Divorced parents and adolescents' alcohol use

Parental divorce as a predictor of alcohol use among Dutch adolescents, with adolescents' self-control and educational level as protective factors

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12-6-2018

Word count: 5994

Abstract

Various studies have found evidence that a parental divorce has an influence on the alcohol use of a child. Children of divorced parents are younger when they start drinking alcohol, they drink more and they drink more often. However, little is known about this relation in the Netherlands and there could be other factors that influence this relation. Therefore, the current study examines to what extent a parental divorce predicts alcohol use among Dutch adolescents and if adolescents' high levels of self-control and education can act as protective factors. The data consist of 884 Dutch high school students. Results show a significant relation between parental divorce and age of alcohol initiation, but when controlling for gender and age only. A high educational level significantly moderates this relation. However, contrary to expectations, the combination of experiencing a parental divorce and following a high educational level indicates that participants are significantly younger at their age of alcohol initiation. There are no significant effects for the other dependent variables: frequency and quantity. It can be concluded that experiencing a parental divorce is not really a predictor of adolescents' alcohol use, and high levels of self-control and educational level do not have a protective effect either.

Key words: parental divorce; adolescent; alcohol use; self-control; educational level

Samenvatting

Verschillende studies hebben bewijs gevonden dat een ouderlijke scheiding invloed heeft op het alcoholgebruik van een kind. Kinderen van gescheiden ouders zijn jonger als ze beginnen met het drinken van alcohol, ze drinken meer en ze drinken vaker. Echter is er nog weinig bekend over deze relatie in Nederland en andere factoren zouden deze relatie kunnen beïnvloeden. Daarom wordt in de huidige studie onderzocht of een ouderlijke scheiding een voorspeller is van het alcoholgebruik van Nederlandse adolescenten en of hoge levels van zelfcontrole en schoolniveau als protectieve factoren kunnen fungeren. De data bestaat uit 884 Nederlandse middelbare scholieren. Resultaten laten een significante relatie zien tussen ouderlijke scheiding en de leeftijd van alcoholinitiatie, echter houdt dit alleen stand wanneer er alleen voor gender en leeftijd wordt gecontroleerd. Een hoog schoolniveau modereert deze relatie. Echter, in tegenstelling tot de verwachting, leid de combinatie van een ouderlijke scheiding meemaken en een hoog schoolniveau tot het significant jonger beginnen met alcohol drinken. Er waren geen significante effecten voor de andere afhankelijke variabelen: frequentie en kwantiteit. Geconcludeerd kan worden dat een ouderlijke scheiding meemaken geen echte voorspeller is van het alcoholgebruik van adolescenten en dat hoge niveaus van zelfcontrole en schoolniveau hier geen protectief effect op hebben.

Trefwoorden: ouderlijke scheiding; adolescent; alcoholgebruik; zelfcontrole; schoolniveau

Introduction

Underage drinking is a problem in almost every country across the world, according to the European school survey project on alcohol and other drugs (ESPAD group, 2015). The minimum age of legal drinking differs per country, but each country has laws, because it is known that drinking alcohol at a young age is bad for the brain and development of a child (Bjarnason et al., 2003; Bonomo, Bowes, Coffey, Carlin, & Patton, 2004). More than a decade ago, the Netherlands was one of the countries with the most youth drinking alcohol underage (van Dorsselaer et al, 2016). Although compared to 2003, the percentage of young alcohol users has almost halved, there are still many youngsters who try alcohol before they are of legal age (van Dorsselaer et al., 2016). Even though the vast majority of youngsters know that drinking alcohol can be harmful, in 2013 still almost 70% of the Dutch adolescents had tried alcohol before they were 16 (de Looze et al., 2014). Even though they often report drinking because of enhancement motives (drinking to feel good, to get drunk, or just for its own sake), about as many of them report drinking because of coping motives (drinking to cope with bad feelings, to relieve stress, or to avoid social rejection) (Kuntsche, Knibbe, Gmel, & Engels, 2006).

A stressful situation that could lead to these coping motives is a parental divorce. The number of divorces has steadily increased over recent decades (Eurostat, 2017). About 40 percent of all children will experience a parental divorce before they reach adulthood (Amato, 2000). Children from divorced families score significantly lower on a variety of outcomes, including academic achievement, conduct, psychological adjustment, self-concept, and social competence (Amato, 2000). Experiencing a parental divorce often leads to big changes for a child, such as getting raised by only one parent, having a poor relationship with your parents, trying to get more of your parents' attention during a divorce or when there are stepparents in the picture, and a worse (material) wellbeing (Amato, 2000; Seltzer, 1994). These can all be potential coping reasons for an adolescent to start drinking alcohol.

