Effect of the Covid-19 Pandemic on the Drinking Behaviour of Dutch Adolescents with

Different Socioeconomic Backgrounds

Master Thesis

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24 June 2022

Word count: 4861

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Abstract

Background: Alcohol use among adolescents is a global health concern, which is associated with a higher prevalence of alcohol dependence later in life and can affect development. However, different socioeconomic groups seem unequally affected by alcohol consumption, with lower socioeconomic groups experiencing more significant harm from alcohol consumption. With the start of the Covid-19 pandemic in 2020, these differences have the potential to be aggravated even further. The current study examined the influence of the Covid-19 pandemic on the drinking behaviour of adolescents in different socioeconomic groups in the Netherlands. **Method:** Longitudinal survey data from the Youth Got Talent study was used. Participants (N=1650) were 16 years or older and attended vocational schools in the Netherlands. Logistic regression analyses assessed associations between socioeconomic position and drinking behaviour (binge drinking and drinking frequency) before and during the Covid-19 pandemic. ANOVA analyses were performed to assess the change in drinking behaviour for socioeconomic groups before and during the pandemic. **Results**: Drinking frequency increased for all adolescents in this sample during the pandemic, while binge drinking decreased. However, no significant relations were found between socioeconomic position and drinking behaviour. There was also no significant change in drinking behaviour pre-and during the pandemic between socioeconomic groups. **Conclusion**: There was no evidence that socioeconomic position influenced adolescents' drinking behaviour pre-or during the pandemic in this sample. Unequal sample sizes for socioeconomic groups may have affected these results. Therefore, future research is needed that uses equal sample sizes to investigate factors that influence alcohol consumption in adolescents, especially during social isolation. This would help improve policies and interventions that target alcohol consumption in adolescents in the Netherlands.

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The WHO considers the harmful use of alcohol as one of the most dangerous risk factors that leads to premature mortality, accounting for over 3 million deaths worldwide (Marten et al., 2018). Most people usually start experimenting with alcohol during adolescence. The early start of alcohol use is also associated with a higher prevalence of alcohol dependence later in life (Spear, 2002). In the Netherlands, this was considered a significant public health concern in the late 20th century, having one of the highest drinking rates among adolescents in Europe and North America (de Looze et al., 2017). While drinking rates have been steadily declining among Dutch adolescents in all age groups at the start of this century, drinking among adolescents, particularly binge drinking (drinking more than five drinks on one occasion (Gmel et al., 2003)), is still a relevant problem in the Netherlands today. In 2017, over 70% of adolescents who had drunk alcohol in the past month reported engaging also in binge drinking (Stevens et al., 2018). Early binge drinking is especially problematic since it can have a detrimental impact on adolescents' psychological and physical health outcomes (Inchley et al., 2018).

On top of that, the harms of alcohol consumption seem to be unequally distributed for different socioeconomic groups, with lower socioeconomic groups experiencing greater harm from alcohol consumption (Katikireddi et al., 2017). This is also demonstrated in the higher alcohol-related mortality and morbidity rate for lower socioeconomic groups (Bellis et al., 2016). These health differences between socioeconomic groups have the potential to be further aggravated by the COVID-19 pandemic leading to lockdowns and social distancing measures.

So far, research has demonstrated that social isolation can have a detrimental impact on the health and well-being of society. However, much is still unknown about its effects, especially

long-term social isolation in adolescents (Szwarcwald et al., 2021). Even so, it is crucial to investigate which vulnerable groups were especially engaging in alcohol use during the Covid-19 pandemic. To this day, no research appears to have been done on the effect of adolescents' socioeconomic position on their drinking behaviour during the Covid-19 pandemic in the Netherlands. Hence, this thesis aims to investigate how the drinking behaviour has changed in adolescents due to the Covid-19 pandemic in different socioeconomic groups and if lower socioeconomic groups were more likely to engage in more dangerous drinking behaviours. By drawing on several psychological and sociological theories, this thesis intends to uncover reasons that may have affected the alcohol consumption of adolescents and led to unequal outcomes between different socioeconomic groups. Gaining more knowledge on the possible impact that lockdowns have on the alcohol consumption of adolescents can help policymakers and politicians guide their decision process when new measures are introduced.

Motives in Adolescents to Engage in Alcohol Use

To investigate the drinking behaviour of adolescents and how this could have been affected by the Covid-19 pandemic, it is essential to understand why adolescents engage in alcohol use. According to the Motivational Model of Alcohol Use, individuals have underlying motives that influence their drinking behaviour (Cox & Klinger, 1988). The model proposes that the decision to consume alcohol or not depends on the consequences the person perceives of this behaviour. It is based on a combination of emotional and rational processes. Building on the Motivational Model of Alcohol Use, four categories of motives are associated with alcohol use in adolescents: enhancement (drinking to feel more positive emotions); coping (drinking to cope with negative emotions); social (drinking to be more social) and conformity (drinking to belong to a group) (M.L. Cooper, 1994). These four motives are connected to different behavioural

patterns of alcohol use. Light drinking and nonproblematic alcohol consumption are associated with social motives. While on the contrary, those that drink to cope with negative emotions show a more problematic drinking behaviour, including heavier drinking and drinking alone (M.L. Cooper, 1994). However, most adolescents drink for social and enhancement reasons, and only a minority drink to cope with negative emotions (Kairouz et al., 2002). Nevertheless, it is crucial to investigate coping models of drinking in adolescents since they are associated with alcohol-related problems in adulthood and a higher probability of substance abuse (Kuntsche et al., 2005; Stapinski et al., 2016). This would also help to develop prevention programs that can target this issue.

