



**Universiteit Utrecht**

**Changes in Alcohol use Among Adolescents Pre- and Post-Lockdown**

*What is the impact of COVID-19 on adolescents' alcohol use, and how is this influenced by their empowerment, parental rules, and peer norms?*

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**Abstract:** An alarming amount of underaged adolescents in the Netherlands engage in alcohol use. Insight into the impact of COVID-19 on adolescents' alcohol use at a local level contributes to the refinement of interventions to meet the needs of this specific population in the Netherlands. The research question addressed in this study is; What is the impact of COVID-19 on adolescents' alcohol use, and how is this influenced by their empowerment, parental rules, and peer norms? A longitudinal design was used including two waves with a 24-month interval. Results showed that the effects of parental rules ( $\beta = .13, t=2.27, p=.02$ ) and peer norms ( $\beta = .16, t=2.99, p=.00$ ) have a positive significant effect on alcohol use at T2. Empowerment is not a significant predictor for the drinking levels at T2. This implies that underaged drinking is more affected by environmental influences than individual factors, which is informative for future interventions.

**Key words:** alcohol use; empowerment; parental rules; peer norms; COVID-19; adolescents

**Samenvatting:** Een alarmerend aantal minderjarige jongeren in Nederland gebruikt alcohol. Inzicht in de impact van COVID-19 op alcoholgebruik bij jongeren op lokaal niveau draagt bij aan het verfijnen van interventies om tegemoet te komen aan de behoefte van deze specifieke populatie in Nederland. De onderzoeksvraag die in dit onderzoek aan de orde komt is; Wat is de impact van COVID-19 op het alcoholgebruik van adolescenten, en hoe wordt dit beïnvloed door hun empowerment, ouderlijke regels en normen van leeftijdsgenoten? Er is gebruik gemaakt van een longitudinaal ontwerp met twee golven met een interval van 24 maanden. De resultaten lieten zien dat de effecten van ouderlijke regels ( $\beta = .13, t=2.27, p=.02$ ) en peer-normen ( $\beta = .16, t=2.99, p=.00$ ) een positief significant effect hebben op alcoholgebruik op T2. Empowerment is geen significante voorspeller voor het drinkniveau op T2. Dit impliceert dat alcoholgebruik door minderjarigen meer wordt beïnvloed door omgevingsinvloeden dan door individuele factoren, wat informatief is voor toekomstige interventies.

**Sleutelwoorden:** alcoholgebruik; empowerment; ouderlijke regels; normen van leeftijdsgenoten; COVID-19; adolescenten

## **Introduction**

Since July 2021, the Dutch government has, once again, tightened the rules regarding the alcohol consumption of minors by incriminating parents when their underaged offspring drinks alcohol (Ministerie van Algemene Zaken, 2021). In 2014, the national legal drinking age went up from 16 to 18 years old (Jellinek, 2020). However, the Netherlands is still part of the top 10 European countries where most underaged adolescents consume alcohol (Volksgezondheid en Zorg, 2021). Among 12 to 16-year-old adolescents, 46,6% reported having already drunk alcohol more than once (Trimbos Instituut, 2020). At 16 years old, half of the adolescents has drunk alcohol in the past month, of which 42% reported having engaged in binge drinking. Thus, an alarming amount of underaged adolescents in the Netherlands engage in risky drinking. The problematic effects of underaged drinking vary from poor mental health, disrupted brain development, addiction, and sexual harassment (Hingson et al., 2006; Mahedy et al., 2020; Meririnne et al., 2010; Wiers et al., 2007) to the amount of medical, police and educational costs (De Wit et al., 2016). This makes it imperative to investigate the impact of a major life event, such as the COVID-19 pandemic, on the change of alcohol use among underaged adolescents at the local level. Insight into the impact of COVID-19 on adolescents' alcohol use at a local level contributes to the refinement of interventions to meet the needs of this specific population in the Netherlands.

COVID-19 has led to an increase in the amount of alcohol consumed in the Netherlands, including underaged adolescents (Trimbos Instituut, 2021). Yet, the increase in alcohol consumption among adolescents may differ based on specific characteristics, such as the level of empowerment, parental rules and peer norms about drinking. That is, the lockdowns of 2020 decreased adolescents' feelings of empowerment as they had little control over the situation this partly increased the number of mental health complaints (Hakami et al., 2021; Trimbos Instituut, 2021). Moreover, schools were closed and peer contact was limited. As a consequence, the amount of contact and the form of contact between families and friends was affected (Sociaal en Cultureel Planbureau, 2021). Therefore, the level of empowerment, as well as the rules parents set and the peer norms about alcohol may have affected the level of change among adolescents' drinking pre- and post-COVID.

## **Empowerment**

One of the factors that may influence the change in alcohol use in times of COVID-19 is adolescents' feeling of empowerment. Empowerment is defined by the access of information, ability to make choices, assertiveness and self-esteem (Chamberlin and Schene, 1997). Though we know that empowerment and alcohol use go together (Rissel et al., 1996)

and that some people drink to soothe emotional stress (Bernstein et al., 2008), the relation between empowerment and alcohol use is mostly investigated in the context of an intervention (Hardoff et al., 2013; Nelson and Arthur, 2003). The pandemic has increased the stress level among a lot of people (Tran et al., 2020), partly due to decreasing opportunities to de-stress, such as sports (Schmits and Glowacz, 2021). These situations led to lower feelings of empowerment to cope with stress. Since alcohol is used as a mechanism to cope with low levels of empowerment (Hakami et al., 2021; Le et al., 2021), it seems likely that adolescents with a lower level of empowerment are more likely to have increased drinking levels due to the COVID-19 pandemic.