However, since a parental divorce does not always lead to adolescents' alcohol use, other factors will be taken into account that could work as a protective factors. The educational level of the adolescent is one of these factors, because the higher the educational level, the less likely children are to drink alcohol in general (de Looze et al., 2014; van Dorsselaer et al, 2016). There is also evidence that high intelligence can be a protective factor for young people with many risk factors for delinquency (White, Moffitt, & Silva, 1989), therefore it is possible that a high educational level protects the relation between experiencing a parental divorce and alcohol use. Another factor that will be looked at is self-control, because studies show that higher self-control is related to lower alcohol consumption (Desmond, Ulmer, & Bader, 2013; Koning, van den Eijnden, & Vollebergh, 2014). High self-control has proven to be a protective factor in situations in which the mental balance is disturbed, such as a parental divorce (Ronen, 1997).

The relation between a parental divorce and alcohol use among adolescents has not been studied before in combination with these variables as protective factors. This is important, because a

complete model is necessary to find valid effects. Underage drinking is unhealthy and possibly dangerous, so even though there has been a decline in underage drinking in the Netherlands, it is still important to know what influences a child to try alcohol. If it is clear from this study that there is a relation between parental divorces and alcohol use among adolescents, but also that higher levels of education and self-control work as a protection, interventions and policies can be developed that spend more time on improving adolescents' self-control or take into account that there should be a focus on adolescents who have experienced a parental divorce or have a lower educational level.

Parental divorce and alcohol use

One reason for adolescents to start drinking is because they want relief from a stressful situation (Kuntsche et al., 2006). Fletcher and Sindelar (2012) looked at the extent to which different family stressors influenced the timing of initiation of drinking. A parental divorce was the most important stressor, it had a larger impact on the timing of initiation of drinking than parental unemployment or being on welfare. Many more studies on parental divorces in combination with drinking behaviour of the children conclude that there is indeed a relationship between the two. Cox Proportional Hazard models show an increased risk for onset of drinking among middle-school students as a function of divorce or separation, even when controlling for stress, parental alcohol involvement, and psychopathology (Jackson, Rogers, & Sartor, 2016). Other results show that the amount of adolescents that had been drinking alcohol at the age of 14 was significantly higher in cases of divorce or when the parent of the same sex of the child had died. This suggests that a non-standard family structure (when the family structure is not two biological parents living with their child) is associated with early juvenile alcohol drinking (Isohanni, Oja, Moilanen, & Koiranen, 1994). These studies substantiate that a parental divorce could predict the age of alcohol initiation of adolescents.

Other researchers looked at the frequency of drinking among adolescents who have divorced parents. A study in Iceland (Kristjansson, Sigfusdottir, Allegrante, & Helgason, 2008) found a significant relationship between parental divorce and adolescent alcohol use during the last 30 days when controlling only for gender. However, this relationship disappeared when it was controlled for other variables, for example involvement in a serious argument with parents or witnessing a serious argument by parents. British and French data also confirm that adolescents who live in non-intact families are more likely to use alcohol. However, these associations seemed strongest among girls in the United Kingdom, and maintaining a loving relationship with the parents reduced the impact of the divorce (Ledoux, Miller, Choquet, & Plant, 2002). Results from a study in Flanders showed that children living in non-intact families drank alcohol more often at an age it is not legally allowed (below 16 years old) (Vanassche, Sodermans, Matthijs, & Swicegood, 2013). So although there are indications that a parental divorce has an influence on the frequency of drinking, not all effects remain after controlling for other variables.

Furthermore, similar studies have been done with quantity of drinks as dependent factor. Children from divorced families had a 10 percent higher probability of engaging in binge drinking and alcohol consumption between the ages of 12 and 18 years. However, the divorce effects were persistent for alcohol consumption and binge drinking only for the girls (Gustavsen, Nayga Jr., & Wu, 2015). Other significant results showed that the risk of having been drunk was increased in non-standard families, especially in cases of divorce or parental death of the parent from the same sex of the child (Isohanni et al., 1994). Adolescents living with both biological parents engaged less frequently in heavy alcohol use than those living in any other arrangements, like living with a single parent, neither biological parent or a stepparent (Bjarnason et al., 2003). Wolfinger (1998) showed that a divorce greatly increases the likelihood of being for a problem drinker for men, however, parental remarriage did completely offset the effects of parental divorce on men's drinking.

