinking behaviors could result in null or inconsistent associations in the literature.

The aim of this study is to examine whether childhood socioeconomic position (measured as parental education) is differentially associated with young adult (20–28 years) drinking frequency and drinking quantity in a longitudinal Swedish sample. In addition, we will incorporate a life course perspective to identify other pathways that may be important for understanding an association between childhood socioeconomic position and young adult drinking patterns (see Fig. 1, path a). For instance, parents may contribute to the reproduction of inequalities in drinking patterns by modeling to their offspring (path b) their own socially differentiated drinking behavior (path c). Another relevant intermediary is young adults' own socioeconomic position. While many young adults lack an occupation or income, their current educational attainment can be considered a marker of their socioeconomic position of destination. One can also regard young adult educational attainment as an educational pathway connecting parental education with young adult alcohol use (Ben-Shlomo & Kuh, 2002), considering an inter-generational association of education (path d) and an association between young adult educational attainment and their own drinking patterns (path e).

This study will thus address four research questions:

1. How does parental education associate with young adult drinking patterns (drinking frequency and quantity per occasion)?
2. Are drinking patterns associated inter-generationally?
3. How does young adults' own educational attainment associate with their drinking patterns?
4. If parental education is associated with young adult drinking patterns (question 1), do parental drinking patterns or young adults' own education account for this association?

2. Material and methods

2.1. Study population

This study uses data from the two latest waves (2000 and 2010) of the Swedish Level of Living Survey (LNU). The LNU is a nationally representative study of 1/1000 of the Swedish adult population aged 18–75 years (Bygren, Gähler, & Nermo, 2004). Personal interviews focus on participants' living conditions in a broad sense, including their education and health behaviors.

The study population constitutes a cohort of young adults (aged 20–28) who provided information on drinking patterns and own education in 2010. These young adults were originally recruited as adolescents through a parent's participation in the LNU 2000 (N = 1290 adolescents, corresponding to 86% of all eligible adolescents, see Jonsson & Östberg, 2010 for more information). The LNU 2000 and Partner-LNU 2000 (an abbreviated postal survey completed by cohabitating partners of participants in the LNU 2000) were used to obtain household parental education and parental drinking patterns.

The cohort of young adults who participated in the LNU 2010 constitutes over two thirds (72%, n = 929) of the original sample recruited in 2000. Young adults' drinking patterns were obtained from a supplementary questionnaire to the LNU 2010, of which 63% (n = 813) of the original sample participated. Regarding non-response, young adults who answered questions about alcohol in the supplemental questionnaire were more likely to have an advantaged socioeconomic background or be native Swedes compared with those originally recruited in 2000 (see Östberg, Modin, & Brolin Låftman, 2014). After accounting for missing data, the final analytic sample comprises 62% (n = 803) of those originally recruited in 2000. This study was approved by the Regional Ethics Committee of Stockholm (EPN).

2.2. Variables

2.2.1. Parental education

Parental education reflects the highest level of completed education in the household based on three ordered categories: (1) Tertiary degree (corresponds to 13+ years of education); (2) Upper secondary degree (11–12 years of education); (3) Compulsory degree or less (≤ 9 years). Education was determined though official register information, which was confirmed or updated through self-report (i.e., in the LNU 2000 and Partner-LNU 2000). Information from one parent was used when data was missing from a second parent (applicable for 10% of young adults living in two parent households).

2.2.2. Young adult educational attainment

Young adults' own education was also determined though official register information, which was confirmed or updated in the LNU 2010. While some young adults in our sample were too young to have graduated with a tertiary (college or university) degree, all participants would have had the opportunity to graduate with an upper secondary degree. In Sweden, upper secondary education is optional, though highly attended, and today typically comprises 3 years of study