### **Social Norms**

To explain the influence of parental rules and peer norms on adolescents' change in drinking, the Social Norms Theory (Berkowitz, 2002) is used. This theory describes that perceived norms are the interpretation of group norms by the individual, which can be different from the actual norms (Berkowitz, 2002). The theory distinguishes two types of norms, injunctive and descriptive norms (Turner, 1991). As the latter shows less influence on underaged drinking it will not be considered as a further explanation (Borsari and Carey, 2003). Injunctive norms are the perceived approval or disapproval towards a certain behaviour: i.e. underaged drinking. Peer norms about drinking have been found to predict adolescents' drinking (Bot et al., 2005; Wood et al., 2004). Due to the lockdown in 2020, adolescents might have had less opportunities to meet with peers, which may have affected the amount of alcohol use (i.e., lower drinking levels). The influence of peers is expected to have changed, as the contact itself has shifted during the lockdowns of 2020. The form and amount of contact are crucial for the transaction of norms (Jasinskaja et al., 2011; Yee et al., 2007), however, whether this relationship has become more influential is not clear. It is likely that the adolescents with more positive injunctive norms among their peers, are more likely to have increased their alcohol use from pre- to post-COVID.

Parental rules regarding alcohol use influence adolescent's alcohol use in two different ways: through injunctive norms and perceived opportunity. Previous studies have demonstrated a consistent influence from parental norms on adolescents' alcohol use, particularly among underaged adolescents (Wood et al., 2004). Rules reflect the parental injunctive norms and thereby the alcohol consumption of their offspring (Koning et al., 2010). As parental approval is expressed through rules (Boytsun et al., 2011), therefore, the Social Norm Theory also applies to the influence of parental rules on adolescent's drinking behaviour. Positive norms or less strict rules towards alcohol use, will lead to an increase in

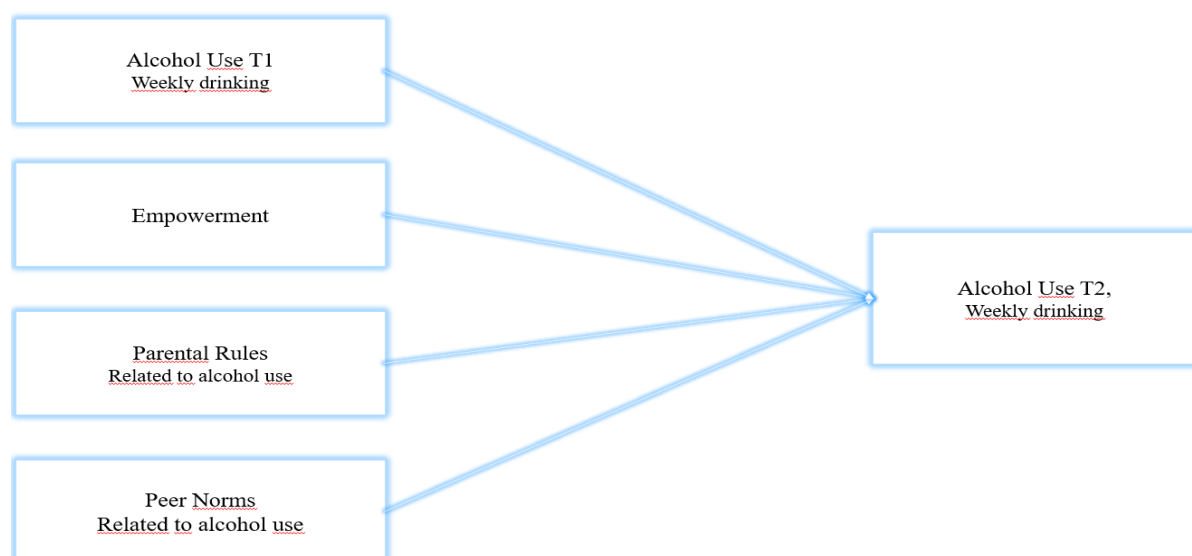
alcohol consumption of the individual self (Berkowitz, 2003; Champion, 2012; Hagman et al., 2007). The second mechanism through which parental rules influence alcohol use, is through opportunity (Williams and Wood, 2015). Less strict rules, lead to a higher perceived opportunity, and more likely performed behaviour (Opp, 2007). This will lead to a greater likelihood for the adolescent to engage in underaged drinking (Chapple et al., 2005; Van Der Vorst et al., 2006; Wood et al., 2004). As people had trouble with law-enforced COVID-19 rules (Hudson et al., 2021; Shaw, 2021), more sympathy from parents may be reflected in rules regarding underaged alcohol use, this will be more increased for parents who already had less strict rules. Thus, the expectation is that the adolescents who experience less strict parental rules regarding their alcohol use prior to COVID-19, have an increased alcohol use after the pandemic.

### **Current study**

The following question is addressed in the current study; *What is the impact of COVID-19 on adolescents' alcohol use, and how is this influenced by their empowerment, parental rules, and peer norms?* This is investigated in a longitudinal study, including two waves (pre- and post-COVID), conducted in a Dutch municipality. Based on previous research, it is expected that the amount of weekly alcohol consumed has increased between pre- and post-COVID-19. Moreover, particularly among adolescents with a lower level of empowerment, and who perceived more positive parental and peer norms at T1, drinking levels may have increased.