In conclusion, results of various studies have shown that a parental divorce and growing up in a non-standard family seems to have an effect on the age of alcohol initiation, frequency and quantity among adolescents. However, it cannot be said with certainty that experiencing a parental divorce leads to a greater risk of using alcohol. There are lots of other factors that can explain, strengthen or weaken this relationship.

Self-control and educational level as protective factors

This study will focus on factors that can moderate the relationship between parental divorces and alcohol use in a protective way. One of the most important protective factors for the prevention of risk behavior in general (Gottfredson & Hirschi, 1990) and alcohol use specifically (Wills & Stoolmiller, 2002), is the degree of self-control. Self-control is the ability to suppress inappropriate emotions, desires, and actions (Casey & Caudle, 2013). Gottfredson and Hirschi (1990) formulated a theory of crime, which asserts that the essential element of criminality is the absence of self-control. People with high self-control consider the long-term consequences of their behaviour, like drinking alcohol before they are of legal age. Persons with low self-control think less about these consequences. Such control is learned, usually early in life, and once learned, is highly resistant to change (Gottfredson & Hirschi, 1990).

Different studies indeed show that a higher level of self-control is related to lower rates of drinking in adolescents (Koning et al., 2014), respondents with greater self-control are less likely to use alcohol to excess (Desmond et al., 2013) and high self-control is linked to a relative absence of problem drinking patterns (Tangney, Baumeister, & Boone, 2004). Furthermore, high self-control has proven to be a protective factor in situations in which the mental balance is disturbed (Ronen, 1997). So a high degree of self-control of the adolescent could moderate the relationship between a parental divorce and the alcohol use of the adolescent. Maybe the stress of the divorce and the additional consequences, like seeing one or both parents less and a worse material wellbeing, are not good enough reasons to illegally drink alcohol for someone with a high self-control.

Another factor that will be looked at in this study, because it could have a protective effect, is educational level. The Netherlands has various educational levels. When Dutch children are 11 or 12 years old they go to high school. The high school levels from lowest to highest are VMBO-b, VMBO-t, HAVO, and VWO. A study with Dutch data of the 2013 Health Behavior in School-aged Children (HBSC) found that 30% of the VMBO-b students drank alcohol last month and 35% of the VMBO-t students, while it was around 20% of the HAVO and VWO students. Furthermore, it is noteworthy that almost 10% of the VMBO-b students drank more than ten glasses of alcohol on a weekend day and less than 1% of the VWO students did (de Looze et al., 2014). A study from the Trimbos Institute with data from 2015 showed similar differences in alcohol use between the school levels. Binge drinking (drinking 5 or more glasses on one occasion) happens more often among VMBO-b (79%) or VMBO-t students (71%) than amongst VWO students (57%) (van Dorsselaer et al., 2016).

Furthermore, de Looze et al. (2014) state that VMBO students can be seen as a risk group. On the other hand, high intelligence can be a protective factor for young people with many risk factors for delinquency (White, Moffitt, & Silva, 1989). It is possible that a high educational level can also have a protective effect on the relationship between parental divorce and alcohol use of the adolescents. Maybe students with a lower educational level are more prone to start drinking alcohol because of a stressful life situation like a parental divorce and its consequences.

Present study

The research question of this study consists of two parts: (1) to what extent does a parental divorce predict alcohol use among Dutch adolescents and (2) can adolescents' self-control and educational level act as protective factors? In this study 'alcohol use' will be determined by looking at the age of alcohol initiation, the frequency of drinking alcohol and the quantity of drinks.

On the basis of the literature review, five hypotheses have been established: (H1) adolescents with divorced parents have an earlier alcohol initiation than adolescents from intact families, (H2) adolescents with divorced parents drink alcohol more often than adolescents from intact families, (H3) adolescents with divorced parents drink greater quantities of alcohol than adolescents from intact families, (H4) high self-control of adolescents reduces the effect of a parental divorce on the alcohol use of adolescents, (H5) a high educational level of adolescents reduces the effect of a parental divorce on the alcohol use of adolescents.