Socioeconomic Position and Health Inequality

Socioeconomic position (SEP) is one of the significant predictors of health outcomes (Mackenbach, 2012). One factor contributing to this effect is a higher engagement in unhealthy behaviours of lower socioeconomic groups (Currie, 2008). This includes a higher smoking prevalence, less physical activity, and unhealthy eating habits compared to higher socioeconomic groups. The health lifestyle theory claims that health behaviours follow social norms, which are embedded in the behaviour of the individual's socioeconomic group (Cockerham, 2005). This means that lifestyle practices are not random behaviours but reflect the characteristics and the available choices of the individual's social class. People make their own decisions, but they are usually in line with the social norms of their social class and other structural variables that apply to them (Cockerham, 2005). Structural variables include "(1) class circumstances; (2) age, gender, and race/ethnicity; (3) collectivities (social networks associated with marriage and kinship, religion, politics, ideology, the workplace, etc.); and (4) living conditions (quality of housing, access to basic utilities, neighborhood facilities, public safety, etc.)" (Cockerham et al.,

2020, p.36). This may partly explain the inequalities in health lifestyles between different socioeconomic groups. On top of that, lower SEP groups often experience higher stress levels due to financial hardship, more difficult living situations, and less social support to buffer stress than higher socioeconomic groups (Santiago et al., 2011; Weyers et al., 2008). Financial stress and lack of social support may lead to heavier drinking and alcohol problems (Peirce et al., 1996).

For adolescents, existing research suggests mixed results for the influence of socioeconomic position on drinking behaviour. A recent study compared adolescent alcohol use and their socioeconomic position in six European countries. They concluded that in most countries, parental SEP of adolescents did not influence their drinking behaviour (Bosque-Prous et al., 2017). However, in the Netherlands, they found a positive association between drinking levels and family affluence. Other studies have found a higher alcohol consumption among adolescents in higher SEP groups than in lower groups (Hanson & Chen, 2007a; Schmengler et al., 2022). However, these studies did not investigate the Covid-19 pandemic as a factor that might impact adolescents' drinking behaviour in different socioeconomic groups. On top of that, most studies only include parental SEP as a measure of adolescents' socioeconomic position and do not consider different drinking behaviours, like binge drinking or the drinking frequency. Hence, it is important to examine different drinking behaviours on the effect of SEP on the alcohol consumption of adolescents.

The Covid-19 Pandemic

On March 11, 2020, the WHO declared the spread of the coronavirus a global pandemic (WHO, 2020). Social distancing measures followed this in most countries, including the Netherlands. On March 16, the Dutch government decided to close schools to prevent the further

spread of the virus (Government of the Netherlands, 2020a). Between March 2020 and

December 2020, the Dutch government loosened some restrictions; however, on 15.12.2020

decided to go into a strict lockdown with the closing of all non-essential shops and move again to

online education in schools (Government of the Netherlands, 2020b). Adolescents could no

longer interact in person with their peers in class and fulfil their social support needs. This is

supported by literature claiming that the feeling of loneliness has increased in adolescents during

the pandemic (K. Cooper et al., 2021). Research also demonstrates that the pandemic has led to

many mental health-related issues among adolescents, including increased levels of stress and

trouble coping (Szwarcwald et al., 2021). Therefore, adolescents may have turned to alcohol as a

coping mechanism to manage negative feelings due to social distancing measures and the

outbreak of a global pandemic. Earlier research findings support this by associating loneliness in

adolescents with higher substance abuse (Ennett et al., 2006). However, it is important to note

that some authors also suggest a decrease in substance use during social isolation because they

are often purchased through their peers (Osgood et al., 2014). These conflicting results are most

likely due to differences in defining loneliness (Copeland et al., 2018). Hence, it is crucial to

understand how the pandemic and the lockdown measures have affected alcohol use in

adolescents.

The Covid-19 pandemic may have also had a differential impact depending on SEP.

Children from lower socioeconomic backgrounds may have experienced more stress than those

with higher socioeconomic backgrounds because of limited living space during lockdowns

(Ravens-Sieberer et al., 2021; Szwarcwald et al., 2021). In addition, adolescents in lower

socioeconomic groups are often affected by their family's economic hardship, aggravated further

by the Covid-19 pandemic (Mistry et al., 2009; Palomino et al., 2020). This leads to the

assumption that adolescents in lower socioeconomic groups were especially vulnerable to increase their alcohol consumption.

Hypotheses

This paper aims to examine if there was a change in alcohol use among adolescents of different socioeconomic groups during the pandemic since existing research has found mixed results for this connection. So far, studies have not included the effects of the Covid-19 pandemic, which may have imposed an even greater burden on people in lower socioeconomic positions.

H_{1a}: Adolescents in lower socioeconomic positions were pre-pandemic (winter 2019/2020) and during pandemic (winter 2020/2021) more likely to binge drink than adolescents in higher socioeconomic positions.

H_{1b}: Adolescents in lower socioeconomic positions were pre-pandemic (winter 2019/2020) and during pandemic (winter 2020/2021) more likely to have a higher drinking frequency (drinking more than once a week) compared to adolescents in higher socioeconomic positions.

H_{2a}: The change in binge drinking during the pandemic was greater in adolescents of lower socioeconomic groups than in higher socioeconomic groups.

H_{2b}: The change in drinking frequency during the pandemic was greater in adolescents of lower socioeconomic groups compared to higher socioeconomic groups.