### **Figure 1**

*Hypothetical Model of Factors Influencing the Change in Weekly Alcohol Consumption Between T1 and T2.*



## Methods

### Procedure

For the current study, an already existing data-set of a longitudinal intervention study is used: LEF. LEF is a community-based intervention in which two Dutch municipalities participated; an experimental and a control condition. In the current study, only data from the control condition was included so that the results are not affected by the intervention. The data for this study includes the original Wave 3 (January 2020) and Wave 5 (January 2022), which were collected at one high-school. Wave 3 (now referred to as T1) and Wave 5 (now referred to as T2) are closest to the start and end of the COVID-19 pandemic. The survey was conducted in every class except for the graduate students, after obtaining passive parental consent. The data was collected in a safe environment for the students: a computer classroom. The questionnaire was filled in and processed anonymously. The original study and the current one have been approved by the Ethics Board of the Faculty of Behavioral & Social Sciences at Utrecht University.

### Sample

All high-school students aged 12-18 years old in the levels VMBO to VWO were invited to participate. This resulted in 931 participants in the control group. Inclusion criteria for the current study consisted of participation in both waves, participation in the control group, and answering to all relevant variables for the current study. After data-cleaning, the sample consisted of 435 participants. Participants were between 12-17 years old, with a mean age of 13.9 years ( $SD=.86$ ) at T1, compared to a mean age of 16.975 ( $SD=.10$ ) at T2. Of all the participants 48.40% ( $SD=.50$ ) were girls. Participants were enrolled in VMBO (0.20%), MAVO/HAVO (22.80%), and HAVO/VWO (77.00%) (see Table 1).

### Attrition analysis

Participants who were graduating at the time of data collection in T1 were excluded from the data as graduation classes were not allowed to participate in the study, this led to a drop-out of 61.70% students. Another reason for drop-outs were absent students, perhaps due to illness, and the request for passive consent. This covered less than 1% of the drop-outs. Non-responders at T2 reported a higher alcohol use ( $M=2.20$ ,  $SD=5.40$ ,  $t=6.60$ ,  $p<.00$ ), less strict parental rules regarding alcohol ( $M=1.93$ ,  $SD=1.21$ ,  $t=8.12$ ,  $p<.00$ ), a more positive peer norms regarding to alcohol ( $M=2.17$ ,  $SD=1.39$ ,  $t=7.75$ ,  $p<.00$ ) and had a lower educational level ( $M=2.52$ ,  $SD=.69$ ,  $t=-7.59$ ,  $p<.00$ ), they also appeared to be older ( $M=15.42$ ,  $SD=1.28$ ,  $t=15.07$ ,  $p<.00$ ).

**Table 1**

*Descriptive Statistics of the Variables in the Analysis for T1 (N=435) and T2 (N=435) (Mean, Minimum, Maximum, Standard Deviation (SD))*

	Mean	Min	Max	SD
Alcohol Use T1	.50	.00	56.00	3.79
Alcohol Use T2	3.66***	.00	56.00	6.38
Empowerment	3.66	1.00	5.00	.72
Parental Rules	1.43	1.00	5.00	.85
Peer Norms	1.57	1.00	7.00	1.05
Age	13.98	12.13	16.72	.86
Educational Level	1.00=20%	1.00	3.00	1.42
	2.00=22.80%			
	3.00=77.00%			
Female	48.40%			

## Measures

### *Alcohol use*

*Alcohol use* of adolescents (measured at T1 and T2) reflected the average weekly alcohol use, which was measured by two items (Engels et al., 2000; 1999). The first item asked about the amount of glasses of alcohol adolescents drink per occasion. Answer categories ranged from 1=*11 glasses or more* to 8=*0 glasses or never*. The second item asked for the number of drinking days per week. Response options were 1=*7 days* to 8=*drinks never*. As both items listed fewer alcoholic drinks with a higher score, the variables were mirrored. Thus, a higher score indicates more weekly drinking. The two items were multiplied to gain an insight into the amount of weekly drinking.

### *Empowerment*

*Empowerment*, defined by self-esteem, access to information, assertiveness and control (Chamberlin and Schene, 1997), was measured by 16 items, at T1, reflecting on the empowerment the child experiences (Damen et al., 2017). For example: 'I have control over my life'. Response categories were on a scale of 1=*totally disagree* to 5=*totally agree*. A higher score reflects a higher level of empowerment. To compute the variable, the mean score was calculated. The Cronbach's Alpha is .95.

### *Parental Rules*

*Parental rules* are questioned through the child, reflecting the perceived parental consent by the child at the time of T1 (de Looze et al., 2012; van der Vorst et al., 2007). The child was given 5 statements on his/her parents' rules regarding their alcohol use. For example: 'I would have permission from my parents to drink alcohol on my birthday'. Response categories ranged from 0=*absolutely not* to 5=*most certainly*. A mean score was calculated, where a higher score indicates less strict perceived rules from the parent to drink alcohol. The Cronbach's Alpha was .93.

### **Peer Norms**

*Peer norms*, defined as the perceived approval of peers by the individual, are described through 4 questions regarding injunctive norms at T1 (Baer, 1994). These questions pose the perceived approval of peers on the frequency of alcohol use. For example: 'drinking so much I would pass out'. Response categories were 1=*strongly disapprove* to 7=*strongly approve*. Two items are regarding the frequency of alcohol consumption and two items are regarding the amount of alcohol consumed per occasion. As the last item was a reversed statement and caused a drop in the Cronbach's Alpha (.45), this item was deleted as a new variable was computed. With three items, in which a higher score reflected a higher level of empowerment, the Cronbach's Alpha was .78.