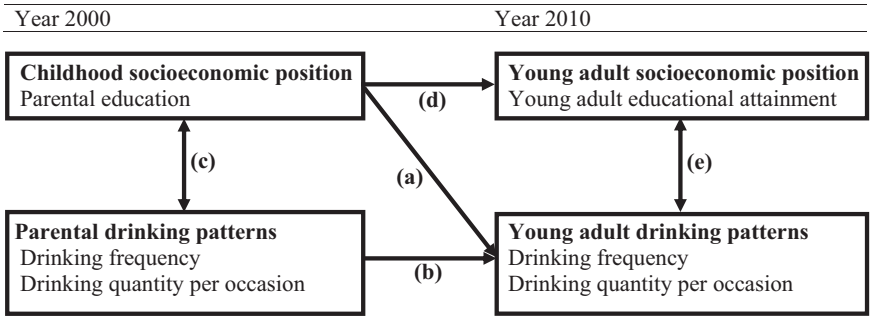

Fig. 1. Conceptual framework. *Note.* Hypothetical pathways connecting childhood socioeconomic position with young adult drinking patterns.

between the ages of 16–19. Indeed, most young adults (72% in 2009) receive final upper secondary marks by age 20 (Skolverket, 2010). Three educational categories were thus formed: (1) Upper secondary degree from a theoretical program or any post-upper secondary education; (2) Upper secondary degree from a vocational program; (3) Compulsory degree or less education. The distinction between theoretical and vocational upper secondary programs reflects different academic tracks: A higher proportion of students attending a theoretical program go on to attend college or university (Statistics Sweden, 2009). This distinction has also been referred to as 'academic orientation' and is associated with adolescent smoking, physical activity, and alcohol use in Sweden (Hagquist, 2007).

2.2.3. Parental and young adult drinking patterns

Drinking patterns were examined in both generations as drinking frequency and drinking quantity per occasion. Information was available for both parents for the large majority (80%) of the sample. Information from one parent was used if the young adult lived in a single parent household (9%) or was missing information from the second parent (11%).

Drinking frequency was assessed in both generations through the question: "During the last 12 months, about how often have you consumed some amount of alcoholic beverage, that is: wine, strong beer, strong cider or liquor?" Eight response options were recoded into three categories: (1) Daily/weekly drinking (response options "daily or almost daily," "2–4 times a week," and "once a week"); (2) Monthly drinking ("2–3 times a month," "once a month"); and (3) Infrequent drinking ("6–11 times a year," "less often," "never"). Parental drinking frequency reflects the highest frequency in the household.

Drinking quantity per occasion was assessed in both generations though the question: "On such occasions, how many glasses do you usually drink? One glass can be 1 glass of wine, 1 bottle or can of beer, or 1 schnapps or drink." To capture quantity associated with health risks, a high/low dichotomization was used; high was measured as six or more glasses per occasion, a cutoff consistent with research on binge drinking in Sweden and the Nordic countries (Bergmark, 2004; Gmel, Rehm, & Kuntsche, 2003; Mäkelä et al., 2001). However as very few parents report consumption at this level, parental high quantity reflects at least one parent drinking four or more drinks per occasion.

As aforementioned survey questions were asked consecutively, we checked the extent to which drinking frequency and quantity could be considered nested or overlapping in our sample. While a small percentage (7%) of infrequent drinkers engaged in high quantity drinking, 29% of monthly drinkers and 29% of daily/weekly drinkers engaged in high quantity drinking, indicating that frequent drinking and high quantity drinking reflect different drinking patterns.

2.2.4. Covariates

Immigrant background, family composition, age, and gender were included as covariates. As having parents who immigrated to Sweden may relate to parental education and young adult alcohol use (Hansen, Ekholm, & Kjøller, 2008), having an immigrant background (i.e., all parents in the household born outside of Sweden) was considered a potential confounder. Family composition (i.e., single or two-parent household) may relate to parental and young adult alcohol use (Barrett & Turner, 2006). Age is associated with frequency and quantity of alcohol use (Casswell et al., 2002) and may relate to young adult educational attainment. Gender was also treated as a covariate and adjusted for in analyses. The same high quantity cutoff was used for men and women since using a lower cutoff (5 drinks) for women did not meaningfully affect the results. Furthermore, no substantial gender differences or significant interaction effects were found so gender-specific analyses are not presented.