Method

Design

The data used for the analysis is part of the ongoing Youth Got Talent longitudinal study conducted by researchers at Utrecht University. The data collected by the Youth Got Talent study examines adolescents' opinions and behaviour concerning various topics, including alcohol use. On top of that, it explores the SEP-health gradient among adolescents. The study started with wave 1 in autumn 2019, just before the start of the Covid-19 pandemic and is still ongoing. Questions on alcohol consumption were asked in wave 1 and wave 3 (autumn 2020/winter 2021). These factors make this dataset particularly useful for investigating how the pandemic has influenced the alcohol consumption of adolescents and if certain socioeconomic groups were more likely to change their alcohol consumption.

Study Sample

Data for the Youth Got Talent study was collected from three vocational schools (MBO schools) in the Utrecht region that agreed to participate in the study. Within these three schools, 72 classes agreed to participate, adding up to 1,650 students. All participants had to be older than 16 years old. Due to the Covid-19 pandemic, there were some dropouts during the study in the second and third wave. For the analyses of this study, cases were excluded that showed missing's for one of the relevant study variables in wave 1 and wave 3, which lowered the sample to 313 cases.

All students gave active consent to participate in the study and were informed that their answers would be anonymised. The study first received ethics approval by the Ethics Assessment Committee of the Faculty of Social Sciences at Utrecht University in 2018, updated in 2020. Another ethics approval was submitted to the Ethical Review Board of the Faculty of Social and

Behavioural Sciences at Utrecht University for this thesis. It was granted in January 2022 (see Appendix C).

Data and Measurements

Data was anonymously collected by trained researchers that handed out self-report questionnaires to students of the participating classes. The data collection took place during school hours in class. During the first wave, researchers visited each classroom to collect the questionnaires. During wave 2 and 3, education was only taking place online due to the lockdown measures of the pandemic. This meant that researchers did not visit the classrooms in person but participated in "virtual classrooms" online.

Subjective Socioeconomic Position

To capture the perceived socioeconomic position of adolescents, they were asked the following question: "How rich do you think your family is?" Adolescents responded on a five-item scale ranging from 1 (*very rich*) to 5 (*not rich at all*). Using the perceived social status may be more fitting to analyse the links between SEP and the health behaviour of adolescents. During adolescence, many young adults develop their own sense of social status. Hence it could be problematic to rely on parental socioeconomic position (Jeon et al., 2013). Given the small sample sizes of the low and high SEP group, the variable's five categories were transformed into High SEP, Middle SEP, and Low SEP. High SEP included the two answer categories *very rich* and *quite rich*. Middle SEP included the answer category *average*. The last category Low SEP summarized the two categories *not so rich* and *not rich at all*.

Drinking Behaviour

The drinking behaviour of the participating adolescents was measured in wave 1 and wave 3. This captures the alcohol consumption of the students just before the Covid-19

pandemic started and one year after, during a strict lockdown. The variable *binge drinking* was measured by the item "In the last four weeks, how often did you have FIVE OR MORE drinks (with alcohol) on one occasion (e.g., at a party or on an evening)?". Participants rated the item on a 7-point Likert scale (1 = *never,* 2 = *one time*, 3 = *twice*, 4 = *3 or 4 times*, 5 = *5 or 6 times*, 6 = *7 or 8 times*, 7 = *9 times or more*). To measure the variable *drinking frequency*, students were asked how many days they had drunk alcohol in the past four weeks. Participants had to rate this item on a 7-point Likert scale (1= *no alcohol at all*, 2 = *1-2 days*, 3 = *3 – 5 days*, 4 = *6 - 9 days*, 5 = *10 – 19 days*, 6 = *20 - 29 days*, 7 = *30 days or more*).

For hypotheses H_{1a} and H_{1b}, binary variables were created. Previous research has discovered that responders typically accurately report if they have consumed alcohol but lean towards underreporting the amount they have consumed (Farrell et al., 2003). *Binge drinking* was dichotomised into the categories: 0= no binge drinking and 1=binge drinking. The category "no binge drinking" included the category *never* from the original variable. The category "binge drinking" summarised all remaining categories, from *1-time* binge drinking in the past four weeks to *9 or more times*.

For *drinking frequency*, the following two categories were created: 0= drinking less than once a week and 1= drinking more than once a week. "Drinking less than once a week" included the categories "*no alcohol at all*" to "*3-5 days*" in the past four weeks. The second category, "drinking more than once a week" included the answer categories *Six to nine days* to *30 days or more*.

To test H_{2a} and H_{2b}, two new variables were computed for both drinking outcomes that captured their change from wave 1 to wave 3. For binge drinking, the variable *ChangeBDW3W1* was created by subtracting the original variables *binge drinking* in W1 from *binge drinking* in

W3. For drinking frequency, the variable *ChangeDFW3W1* was created by subtracting the original variables *drinking frequency* in wave 1 from *drinking frequency* in wave 3.

Confounding Variables

The following confounding variables were included since they most likely have an effect on alcohol consumption among adolescents in the Netherlands. These include *sex, age,* and *migration background*. To measure *sex*, adolescents were asked if they were a boy or a girl. Then this was coded as 0 (girl) and 1 (boy). Adolescents were asked for their own country of birth and that of their parents to determine if they had a migration background. In line with other research on migration status, those that reported that they or one of their parents was born abroad were considered to have a migration background (Pieh et al., 2022). This led to the creation of the following categories: 0 = Dutch background, 1 = Western background (non-Dutch) and 2 = Non-Western background.