### **Control Variables**

*Gender* (0=*girl* or 1=*boy*), *age* (in years) and *educational level* (1=*VMBO/ beroepsgericht*, 2=*VMBO theoretisch*, 3=*VMBO/HAVO*, 4=*HAVO*, 5=*HAVO/VWO*, 6=*VWO*) were included as control variables. Education level was recoded into 1=*vmbo*, 2=*mavo/havo* and 3=*havo/vwo*.

### **Data-Analysis Strategy**

For the data analysis, the data set has been investigated and cleaned. First, the characteristics of the variables were provided (Table 1). Next, potentially unreliable respondents and inconsistent answers were inspected by reviewing the strings of answers. There was no evidence for a systematic response tendency or inconsistency. The first step in answering the impact of COVID-19 on alcohol use, and how this is influenced by parental rules, peer norms and empowerment, alcohol use at T1 and T2 are put in a dependent t-test to define whether there is a significant change in alcohol use over the COVID-19 pandemic. To provide information on the strength and direction of the relationship between two variables, a correlation analysis is conducted. As the dependent variable is at interval level, the Pearson correlation test is used for each predictor to the dependent variable. To investigate how the predictors influence alcohol use at T1, a cross-sectional design is investigated through a linear regression analyses to define whether the variables predict the onset alcohol use. If the onset



alcohol use is not influenced by the predictors, the likelihood of a longitudinal influence will decrease. In addition to the cross-sectional analysis, a longitudinal analysis is used to investigate how the predictors influenced the alcohol use over the time of COVID-19. Alcohol use, empowerment, parental rules and peer norms at T1 are used to predict alcohol use at T2. This relation will be controlled for age, gender and educational level. Prior to the linear regression analysis, the data was checked for the six assumptions relevant for a linear regression: 1) continuous (dependent) variable, 2) linearity, 3) no significant outliers, 4) independency, 5) homoscedasticity, and 6) normal distribution (Neuman, 2014). The first assumption is met as the dependent variable is at interval level. The second and fifth assumption will be measured through scatterplots between all the variables and the dependent variable. The third assumption is taken care of during the data cleaning and the sixth assumption is shown in the linear regression analysis.

## Results

### Difference in Alcohol Use (T1, T2)

First, a paired sample t-test (see Table 1) is conducted to compare the alcohol use of adolescents pre- and post-COVID-19. Participants show on average a significant lower level of alcohol use at T1 ( $M=.50$ ;  $SD=3.79$ ) compared to the level of alcohol use at T2 ( $M=3.66$ ;  $SD=6.38$ );  $t(434)=-9.54$ ,  $p<.001$  (two-tailed). The difference between T1 and T2 is also visualised in Figure 2.

### Figure 2

*Alcohol Use at T1 and T2 by Age*

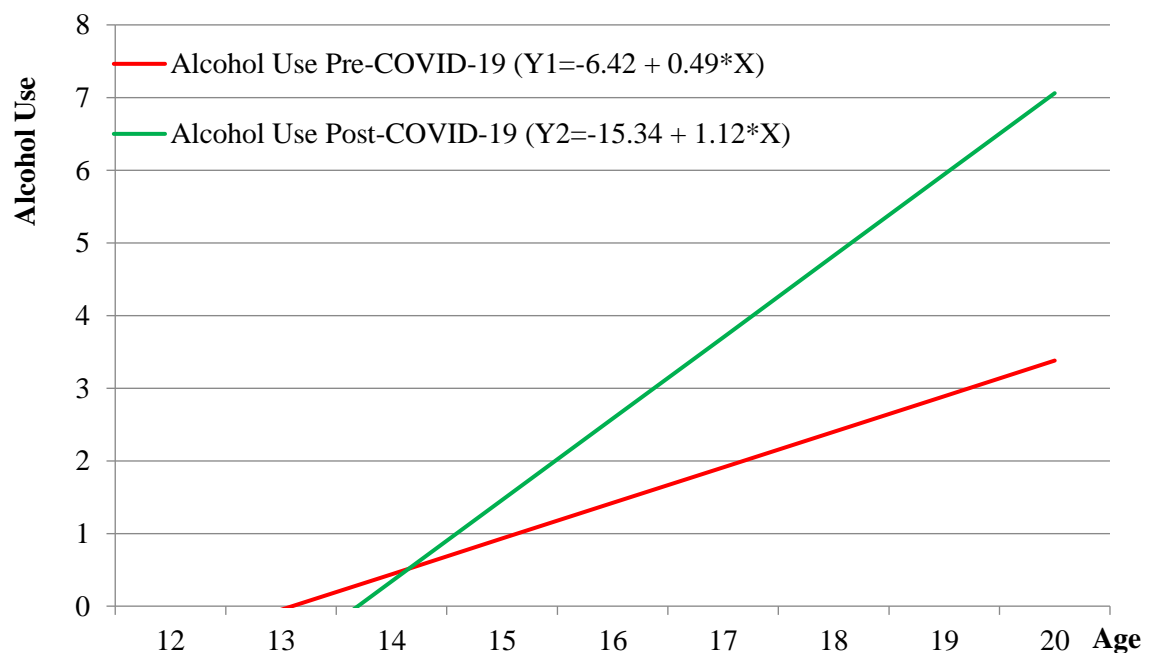


Figure 2 shows alcohol use prior to (T1) and after (T2) the COVID-19 pandemic by age. First, the graph shows a later starting point of drinking at T2 compared to T1. However, the graph shows that when adolescents starts drinking at T2, they rapidly increase their weekly drinking (T1:  $b=0.49$ , T2:  $b=1.12$ )