2.3. Data analysis

Analysis was conducted using Stata 14.2. For drinking frequency, relative risk ratios (RR) were estimated of daily/weekly and monthly drinking, respectively compared to infrequent drinking, through multinomial logistic regression analyses. Odds ratios (OR) of high drinking quantity were calculated using binary logistic regression analyses. Results did not differ if we obtained average marginal effects, considered more reliable than OR when comparing logistic regression models (Mood, 2010). As the sample includes individuals who lived in the same household in 2000 (i.e., siblings or stepsiblings), Stata's cluster command was used to estimate robust standard errors for all analyses. The sample included 611 independent observations (i.e., unique households).

The same analytic strategy was employed for both drinking patterns. First, to address research questions 1–3, crude analyses are presented where the effects of independent variables are assessed one at a time, controlling only for covariates. Next, to address the first part of research question 4, parental education and parental drinking patterns were assessed simultaneously to determine if parental alcohol use accounted for the association between parental education and young adult drinking frequency (Table 2, Model 1) or drinking quantity (Table 3, Model 1) Finally, regarding the last part of question 4, young adults' own educational attainment was added to the model to determine whether it accounted for the association between parental education and young adult drinking frequency (Table 2, Model 2) or drinking quantity (Table 3, Model 2).

3. Results

Descriptive statistics are shown in Table 1. Most young adults grew up in households where the highest education was upper secondary (67%), relative to tertiary (25%) and compulsory (8%). The largest proportion of young adults were monthly drinkers (44%), relative to daily/weekly (32%) and infrequent drinkers (25%). A quarter (24%) of young adults engaged in high quantity drinking.

3.1. Drinking frequency

How parental education, parental drinking frequency, and young

Table 1
Descriptive statistics (n = 803).

	n (%)
Outcomes	
Young adult drinking frequency	
Infrequent (≤11 times a year)	197 (24.5)
Monthly	352 (43.8)
Daily/weekly	254 (31.6)
Young adult drinking quantity per occasion	
Low (< 6 drinks)	614 (76.5)
High (≥ 6 drinks)	189 (23.5)
Independent variables	
Parental education	
Tertiary degree	198 (24.7)
Upper secondary degree	540 (67.3)
≤ Compulsory degree	65 (8.1)
Parental drinking frequency	
Infrequent (≤11 times a year)	171 (21.3)
Monthly	280 (34.9)
Daily/weekly	352 (43.8)
Parental drinking quantity per occasion	
Low (< 4 drinks)	599 (74.6)
High (≥ 4 drinks)	204 (25.4)
Young adult educational attainment	
≥ Theoretical upper secondary degree	399 (49.7)
Vocational upper secondary degree	341 (42.5)
≤ Compulsory degree	63 (7.9)
Covariates	
Young adult age in years, M ± SD	23.4 ± 2.5
Young adult gender	
Male	384 (47.8)
Female	419 (52.2)
Young adult immigrant background	
No	724 (90.2)
Yes	79 (9.8)
Young adult family composition	
Two-parent family	727 (90.5)
Single-parent family	76 (9.5)

Note. M = mean. SD = standard deviation.

adult educational attainment associate with young adult drinking frequency is examined in Table 2. In crude analyses, there was no clear association between parental education and young adult monthly drinking, but a graded association was found between parental education and young adult daily/weekly drinking. That is, young adults were less likely to drink daily/weekly (compared to infrequently, i.e., ≤11 times a year) if their parents had lower education, i.e., held an upper secondary degree (OR = 0.50, $p < 0.01$) or a compulsory degree (OR = 0.18, $p < 0.01$) relative to a tertiary degree. We also found an intergenerational association of drinking frequency. The risk of daily/weekly drinking was higher if parents drank monthly (OR = 3.12, $p < 0.001$) or daily/weekly (OR = 5.37, $p < 0.001$) relative to less frequently (≤11 times a year). However, parental drinking frequency did not substantially attenuate the association between parental education and young adult daily/weekly drinking (Model 1). With regard to young adults' own education, it was positively associated with drinking frequency. In crude analyses, young adults' risk of daily/weekly drinking was lower if they had obtained a vocational upper secondary (OR = 0.58, $p < 0.05$) or compulsory degree (OR = 0.42, $p < 0.05$) in comparison to a theoretical upper secondary degree or post-upper secondary education. Young adult educational attainment did not account for the association between parental education and young adult drinking frequency (Model 2).