Data Analysis

The statistical analysis was conducted using IBM SPSS Statistics 28. First descriptive statistics and correlations tables were created for all study variables in wave 1 and wave 3. The hypotheses H_{1a} and H_{1b} were tested by computing two binominal logistic regressions for each wave. For H_{1a}, the dependent variable *binge drinking* was used, while the analyses of H_{1b} used the variable *drinking frequency* to compare the drinking behaviour in different socioeconomic groups in W1 and W3. To test if the change in the binge drinking behaviour (H_{2a}) and drinking frequency (H_{2b}) from wave 1 to wave 3 was greater for lower SEP adolescents than for higher SEP adolescents, a one-way ANOVA was conducted for each hypothesis using the newly computed variables "*ChangeBDW3W1*" and "*ChangeDFW3W1*". Data was not normally distributed for each group, as assessed by the Shapiro-Wilk test ($p > .05$). Hence, bootstrapping was turned on when running the ANOVA analyses.

Results

Descriptive Statistics

Table 1 shows the descriptive statistics and correlations for the Youth Got Talent study variables for wave 1 and wave 3. The mean age in wave 1 was 17.45 years (SD_{T1}= 1.4). Of all participants, 44% were classified as male. The percentages of students in each SEP group were unequally distributed. 65% of students reported their subjective SEP as "middle", while only 9% reported a low SEP and 26% a high SEP.

In wave 1 18.2% of all students reported that they had drunk at least once a week (more than 6 days in the past four weeks). In wave 3 this drinking frequency increased slightly to 20.4%. Binge drinking behaviour (drinking more than five drinks on one occasion) decreased from wave 1 to wave 3 (66.8%$_{T1}$ to 58.5%$_{T3}$), meaning that fewer students reported binge drinking on at least one occasion in the past four weeks. *Drinking frequency* and *sex* had a significant positive association in wave 1 (r_{T1}=0.23) but not in wave 3 (r_{T3}=0.03), meaning that males drank more than females in wave 1, but not in wave 3. For *drinking frequency* there was in both waves a significant negative association for *middle SEP* (r_{T1}= - 0.13; r_{T3}= -0.13) and a significant positive association for *high SEP* (r_{T1}=0.18; r_{T3}=0.16). For *binge drinking* in wave 1 there was a significant positive association for *Dutch background* (r_{T1}=0.25) and significant negative associations for *Western background* (r_{T1}= - 0.15), *Not-Western background* (r_{T1}= - 0.19) and *low SEP* (r_{T1}= - 0.17). In wave 3 there were only significant negative associations for *age* (r_{T3}= - 0.16) and *Western background* (r_{T3} = - 0.13).

Table 1

Descriptive and Correlation Table for Wave 1 and Wave 3 (n=313)

Variable	1. Age	2. Sex[a]	3. Dutch	4. Western	5. Not Western	6. Low SEP	7. Middle SEP	8. High SEP	9. DF W1[b]	10. DF W3[b]	11. BD W1[c]	12. BD W3[c]
1. Age	-											
2. Sex[a]	.09	-										
Migration Background												
3. Dutch	-.20**	-.05	-									
4. Western	.16**	.08	-									
5. Not Western	.12*	-.01	-									
Subjective Socioeconomic Position												
6. Low SEP	.31**	.05	-.25**	.06	.27**	-						
7. Middle SEP	-.12*	-.18**	.03	-.02	-.02		-					
8. High SEP	-.08	.17**	.13*	-.02	-.16**			-				
Drinking Frequency												
9. DF W1[b]	.01	.23**	.17	-.01	-.09	-.07	-.13*	.18**	-			
10. DF W3[b]	-.05	.03	.09	-.02	-.10	-.03	-.13*	.16**	.32**	-		
Binge Drinking												
11. BD W1[c]	-.04	-.01	.25**	-.15**	-.19**	-.17**	.04	.07	.32**	.22**	-	
12. BD W3[c]	-.16**	-.01	.08	-.13*	.02	-.11	-.02	.09	.26**	.28**	.30**	-
Mean /% SD	17.4$_M$ 1.4$_{SD}$	44.3%	87.5%	5.8%	6.7%	9.3%	65.2%	25.6%	18.2%	20.4%	66.8%	58.5%

Note. BD = Binge Drinking, DF = Drinking Frequency

[a] Reference category: girl

[b] Reference category: drinking less than once a week

[c] Reference category: no binge drinking in the past 4 weeks

*p<.05 **p<.01

Binge Drinking and SEP Before and During the Pandemic (H_{1a})

Table 2 shows the results of the binary regressions for wave 1 and wave 3 to identify the effect of socioeconomic position on the likelihood that the participating adolescents were binge drinking before and during the pandemic, controlling for *age, sex*, and *migration background*. For both waves the regression models were significant $X^2(6)$ W1= 23.01, $p<.001$ and $X^2(6)$ W3= 15.15, $p = 0.02$. They correctly classified 70.9% of all cases in wave 1 and 62.6% in wave 3. Based on this model, the explained variation in the dependent variable was 9.8% (Nagelkerke R^2) in wave 1 and dropped to 6.4% (Nagelkerke R^2) in wave 3. In wave 1 only *migration background* added significantly to the model prediction: students with a Western and Non-Western background were significantly less likely to engage in binge drinking than Dutch students. Although there was no overall effect for socioeconomic position, the low socioeconomic group was 0.39 times less likely to binge drink compared to the middle socioeconomic group. In wave 3 the overall effect for socioeconomic position was not significant, nor were comparisons between SEP groups. In wave 3 only age added significantly to the model prediction. Older adolescents were less likely to binge drink.