### Pearson Correlation Analysis

Table 3 shows the correlations between all variables of interest. A significant, negative correlation between empowerment and alcohol use at T1 ( $r(433)=-.152, p=.00$ ) and alcohol use at T2 ( $r(433)=-.142, p=.00$ ). This would mean that adolescents who felt more empowered at T1 will drink less at T2, or vice versa. A significant, positive correlation is found for parental rules and alcohol use at T2 ( $r(433)=.24, p<.00$ ). The correlation between peer norms at alcohol use at T1 ( $r(433)=.29, p<.00$ ) and T2 ( $r(433)=.25, p<.00$ ), seems more stable as both correlations are around the same strength and both significant as positive. Peer norms and parental rules also show a strong, positive correlation ( $r(433)=.48, p<.00$ ). This means that an adolescent with less strict rules regarding alcohol from their parents, experience a more positive peer norm regarding alcohol.

**Table 3**

*Pearson Correlations between All Variables of Interest (df=433)*

	1.	2.	3.	4.	5.	6.	7.
1. Alcohol Use T1							
2. Alcohol Use T2	.15**						
3. Empowerment (T1)	-.15***	-.14**					
4. Parental Rules (T1)	.40***	.24***	-.21***				
5. Peer Norms (T1)	.29***	.25***	-.23***	.48***			
6. Educational Level (T1)	-.09	.00	.12*	.00	.04		
7. Age (T1)	.11*	.23***	-.13**	.32***	.34***	.22***	

\*\*\*  $p<.001$ , \*\*  $p<.01$ , \*  $p<.05$  (two-tailed).

### Linear Regression Analysis

#### *Cross-sectional*

Table 4, model 1, shows the results of the estimated effect of empowerment, parental rules and peer norms on alcohol use at T1. These variables can explain the variance in alcohol use at T1 for 17.8% ( $R^2=.18, p<.00$ ). Table 4, model 2 shows the estimated effect of the predicting and control variables together ( $R^2=.19, p=.11$ ).

The results show a significant and positive effect (model 1:  $\beta = .36, p < .00$ ; model 2:  $\beta = .34, p < .00$ ); meaning that less strict rules regarding alcohol, predict an increase of weekly drinking. Also, the effect of peer norms has a positive, significant effect on alcohol use at T1 in both models (model 1:  $\beta = .12, p = .02$ ; model 2:  $\beta = .13, p = .01$ ). This means that individuals who perceive more positive norms of peers regarding alcohol use, will be more likely to drink alcohol.

**Table 4**

*Linear Regression Analysis of Alcohol Use AT T1 Predicted by Empowerment, Parental Rules, Peer Norms and Control Variables Educational Level and Age: N=435*

	Model 1			Model 2		
	B	s.e.	$\beta$	B	s.e.	$\beta$
C	-1.21	1.01		2.31	3.00	
Empowerment	-.30	.24	-.06	-.25	.24	-.05
Parental Rules	1.51***	.26	.36	.15***	.23	.34
Peer Norms	.42*	.18	.12	.47*	.19	.13
Educational Level						-.08
Age				-.73	.40	
R2		.18			.19	
		( $p < .00$ )			( $p = .11$ )	

\*\*\*  $p < .001$ , \*\*  $p < .01$ , \*  $p < .05$  (two-tailed).

$\beta$  = Bèta, Regressie Coefficient, s.e. = standard error

#### *Longitudinal*

In Table 5, the results of the linear regression analysis of alcohol use at T2 are shown. The models estimate the association between alcohol use in T2, influenced by alcohol use at T1 (model 1), after which the predicting factors are added (model 2) and eventually the control variables also are taken into account (model 3).

The results show a significant, positive effect of alcohol use at T1 on alcohol use at T2 ( $\beta = .15, p = .00$ ). After adding the predicting variables of model 2, alcohol use at T1 no longer has a significant effect on alcohol use at T2.

In model 2, the effects of parental rules ( $\beta = .13, p = .02$ ) and peer norms ( $\beta = .16, p = .00$ ) have a positive significant effect on alcohol use at T2. That is, both positive parental rules and positive peer norms predict an increase in alcohol use of adolescents in Enkhuizen. This

remains the case for peer norms in model 3 ( $\beta = .13, p = .02$ ). The effect of parent rules on alcohol use at T2, however, becomes insignificant after adding the control variables ( $\beta = .09, p = .10$ ). Table 5 shows that the effect of peer norms becomes somewhat more important than parental rules concerning alcohol use at T2. This is still the case when controlled for age and educational level. This means, that comparing with control variables and parental rules, positive peer norms regarding alcohol use show the better predictor for future alcohol use at T2.