3.2. Drinking quantity per occasion

How parental education, parental drinking quantity, and young adult educational attainment associate with young adult drinking quantity is examined in Table 3. In crude analyses, a reverse association between parental education and young adult high quantity drinking was found: Young adults were more likely to engage in high quantity drinking (6+ drinks per occasion) if their parents held a compulsory degree (OR = 2.67, $p < 0.05$) relative to a tertiary degree. Parental high quantity drinking (4+ drinks per occasion) was a risk factor (OR = 1.79, $p < 0.01$) for young adult high quantity drinking but did not attenuate the association with parental education (Model 1). In crude analyses, young adults were more likely to engage in high quantity drinking if they had obtained a vocational upper secondary degree (OR = 1.60, $p < 0.05$) or a compulsory degree (OR = 2.06, $p < 0.05$) when compared to a theoretical upper secondary degree or higher education. However, simultaneously assessing parental education and young adult educational attainment resulted in both factors becoming somewhat attenuated in the full model, so that the effect of parental education (OR = 2.10, $p < 0.10$) on young adult drinking quantity was no longer statistically significant at the 5% level (Model 2).

Table 2
Relative risk ratios (RR) of monthly and daily/weekly drinking (compared to infrequent drinking) in young adulthood, by parental education, parental drinking frequency, and young adult educational attainment (n = 803).

	Monthly drinking			**Daily/weekly drinking**		
	Crude RR (95% CI)	Model 1 RR (95% CI)	Model 2 RR (95% CI)	Crude RR (95% CI)	Model 1 RR (95% CI)	Model 2 RR (95% CI)
Parental education						
Tertiary degree (reference)	1.00	1.00	1.00	1.00	1.00	1.00
Upper secondary degree	1.08 (0.66-1.75)	1.11 (0.68-1.80)	1.22 (0.74-2.01)	**0.50 (0.31-0.81)**	**0.53 (0.32-0.86)**	**0.57 (0.35-0.95)**
≤Compulsory degree	0.78 (0.36-1.65)	0.88 (0.41-1.91)	1.01 (0.47-2.20)	**0.18 (0.07-0.47)**	**0.23 (0.09-0.62)**	**0.27 (0.10-0.73)**
Parental drinking frequency						
Infrequent (≤11 times a year, ref.)	1.00	1.00	1.00	1.00	1.00	1.00
Monthly	1.64 (0.99-2.73)	1.60 (0.96-2.68)	1.57 (0.93-2.61)	**3.12 (1.72-5.68)**	**3.01 (1.67-5.44)**	**2.93 (1.61-5.33)**
Daily/weekly	**2.10 (1.26-3.51)**	**2.07 (1.23-3.48)**	**2.05 (1.22-3.44)**	**5.37 (2.96-9.73)**	**4.85 (2.68-8.77)**	**4.83 (2.66-8.77)**
Young adult educational attainment						
≥Theoretical upper secondary degree (ref.)	1.00		1.00	1.00		1.00
Vocational upper secondary degree	0.68 (0.46-1.01)		0.67 (0.45-1.00)	**0.58 (0.38-0.90)**		0.71 (0.45-1.10)
≤Compulsory degree	0.68 (0.33-1.37)		0.72 (0.35-1.48)	**0.42 (0.19-0.95)**		0.54 (0.23-1.29)

Note. CI = Confidence interval. All analyses are adjusted for gender, age, immigrant background, and family composition. Crude analyses include one independent variable at a time. Model 1 includes variables from the parental generation. Model 2 includes variables from Model 1 and young adult educational attainment. Significant ($p < 0.05$) relative risk ratios are bolded.

Table 3
Odds (OR) of high drinking quantity (≥ 6 drinks) per occasion in young adulthood by parental education, parental drinking quantity, and young adult educational attainment (n = 803).