Table 2

Logistic Regression for Binge Drinking in Wave 1 and Wave 3

Variable	B		S.E.		Wald		Sig.		Exp (B)	
	W1	W3	W1	W3	W1	W3	W1	W3	W1	W3
Constant	-.55	3.66	1.66	1.61	.11	5.16	.74	.02	.58	38.75
Age	0.09	-.19	.10	.09	.80	4.27	.37	.04	1.09	.83
Sex[a]	-0.01	.02	.26	.24	.00	.01	.97	.94	.99	1.02
Migration Background										
Migration Background[b]					13.13	4.08	.00	.13		
Migration = Western	-1.36	-.90	.53	.53	6.98	2.86	.01	0.9	.26	.41
Migration = Non-Western	-1.37	.49	.51	.51	7.38	.96	.01	.33	.25	1.64
Subjective SEP										
Subjective SEP[c]					4.89	3.47	.09	.18		
Subjective SEP = Low	-.94	-.50	.45	.45	4.37	1.23	.04	.26	.39	.61
Subjective SEP = High	.12	.37	.30	.29	.15	1.72	.70	.19	1.12	1.45

[a] Reference category: girl
[b] Reference category: Dutch nationality
[c] Reference category: Middle socioeconomic position

Frequency of Drinking and SEP Before and During the Pandemic (H[1b])

The association between frequency of drinking and socioeconomic position before and during the pandemic (H[1b]) was tested with two binary regressions, controlling for *age, sex*, and *migration background* (Table 3). For wave 1 the model was significant $X^2(6)$ W1 = 25.39, $p<.001$ but it was not in wave 3 $X^2(6)$ W3 = 11.18, $p=0.08$. The model correctly classified 81.8% of all cases in wave 1 and 79.6% in wave 3. The explained variance for *drinking frequency* in wave 1 was 12.7% (Nagelkerke R^2) and dropped to 5.5% (Nagelkerke R^2) in wave 3. Table 3 demonstrates that in wave 1 only the predictor variables *sex* added significantly to the model.

Males were three times more likely than females to drink more than once a week. There was no overall effect for socioeconomic position, but the high socioeconomic group was 1.95 times more likely to drink more than once a week than the middle socioeconomic group. In wave 3 none of the predictor variables added significantly to the model prediction. For socioeconomic position, there was also no overall effect, but the odds of drinking frequently were 2.12 times greater for the high socioeconomic group as opposed to the middle socioeconomic group.

Table 3

Logistic Regression for Drinking Frequency in Wave 1 and Wave 3

Variable	*B*		*S.E.*		*Wald*		*Sig.*		*Exp (B)*	
	W1	W3	W1	W3	W1	W3	W1	W3	W1	W3
Constant	-3.25	-.28	2.14	2.08	2.31	.02	.13	.89	.04	.76
Age	.06	-.07	.12	.12	.23	.37	.63	.54	1.06	.93
Sex[a]	1.14	.02	.32	.29	12.64	.00	<.001	.95	3.13	1.02
Migration										
Migration Background[b]					1.61	2.30	.45	.32		
Migration = Western	-.35	-.26	.68	.67	.26	.16	.61	.69	.71	.77
Migration = Not Western	-1.28	-1.57	1.07	1.06	1.42	2.19	.23	.14	.28	.21
Subjective SEP										
Subjective SEP[c]					5.05	5.83	.08	.05		
Subjective SEP = low	-.43	.38	.71	.56	.36	.46	.55	.50	.65	1.46
Subjective SEP = high	.67	.75	.33	.31	4.18	5.78	.04	.02	1.95	2.12
Constant	-3.25	-.28	2.14	2.08	2.31	.02	.13	.89	.04	.76

[a] Reference category: girl
[b] Reference category: Dutch background
[c] Reference category: Middle socioeconomic position

Change in Binge Drinking Behaviour and Drinking Frequency in SEP Groups during the Pandemic (H$_{2a}$ & H$_{2b}$)

It was described earlier that the drinking frequency increased from wave 1 to wave 3, while binge drinking decreased. A one-way ANOVA was conducted to determine if the change in binge drinking behaviour and drinking frequency between wave 1 and wave 3 differed by socioeconomic group. Table 4 shows that there was no significant difference in binge drinking (F (2, 313) = 1.03, p = 0.360) and drinking frequency (F (2, 313) = 1.53, p = .219) between socioeconomic groups. Although the low and high SEP group were small compared to the middle SEP group, and the results were insignificant, these two groups increased their drinking behaviour (binge drinking and drinking frequency) while the middle SEP group engaged less in these behaviours.