**Table 5**

*Linear Regression Analysis of Alcohol Use T2, Predicted by Empowerment, Parental Rules, Peer Norms (N=435)*

	Model 1		Model 2			Model 3			
	B	s.e.	$\beta$	B	s.e.	$\beta$	B	s.e.	$\beta$
C	3.56***	.31		3.11	1.80		-10.27	5.61	
Alcohol Use T1	.25**	.08	.15	.07	.09	.04	.07	.09	.05
Empowerment				-.65	.42	-.07	-.58	.43	-.06
Parental Rules				.95*	.42	.13	.71	.43	.09
Peer Norms				.97**	.33	.16	.78*	.33	.13
Educational Level							-.33	.71	-.02
Age							1.32	.72	.15
R2		.02			.09			.105	
		(p=.002)			(p<.001)			(p=.036)	

\*\*\*  $p < .001$ , \*\*  $p < .01$ , \*  $p < .05$  (two-tailed).

$\beta$  = Bèta, Regressie Coefficient, s.e. = standard error

### Discussion

The aim of the current study was to investigate whether alcohol use had changed over the course of the COVID-19 pandemic, and whether empowerment, parental rules and peer norms predicted this change in alcohol use among adolescents. Present study showed an increase in drinking from pre- to post-COVID-19, particularly among adolescents who reported more tolerant rules about alcohol and more positive peer norms pre-COVID-19. The level of empowerment pre-COVID-19 did not influence the level of drinking post-COVID. Thus, it seems likely that COVID-19 contributed to an increase in the level of weekly drinking among adolescents. The results also showed that this increase in drinking is mainly predicted by peer norms and parental rules and not adolescents' level of empowerment.

## **Covid and Adolescents' Alcohol Use**

The current study demonstrated that the COVID-19 situation has most likely contributed to an increase in the level of weekly drinking among adolescents. This is not due to an age-effect, as the trajectory of alcohol use is fairly different. This is in line with research performed in the USA among the same age-groups, in which the amount of alcohol use has increased since the pandemic started (Pollard et al., 2020; Robillard et al., 2020). Specific explanations of these changes have not yet been found, other than the stress and social distancing, boredom, triggered addiction, greater opportunity to drink and less perceived risk of harm in the pandemic (Grossman et al., 2020; Jackson et al., 2021; Pollard et al., 2020; Robillard et al., 2020). The pandemic has triggered several drinking motives, and has caused people to drink individually as well as in social gatherings.

## **The Role of Parental Rules, Peer Norms and Empowerment**

In line with the expectation, the less strict rules about alcohol pre-COVID-19 was predictive of an increase in drinking from pre- to post-COVID-19. The rules of parents also reflect their general approval of alcohol use (Boytson et al., 2011). As suggested by Bahr et al. (2005), parental rules have a strong effect on the alcohol use of adolescents. This means, even though teenagers rebel against their parents (Van Dorsselaar et al., 2016), previous set rules remain of influence. Even in times of a pandemic, in which teenagers experience more conflict with their parents (Bülow et al., 2021). This also means that, in times of a pandemic, parents have to remain strict regarding alcohol specific rules, especially as they are the prime person that the adolescent spends time with (Bülow et al., 2021).

The strongest predictor for the increase in drinking was positive peer norms about drinking pre-COVID-19. This is in line with our expectation and previous research on the role of peer norms in adolescents' drinking (Bot et al., 2005; Wood et al., 2004). When placing this finding in light of the COVID-19 context, when almost all structured leisure activities were omitted (Ministerie van Algemene Zaken, 2021a; Ministerie van Algemene Zaken, 2020), it is likely that more unstructured activities took place (e.g., hanging out together). More involvement in unstructured leisure activities form a risk factor for underaged drinking (Albertos et al., 2021). Adolescents who held more positive peer norms about drinking before the pandemic, were likely to be more involved in (unstructured) peer activities during the lockdown. Subsequently, as adolescents often drink alcohol with peers (O'Mally et al., 1998), this has created a context wherein adolescents are more likely to drink alcohol.

In addition to the actual gathering among peers and formation of norms about alcohol, the norms could also be influenced by online content. That is, social media content in which

peers drink alcohol (Hendriks et al., 2018) continued to be available and visible to adolescents. Social media depicts a more scripted and limited, and therefore homogenous image of peer norms regarding alcohol. Adolescents with already a more positive norm about drinking may therefore be more strongly influenced by their peers in the physical (unstructured) activities as well as through online social media content around drinking (Deng et al., 2018; Berkowitz, 2003).

Contrary to expectations, the level of empowerment pre-COVID-19 did not predict alcohol use post-COVID-19. Those with a higher level of empowerment did not increase or decrease their drinking behaviour. As empowerment does correlate with alcohol use, there is reason to believe that the individual factors are less influential of alcohol use, or mitigated when paired with social factors such as parental rules and peer norms. As this appeared to be so, even in light with a time of social distancing, the relation between peer norms, alcohol use and empowerment must be further investigated without social distancing.

### **Limitations and Strengths**

As the study was conducted in one school and all the participants live in the same municipality, the results cannot be generalised to other adolescents in the Netherlands or the world. Yet, by focusing on adolescents living in this one municipality, the results are imperative for local development/ refinement of alcohol prevention interventions.

Another limitation of the current study is that it is based on adolescents' self-report. This shows a limitation for the injunctive norms and parental rule. Self-report can lead to a discrepancy between the actual parental rules and the perception of them. However, self-report is often chosen over a teacher-report, as teachers may portray a bias caused by gender or ethnicity. Self-report is also chosen over parental reports due to social desirability and as they may have a blind spot for their child's behaviour (Neuman, 2007). Furthermore, self-report is a perfect fit for large sets of data (Neuman, 2007).