	Crude OR (95% CI)	Model 1 OR (95% CI)	Model 2 OR (95% CI)
Parental education			
Tertiary degree (reference)	1.00	1.00	1.00
Upper secondary degree	1.30 (0.83–2.03)	1.13 (0.71–1.78)	1.03 (0.64–1.64)
≤ Compulsory degree	**2.67 (1.17–6.06)**	**2.48 (1.07–5.75)**	2.10 (0.87–5.04)
Parental drinking quantity per occasion			
Low (< 4 drinks, ref.)	1.00	1.00	1.00
High (≥ 4 drinks)	**1.79 (1.19–2.71)**	**1.78 (1.15-2.73)**	**1.75 (1.14–2.68)**
Young adult educational attainment			
≥ Theoretical upper secondary degree (ref.)	1.00		1.00
Vocational upper secondary degree	**1.60 (1.07–2.38)**		1.47 (0.96–2.23)
≤ Compulsory degree	**2.06 (1.01–4.20)**		1.84 (0.88–3.84)

Note. CI = Confidence interval. All analyses are adjusted for gender, age, immigrant background, and family composition. Crude analyses include one independent variable at a time. Model 1 includes variables from the parental generation. Model 2 includes variables from Model 1 and young adult educational attainment. Significant ($p < 0.05$) odds ratios are bolded.

4. Discussion

4.1. Main findings and their significance

This study explored socioeconomic differences in young adult drinking patterns in a Swedish sample. In the Swedish context, the last decade has seen a decline in total alcohol consumption, particularly among adolescents (C.A.N., 2017). At present, there is discussion in Sweden and elsewhere surrounding young people's reasons for consuming less alcohol (Pennay, Livingston, & MacLean, 2015). In Sweden there is also debate as to whether all adolescents are drinking less or whether the prevalence of heavy drinkers has remained stable or even increased, indicating a polarization of drinking patterns among Swedish youth (see Hallgren, Leifman, & Andréasson, 2012; Norström & Raninen, 2017; Thor, Raninen, & Landberg, 2017; Zeebari, Lundin, Dickman, & Hallgren, 2017). These trends have prompted scholars to call for more longitudinal studies that examine how and why young people drink and what societal factors predict risky drinking (Pennay et al., 2018; Pennay et al., 2015). This article contributes to this discussion by examining how parental education differentially predicts young adult drinking patterns in a longitudinal sample. The main finding is that young adults with less educated parents were less likely to drink frequently but were more likely to drink heavily per occasion, a drinking pattern that may place more disadvantaged young adults at a greater health risk. To the best of our knowledge, this is the first study in the Nordic countries to examine socioeconomic differences in both young adult drinking frequency and drinking quantity in the same sample.

Regarding the second research question, results showed drinking patterns to be associated inter-generationally. Many studies have found that parental alcohol use relates to young adult alcohol use (Stone et al., 2012), and an association between parental and young adult total yearly consumption has been found using the same data material as this study (Karlsson, Magnusson, & Svensson, 2016). Our article adds support for the inter-generational transmission of different drinking patterns, which may be consistent with the idea that parents act as socialization agents by influencing how their offspring drinks (Elstad, 2010; Singh-Manoux & Marmot, 2005).

Regarding the effect of young adult educational attainment, young adults with a theoretical upper secondary degree or post-upper secondary education were more likely to drink frequently but were less likely to drink in high quantities. This finding may reflect factors present in young adults' educational environments, as frequent drinking is a normative part of the university experience (Carter, Brandon, & Goldman, 2010; Elgán, Gripenberg, Jalling, Jägerskog, & Källmén, 2014). Indeed, sensitivity analysis showed the effect of young adult education on drinking frequency to be somewhat stronger among those currently studying at the time of data collection, though the effect remained regardless of studying status (results not shown). Regarding heavy drinking, less educated young adults may be more likely to encounter educational- or occupational-based environments where a higher proportion of peers engage in high quantity drinking; they may also be less concerned with the effects of more harmful drinking patterns like high quantity drinking (Elstad, 2010). Young adults with lower educational attainment may also experience more economic stress, which has been linked to increased binge drinking (Dee, 2001). The effect could go in the opposite direction: Engaging in binge drinking could affect educational attainment through lower academic performance or a higher likelihood of dropping out of higher education (Jennison, 2004).