Table 4

One-Way ANOVA Analysis of Variance in Binge Drinking and Drinking Frequency for Different Socioeconomic Groups During the Pandemic

Measure	n		M		SD		p	
	BD	DF	BD	DF	BD	DF	BD	DF
Low SEP	29	29	.38	.21	1.52	1.26		
Middle SEP	204	204	-.10	-.04	1.78	1.26		
High SEP	80	80	.05	.23	.05	1.22		
Difference between groups							.360	.219

Note. BD= Binge Drinking, DF= Drinking Frequency

Discussion

The current study evaluated how the drinking behaviour (drinking frequency and binge drinking) has changed in adolescents in the Netherlands during the Covid-19 pandemic and if lower socioeconomic groups were more likely to increase their drinking. Firstly, the overall drinking frequency (drinking more than once a week) increased very slightly from 18.2% in wave 1 (pre-pandemic) to 20.4% in wave 3 (during pandemic) for all participating students. In contrast, fewer students reported binge drinking in wave 3 (58.5%) compared to wave 1 (66.8%). For all analyses, adolescents' subjective SEP was overall not a significant predictor of their drinking behaviour pre and during the Covid-19 pandemic. Secondly, the low SEP group did not engage in a greater drinking behaviour than adolescents in the high socioeconomic group. In contrast, the high SEP group indicated the highest drinking frequency and binge drinking behaviour compared to the other two SEP groups pre-and during the pandemic. These findings reject hypotheses H_{1a} and H_{2b}, which suggested a higher alcohol consumption for the low SEP group than the high SEP group pre-and during the pandemic. Thirdly, the results indicated that the change in the two drinking behaviours was most pronounced for the low and high SEP group, in contrast to the middle group. However, these differences between groups were insignificant, rejecting hypotheses H_{2a} and H_{2b}, which suggested the biggest change in drinking behaviour for the low SEP group compared to the other socioeconomic groups.

This study did not find evidence that adolescents' socioeconomic position influenced their drinking behaviour pre-and during the Covid-19 pandemic in the Netherlands. It could be that SEP in adolescents does not affect their alcohol consumption the same as in adults. Existing research presents mixed results for the association between adolescents' SEP and drinking behaviour. While some scholars find a connection between drinking and SEP, others suggest that

socioeconomic position in adolescents may influence some health behaviours, like smoking and eating habits, but not their alcohol consumption (Bosque-Prous et al., 2017; Hanson & Chen, 2007b). During adolescence, individuals try to be independent of their families and form their own identity, often influenced by their peers (Meeus et al., 2005). Therefore, peer influence and other factors may significantly impact adolescents' binge drinking and drinking frequency more than their socioeconomic position. Furthermore, each study uses different measures for alcohol consumption and SEP which may lead to different results. Future research is needed to explore further aspects of adolescents' alcohol consumption, especially during the Covid-19 pandemic. Different measures of SEP should be considered as well as other factors that may have a greater impact on adolescents, like their peers.

Even though no overall effect on the socioeconomic position of adolescents was found, there was some tentative evidence that the high SEP group showed the highest drinking frequency and binge drinking behaviour pre-and during the pandemic. This is in line with other research, which also found higher alcohol consumption in high SEP adolescents (Hanson & Chen, 2007a; Schmengler et al., 2022). Adolescents with a high socioeconomic background often have more financial resources to afford alcohol which may explain a greater engagement in alcohol consumption (Hanson & Chen, 2007a). It is possible that this relationship between SEP and alcohol use did not change during the pandemic since the economic hardship of lower socioeconomic groups was further aggravated by the pandemic (Palomino et al., 2020).

Interestingly, the results of this study also indicate that the overall drinking behaviour of adolescents in the Netherlands did not change much during the pandemic. Drinking frequency increased slightly while binge drinking slightly decreased. It was demonstrated earlier that most adolescents drink in social contexts (Kairouz et al., 2002). Therefore, one would suspect a

general decrease in alcohol consumption during the pandemic, where adolescents only had restricted contact with their peers. The results of this study imply either that the influence of peer contact declined during the pandemic or that adolescents may have still been in contact with their peers, either by face-to-face interaction or online. Another possible explanation may be that more adolescents drank to cope with their negative emotions, like loneliness, during lockdowns. So far, scholars have suggested that long-term social isolation may lead to a higher stress response, leading to increased alcohol consumption to cope with the stress (Clay & Parker, 2020; Toscano & Zappalà, 2020). However, future research with longitudinal data is needed to investigate these connections in adolescents during the Covid-19 pandemic.

Strengths and Limitations

An important strength of this study is the use of longitudinal data. The data collection of the Youth Got Talent study started just before the Covid-19 pandemic and continued during the pandemic. Another strength is the use of different measures for alcohol consumption, capturing multiple layers of the drinking behaviour of adolescents in the Netherlands.

However, this study also has several limitations. Sample sizes were found to be unequally distributed for the socioeconomic groups, with only 29 students in the lowest SEP group. This may have affected the reliability and statistical power of the analyses. Results may also be not generalisable to the broader population. Future research should consider recruiting equal sample sizes and use various measures for adolescents' socioeconomic situation. This study only used adolescents' subjective SEP. Considering only one measure of socioeconomic position might not grasp the full complexity of the adolescent's socioeconomic situation and may also affect sample sizes (Fakkel et al., 2020). On top of that, different measures of socioeconomic position may be associated with different health outcomes in adolescents (Quon & McGrath, 2014). Therefore,

future research should make use of several measures of socioeconomic position in their analyses, such as parental education, parental income, and neighbourhood influence.

Moreover, it should be noted that all participants in this study sample followed the vocational education track in the Netherlands. These students are striving toward completing their school education. Therefore, they may not drink as frequently and binge drink as often as other adolescents in the Netherlands. Future research should consider including adolescents from different educational tracks to better understand the general alcohol consumption of adolescents in the Netherlands.

Conclusion

To conclude, this study's results illustrate that the drinking behaviour of adolescents before and during the Covid-19 pandemic did not depend on their subjective socioeconomic position. It may be that other factors are more influential on adolescents drinking behaviour than their socioeconomic position, like peer influence. Therefore, future research on adolescents drinking behaviour should investigate additional factors that may affect their drinking to pursue a better understanding of adolescents' alcohol consumption. Future research should also consider using several measures for socioeconomic status since subjective socioeconomic position may only capture one dimension of adolescents' socioeconomic background. Finding factors that influence adolescents' drinking behaviour could prove helpful for future policies and interventions that plan to reduce the alcohol consumption of adolescents.