A third limitation of the current study is that mental health was excluded in the study. By questioning the mental health, an extra vulnerability to stress can be investigated (Singh et al., 2020), which can confirm or deny the mechanism on coping with stress, and whether it helps to have more control over activities, by gaining empowerment (Savery and Luks, 2001). It could be that the negative effect of the COVID-19 pandemic on mental health (Banks and Xu, 2020; Rossi et al., 2020) heightened certain motivations for drinking, such as stress relieve and experiencing fun (Pardee, 1990). Future research can more thoroughly investigate the coherence of mental health, empowerment, peer norms, parental rules and the effect on alcohol use.

## **Implications**

As underaged alcohol use has increased during the pandemic, it provides an implication for alcohol prevention if these results apply to other, to be investigated, municipalities.

In the case of a next lockdown or pandemic, previous alcohol preventions should focus on the importance of offering structured leisure activities. Due to rapid development in the use of technology (Qiao et al., 2021), alcohol prevention could develop an online replacement for real-life structured activities. This could present a solution to withhold an increase in alcohol use next time.

Further research is necessary to explore whether this increase of alcohol use remains, or whether the alcohol use drops to a lower rate as 'normal' life continues in similar conditions as it did prior to the pandemic. Another recommendation is to enlarge the scale of the original study. This municipality has a significant increase in underaged alcohol use. When alcohol is used on a younger age, and is more consumed, the more problems can occur (White and Hingson, 2013). If this is a national phenomenon, city councils can act, and more funds can be dedicated towards post-COVID-19 alcohol prevention from the national government.

The implication of 'parental rules' as predictor of alcohol use, is that alcohol prevention should be more focused on the rules of the parents regarding alcohol in the municipality. This means that, certainly in times of a pandemic, parents should remain focused of their influence on their children's alcohol use. Therefore, it is imperative in future research to cross-check the actual rules from the parents and the perception of these rules from the adolescents, and how this affects the alcohol use. This can be done by including self-report from both adolescents as parents. This future research is necessary to discover the influence of parental rules on alcohol use, and how this is influenced by the discrepancy between parent-child reports. As Berkowitz (2003) states, misperceived norms, which are implied in the rules parents set (Boytson et al., 2011), can lead to an increase of alcohol use. So, if strict rule setting decreases the chance of misperceptions, interventions can be built to target the parents regarding clear rule-setting about alcohol.

Furthermore, the social identity theory (Tajfel, 1997) and a study of Bahr et al. (2005) suggest that parental attitudes affect alcohol use through peer norms, as adolescents choose their peers based on their norms and values, provided by the parents. This relation implies the importance of shifting the focus of alcohol prevention efforts more towards influencing the parents. This means that parents, even in the early years of parenthood, should be made aware how their rules regarding alcohol affect their children's social choices. So that parents indirectly influence the future peer norms regarding alcohol around their child.

With the rapid increase of social media use (Van Rooij and Kleinman, 2020), and possible new COVID restrictions in the future (Kissler et al., 2020), it is recommended to investigate the effect of social media on the transmission of social norms among peers. These results may provide guidelines for parents to monitor their child's alcohol use, and provide insight into new mechanisms of social norm transmission.

As empowerment did not predict the alcohol use at either T1 or T2, it means it does not provide itself as a protective factor regarding alcohol use. This provides both an implication and a recommendation for future research. For a longer amount of time several alcohol preventions are focused on increasing empowerment among under aged students (Kim et al., 1998; Nelson and Arthur, 2003; Rissel et al., 1996; Wallerstein and Bernstein, 1988). However, what core aspects lead these preventions to success? The current study implicates a greater importance of parental rules and peer norms when it comes to alcohol prevention tactics in this specific context. Future studies are ought to investigate this outcome, and in which degree it applies to other Dutch municipalities and other countries.

### **Conclusion**

The COVID-19 pandemic has had a tremendous effect on several aspects of our society, regarding job markets, social interaction and our health. But, since the pandemic, adolescents have increased their alcohol use. Influences through the pandemic, particularly the social factors (parental rules and peer norms), appeared relevant, whereas the individual factor (empowerment) was not. The importance of these findings lies within the implications for interventions concerning alcohol prevention among underaged adolescents. More specifically, alcohol prevention focused on the peer norms and parental rules. This is important as alcohol use has increased post-COVID-19.