Lastly, we examined whether parental drinking patterns or young adult educational attainment might account for differences in young adult drinking patterns by parental education. Regarding parental alcohol use, parental drinking patterns did not fully explain the effect of parental education on young adult drinking patterns (despite similar associations between parents' education and their drinking patterns, results not shown). This suggests that in this study, we find support for two separate inter-generational pathways that impact on young adult drinking patterns: a structural pathway originating from parental education and a socialization pathway in which drinking patterns may be transferred from parent to offspring regardless of educational background.

Regarding young adult educational attainment, results suggested that young adults' own education did not account for differences in their drinking frequency by parental education. This may indicate that there are important aspects of one's socioeconomic background that influence drinking frequency in young adulthood. For instance, young people with highly educated parents may be exposed to parental attitudes that are more tolerant of drinking (Luthar & Goldstein, 2008), particularly moderate drinking, which is less socially stigmatized than heavy drinking (Room, 2005). Young adults with an advantaged background may be more likely to work in (or know they are headed toward) higher status occupations where frequent alcohol use is culturally embedded (Elstad, 2010; Järvinen, Ellergaard, & Larsen, 2014). They may also have greater awareness of the risks of alcohol abuse (Kenkel, 1991), which could discourage binge drinking and/or encourage more moderate but frequent use. Regarding high quantity drinking, this study did not find that young adults' own educational attainment explained the effect of parental education on their drinking quantity, as both measures of education were somewhat attenuated

when assessed simultaneously. That is, the inclusion of young adult educational attainment rendered the effect of parental education statistically insignificant at the 5% level. This may indicate low statistical power and/or that parental education and young adult educational attainment partially measure the same thing. As educational attainment may be an important mediator of the effect of childhood social class on binge drinking in adulthood (Lawlor et al., 2005), future studies should examine how life course educational attainment relates to drinking quantity.

4.2. Strengths and limitations

This study benefited from the use of longitudinal data, which made it possible to ascertain parental drinking patterns when the young adults were still adolescents living in the same household as their parents. The study was limited by the age range of the sample (20–28 years), which is quite wide and constrained the ability to assess final educational attainment. A relatively small sample size also limited the ability to examine how parental gender might modify an association between parental and young adult drinking patterns. In a similar vein, failure to find modification by young adult gender could be due to insufficient power. Our results may also be context-dependent as educational attainment and drinking patterns may differ over time and space; however, our results are similar in pattern to those found in a study of New Zealand young adults (Casswell et al., 2003).

This study also did not identify young adults who are frequent *and* high quantity drinkers, a behavior that may indicate particularly risky alcohol use. Daily/weekly high quantity drinkers made up 9% of our sample but were not more or less likely to have parents with high or low education compared to the rest of the sample (results not shown). As previously discussed, this suggests that combining drinking frequency and drinking quantity into one measure of alcohol use may obscure socially differentiated drinking patterns in young adulthood.

4.3. Conclusions

This study finds support for educational differences in young adult drinking patterns. The results may be relevant considering recent developments in Sweden, as young people's per capita alcohol consumption has decreased in the last decade, but alcohol-related hospitalizations have risen, and this discrepancy may be due to increased consumption among heavy drinkers (Hallgren et al., 2012). Identifying early risk factors for high quantity drinking may be useful in efforts to reduce alcohol-related consequences among young people, particularly as less frequent high quantity drinkers still account for a substantial share of alcohol-related problems (Danielsson, Wennberg, Hibell, & Romelsjö, 2012), and as differences in drinking patterns may partially explain socioeconomic inequalities in alcohol-related consequences (Huckle, You, & Casswell, 2010; Mäkelä & Paljärvi, 2008).

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Declarations of interest

None.

Ethical statement

We declare no conflicts of interest. This article is a part of a study that has been approved by the Regional Ethics Committee of Stockholm (EPN, #2016/252-31/5).

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