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Appendices

Appendix A: Survey Questions Used

Link to the whole codebook: https://osf.io/4dhjx/

The following questions from the Youth Got Talent survey were used for this study.

Question measuring subjective SEP

Question	Variable name	label	Value
Hoe rijk denk je dat jouw gezin is?	famwlth	Heel rijk	1
		Best rijk	2
		Gemiddeld	3
		Nied zo rijk	4
		Helemaal niet rijk	5

Questions measuring drinking behavior

Drinking Frequency

Question	Variable name	Label	Value
Op hoeveel dagen heb je alcohol gedronken? In de laatste 4 weken	alchlm	Noit	1
		1 of 2 dagen	2
		3-5 dagen	3
		6-9 dagen	4
		10-19 dagen	5
		20-29 dagen	6
		30 dagen of meer	7

Binge drinking

Question	Variable name	Label	Value
Hoe vaak heb je in de laatste 4 weken VIJF OR MEER drankjes (met alcohol) gedronken bij één gelegenheid (bijv. op een feestje of op een avond)?	alchlbg	Noit	1
		1 keer	2
		2 keer	3
		3 of 4 keer	4
		5 of 6 keer	5
		7 of 8 keer	6
		9 keer of vaker	7

Control Variables

Sex

Question	Variable name	Label	Value
Ben je een jongen of een meisje?	Sex	Meisje Jongen Anders[10]	0 1 2

[10] the option (Anders = 2) was added in Wave 3.

Migration background

The constructed variable *migc-dwn* was used.

Question	Variable name	Label	Value
In welk land ben jij geboren?	Cntrya(_t)	Nederland Marokko Turkije Suriname Duitsland Aruba, Bonaire, Curcao, Saba, St Eustatuis of St Maarten In een ander land	1 2 3 4 5 6 7
In welk land is je vader geboren?	Cntryf (_t)	IDEM Weet ik niet	IDEM 8
In welk land is je moeder geboren?	Cntrym (_t)	IDEM	IDEM
Constructed variables[12]	Variable name	Label	Value
Migration background (Dutch, Western, non-Western)	Migc_dwn	Nederlands Overig westers Niet-westers	0 1 2

[12]For migrc a 3 -step process was applied. (Throughout, 'country' also applies to 'non-Western' and 'Western'.)
• Step 1: If both parents were born in same country, case receives this country.
• Step 2a: If parents were born in different countries, case receives the migration group from the mother.
• Step 2b: But if parents born in different countries, and mother was born in the Netherlands, case receives the migration group from the father.
• Step 3a: If both parent's birthplaces were unknown, case receives their own birthplace.
• Step 3b: If only one parents' birthplace was unknown, case receives migration group from the other parent

Age
Constructed Variable *age* was used.

Question	Variable name	Label	Value
Wanner ben je geboren? Jaar	birthy		
Wanner ben je geboren? Maand	birthm	Januari - December	1-12

Constructed variables	Variable name	Label	Value
Age	age[9]		

[9]*age* is given in years and based on completed months. It was constructed using *date* (birth day was not collected, so day 1 of the month was used)