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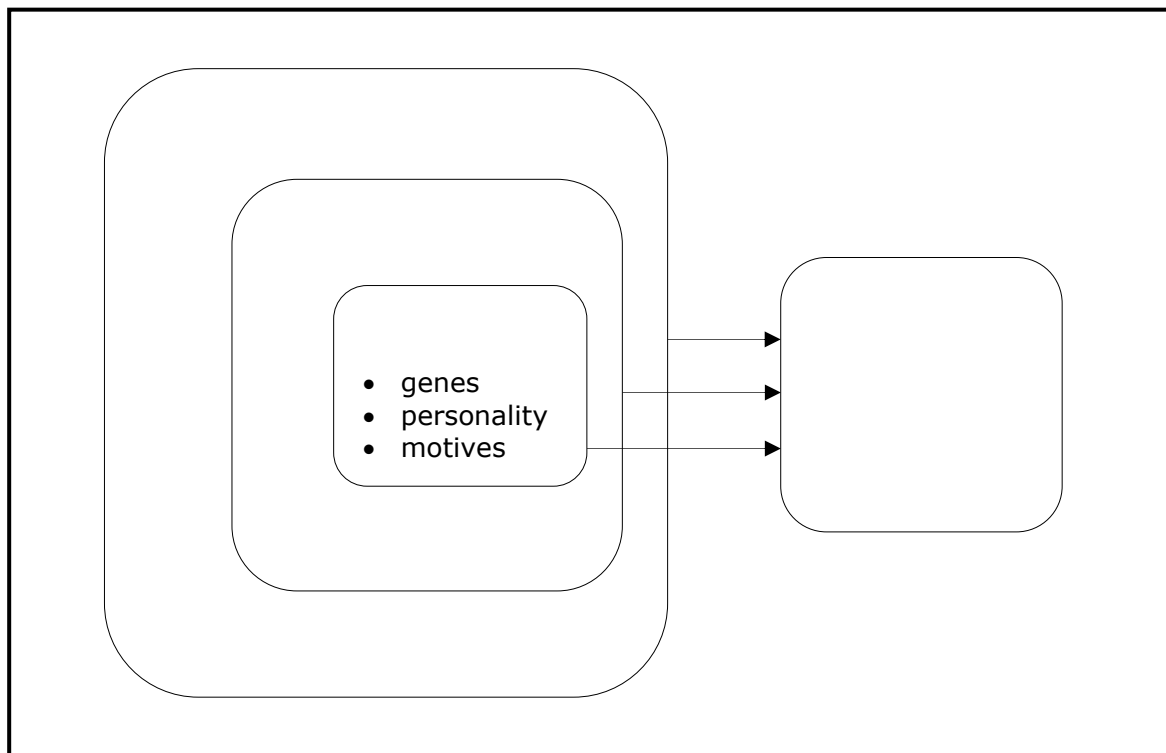
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## Appendix 1: Interdisciplinarity

To fully understand the condition of underaged drinking, several disciplines are involved. First of all, why does an underaged individual drink? Looking at the model of Bronfenbrenner (2007), an individual of the age from 12 to 18 has multiple factors that influence the behaviour. The individual has its own personality, probably still lives with its family, while at school the influences of peers seep through (Bush and Peterson, 2008; Kandel, 1986; Rutter, 1985). Furthermore, the laws in a country and the cultural norm considering alcohol plays a part in the drinking behaviour of the individual, this can take indirect form through social norms in a more direct environment (Park and Sohn, 2012). So, the consumption of alcohol, which is an individual behaviour, is influenced by Sameroff's 'person', 'family and groups', and indirectly by 'society or culture', see figure 1 (2009).

**Figure 1: Sameroff's Model of Development**



To distinguish different disciplines, Sameroff's 'person' comes to light. As there can be several individual motives for drinking alcohol (Leyers et al., 2010), of which self-soothing (Bernstein et al., 2008). To look closer at self-soothing, a psychological perspective must be taken on. Self-soothing comes from dysregulated emotions, if an individual does not know how to cope with difficult emotions, one may flee in the use of alcohol.



Another influence is the ‘family or group’, this describes two disciplines. In the current study, the social norms within a system, a family is investigated. As this is regarding the upbringing of a child, this is considered as a pedagogical perspective (Gegerly et al., 2007). The ‘group’ in Sameroff’s model (2009) is translated to ‘peers’ in this study. The group hold certain norms and values, these are transferred to the individual and predicts behaviour. The transfer of norms from group to individual and reversed is a widely investigated subject in sociology, reaching from the Social Norms Theory (Berkowitz, 2002), Social Identity Theory (Tajfel and Turner, 1979), the threshold model of collective behaviour (Granovetter, 1978) and Social Learning Theory (Bandura and Walters, 1977).

So, by combining a psychological, pedagogical and sociological approach, the model is definitely interdisciplinary. All the perspectives together will form a holistic view of the alcohol consumption of underaged adolescents in Edam-Volendam. However, considering the increasing influence of peers during the teenage years of an individual (Wood et al., 2004), a non-interdisciplinary approach may be appropriate to further and more intensively investigate the peer influence. The sociological approach would have to investigate the circumstances, the intensity and how the peers influence an individual’s drinking behaviour. But, to have a holistic approach, an interdisciplinary approach is required.

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## Appendix 2: Contract Data-Use TED Track

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Utrecht, 2020

This letter constitutes formal confirmation of the fact that the data from the Utrecht University Adolescents Studies 2020 have been made available to Anneloes Verwoerd of Utrecht University.

These data will not be made available to others, and the data may be used only for analysis and reporting on topics for the thesis, about which agreement has been reached with Ina Koning.

Anneloes Verwoerd will receive access to the data from the dataset in order to answer the following research questions within the framework of the thesis:

Research question: *What is the impact of COVID-19 on adolescents' alcohol use in the municipalities of Edam-Volendam, and how is this influenced by their empowerment, parental norms and peer norms?*

The following variables will be used:

Dependent variable: Alcohol Use - 21, 22

Moderating variables: Empowerment – 45 / Parental Norms - 65 / Peer Norms – 53

Other variables: Age – 3 / Gender – 4 / Home Background 8

No report based on the data from the project entitled LEF will be made public, unless permission has been obtained in advance from the Project Coordinator for the LEF program. After the expiration of this contract, dated 31 of July, 2022, Anneloes Verwoerd shall delete the LEF data.

### **Dates and signature:**

**Name of student:**

**Anneloes Verwoerd**

**Name of Project Coordinator:**

**Ina Koning (20-01-2022)**