Appendix B: Syntax

This study used data from the Youth Got Talent dataset. SPSS was used to analyze the data.

```
GET FILE='U:\SPSS\YGT_MBOsJM_20220222.sav'.


*Exclude cases that have missings for relevant study variables.
COMPUTE filter_$=( ~ MISSING(HF01famwlth) &  ~ MISSING(SU01alchlm) &  ~
MISSING(SU01alchlbg) &  ~ MISSING(SU03alchlm) &
    ~ MISSING(SU03alchlbg)).
VARIABLE LABELS filter_$ ' ~ MISSING(HF01famwlth) &  ~ MISSING(SU01alchlm) &
~ MISSING(SU01alchlbg) &  ~ '+
    'MISSING(SU03alchlm) &  ~ MISSING(SU03alchlbg) (FILTER)'.
VALUE LABELS filter_$ 0 'Not Selected' 1 'Selected'.
FORMATS filter_$ (f1.0).
FILTER BY filter_$.
EXECUTE.


*Recoding subjective SEP groups.
Rename variables (HF01famwlth = SubjectiveSEP).
RECODE SubjectiveSEP (SYSMIS=SYSMIS) (3=1) (1=3) (2=3) (4=2) (5=2) INTO
SEPgroups.
Execute.


*Creating binary variables for drinking frequency and binge drinking.
Rename variables (SU01alchlm = drinkingfrequencyW1) (SU01alchlbg =
bingedrinkingW1) (SU03alchlm = drinkingfrequencyW3) (SU03alchlbg =
bingedrinkingW3).
RECODE drinkingfrequencyW1 (SYSMIS=SYSMIS) (1=0) (2=0) (3=0) (4=1) (5=1)
(6=1) (7=1) INTO DDFW1.
EXECUTE.
RECODE drinkingfrequencyW3 (SYSMIS=SYSMIS) (1=0) (2=0) (3=0) (4=1) (5=1)
(6=1) (7=1) INTO DDFW3.
EXECUTE.
RECODE bingedrinkingW1 (SYSMIS=SYSMIS) (1=0) (2=1) (3=1) (4=1) (5=1) (6=1)
(7=1) INTO DBDW1.
EXECUTE.
RECODE bingedrinkingW3 (SYSMIS=SYSMIS) (1=0) (2=1) (3=1) (4=1) (5=1) (6=1)
(7=1) INTO DBDW3.
EXECUTE.


*Dummy variables for Migration background and subjective SEP for descriptive
statistics.
Recode SEPgroups (3=1) (2=0) (1=0) INTO DHighSEP.
Execute.
Recode SEPgroups (2=1) (3=0) (1=0) INTO DLowSEP.
EXECUTE.
Recode SEPgroups (1=1) (2=0) (3=0) INTO DMiddleSEP.
Execute.


Recode BGmigc_dwn (0=1) (1=0) (2=0) INTO DDutch.
Execute.
Recode BGmigc_dwn (1=1) (0=0)(2=0) INTO DWestern.
Execute.
Recode BGmigc_dwn (2=1) (0=0) (1=0) INTO DNotWestern.
Execute.
```

```
*Computing new variables for Hypothesis 2.
COMPUTE ChangeBDW3W1=bingedrinkingW3 - bingedrinkingW1.
EXECUTE.

COMPUTE ChangeDFW3W1=drinkingfrequencyW3 - drinkingfrequencyW1.
EXECUTE.

*Descriptive statistics.
FREQUENCIES VARIABLES=BGage BGsex DHighSEP DLowSEP DMiddleSEP DWestern
DNotWestern DDutch DDFW1
    DDFW3 DBDW1 DBDW3
  /STATISTICS=MEAN MODE
  /ORDER=ANALYSIS.

CORRELATIONS
  /VARIABLES=BGage BGsex DDFW1 DDFW3 DBDW1 DBDW3 DHighSEP DMiddleSEP DLowSEP
DDutch DWestern
    DNotWestern
  /PRINT=TWOTAIL NOSIG FULL
  /MISSING=PAIRWISE.

*Binary regression for H1a.
LOGISTIC REGRESSION VARIABLES DBDW1
  /METHOD=ENTER BGage BGsex BGmigc_dwn SEPgroups
  /CONTRAST (BGsex)=Indicator(1)
  /CONTRAST (BGmigc_dwn)=Indicator(1)
  /CONTRAST (SEPgroups)=Indicator(1)
  /SAVE=PRED
  /CLASSPLOT
  /CASEWISE OUTLIER(2).


LOGISTIC REGRESSION VARIABLES DBDW3
  /METHOD=ENTER BGage BGsex BGmigc_dwn SEPgroups
  /CONTRAST (SEPgroups)=Indicator(1)
  /CONTRAST (BGsex)=Indicator(1)
  /CONTRAST (BGmigc_dwn)=Indicator(1)
  /SAVE=PRED
  /CLASSPLOT
  /CASEWISE OUTLIER(2)
  /PRINT=SUMMARY CI(95)
  /CRITERIA=PIN(0.05) POUT(0.10) ITERATE(20) CUT(0.5).

*Binary logistic regression for H2b.
LOGISTIC REGRESSION VARIABLES DDFW1
  /METHOD=ENTER BGage BGsex BGmigc_dwn SEPgroups
  /CONTRAST (BGsex)=Indicator(1)
  /CONTRAST (BGmigc_dwn)=Indicator(1)
  /CONTRAST (SEPgroups)=Indicator(1)
  /SAVE=PRED
  /CLASSPLOT
  /CASEWISE OUTLIER(2)
  /PRINT=SUMMARY CI(95)
  /CRITERIA=PIN(0.05) POUT(0.10) ITERATE(20) CUT(0.5).

LOGISTIC REGRESSION VARIABLES DDFW3
```

```
  /METHOD=ENTER BGage BGsex BGmigc_dwn SEPgroups
  /CONTRAST (BGsex)=Indicator(1)
  /CONTRAST (BGmigc_dwn)=Indicator(1)
  /CONTRAST (SEPgroups)=Indicator(1)
  /SAVE=PRED
  /CLASSPLOT
  /CASEWISE OUTLIER(2)
  /PRINT=SUMMARY CI(95)
  /CRITERIA=PIN(0.05) POUT(0.10) ITERATE(20) CUT(0.5).

*Oneway ANOVA H2a.
BOOTSTRAP
  /SAMPLING METHOD=SIMPLE
  /VARIABLES TARGET=ChangeBDW3W1 INPUT=SEPgroups
  /CRITERIA CILEVEL=95 CITYPE=PERCENTILE  NSAMPLES=1000
  /MISSING USERMISSING=EXCLUDE.

ONEWAY ChangeBDW3W1 BY SEPgroups
  /ES=OVERALL
  /STATISTICS DESCRIPTIVES HOMOGENEITY WELCH
  /MISSING ANALYSIS
  /CRITERIA=CILEVEL(0.95)
  /POSTHOC=TUKEY GH ALPHA(0.05).

*Oneway ANOVA H2b.
BOOTSTRAP
  /SAMPLING METHOD=SIMPLE
  /VARIABLES TARGET=ChangeDFW3W1 INPUT=SEPgroups
  /CRITERIA CILEVEL=95 CITYPE=PERCENTILE  NSAMPLES=1000
  /MISSING USERMISSING=EXCLUDE.

ONEWAY ChangeDFW3W1 BY SEPgroups
  /ES=OVERALL
  /STATISTICS DESCRIPTIVES HOMOGENEITY WELCH
  /MISSING ANALYSIS
  /CRITERIA=CILEVEL(0.95)
  /POSTHOC=TUKEY GH ALPHA(0.05).
```