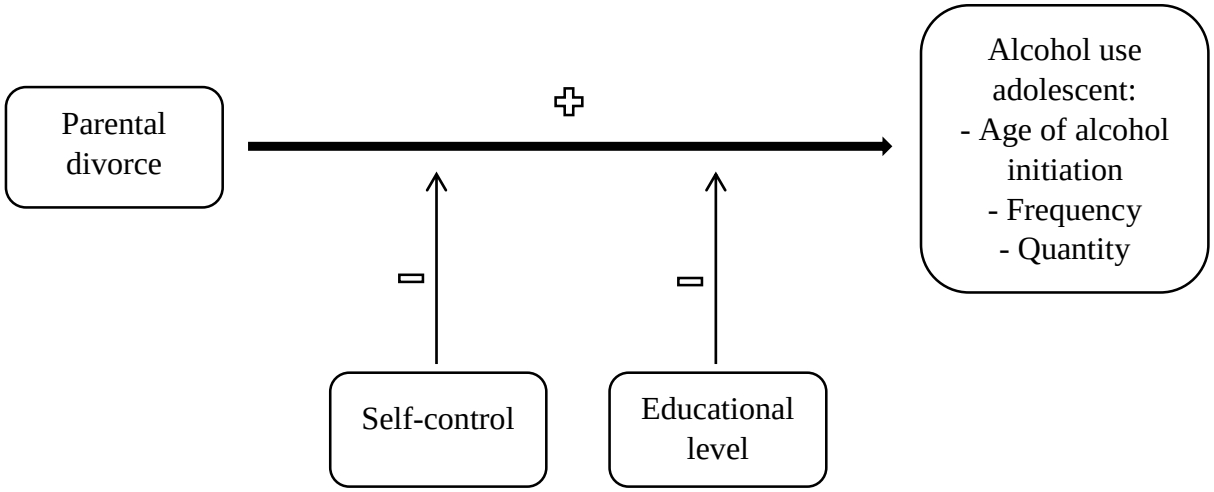

Figure 1: Research model: Parental divorce as predictor of alcohol use among adolescents, and the moderating role of adolescents' level of self-control and educational level

Method

Procedure

The data used for the current study is from a study on alcohol use among Dutch adolescents. It is a large quantitative research, conducted by the faculty of Social Sciences of Utrecht University in September 2015. The data was collected at three high schools in Noord-Holland. The adolescents and their parents gave permission for their participation beforehand. Before the start of the data collection, the participants received a central instruction regarding the correct completion of the questionnaire. Questionnaires were completed digitally during regular school hours. Anonymity was guaranteed through the use of ID codes. Furthermore, researchers, research assistants and teachers were present to answer possible questions and to ensure that participants completed the questionnaire on their own and did not consult with fellow students.

Participants

The sample consisted of 884 Dutch students between the ages of 12 and 20 years. The pupils attended regular secondary education at three educational levels (VMBO, HAVO, and VWO). The mean age of the participants was 15.23 years (SD = 1.42) and 51.2% of them were boys. The number of participants in VMBO, HAVO and VWO was 182 (20.6%), 440 (49.8%), and 262 (29.6%), respectively. Of the participants, 654 (74%) lived in intact families and 194 (21.9%) had divorced parents, the rest (4.1%) had a deceased parent or had a different living situation.

Measuring instruments

In the current study, the dependent variable *alcohol use* consisted of three measurements: *age of alcohol initiation*, *frequency*, and *quantity*. The *age of alcohol initiation* was measured in the

questionnaire with the question: 'How old were you when you did the following things FOR THE FIRST TIME? – Drink alcohol (at least one glass)'. The possible answers were: never done, 9 years or younger, 10, 11, 12, 13, 14 years or older. In SPSS these values were recoded in such a way that the lowest value (1) meant 9 years or younger and the highest (7) never done. *Frequency* was measured in the questionnaire with the question: 'How often have you drunk at least one glass of alcohol? – In your entire life'. The possible answers ranged from 0 to 10, individually, and then the ranges 11-19, 20-39, and 40 or more. A score of 1 on frequency means the participant has never had an alcoholic drink, a score of 14 means they had 40 or more. *Quantity* was measured by the question: 'If you drink on a WEEKEND DAY, how much alcohol (glasses, bottles, or cans) do you drink on such a day?' with 11 possible answers, the first being 20 glasses or more and the last being I never drink on the weekends. It is chosen to look at how much they drink on an average weekend day (Friday, Saturday, Sunday), because more participants drank on these days than on a Monday till Thursday.

The main independent variable *parental divorce* was measured by asking the participants if both parents lived in their house. The answer categories were: yes both parents, no my parents are divorced, no my mother passed away, no my father passed away, and different, namely:…. In the current study the focus is on the comparison between intact and divorced families. Therefore, participants who indicated that they had a deceased parent or a family situation different from the above options were excluded from the analyses (n = 34).

The moderator *self-control* was measured on the basis of the Self-Control Scale developed by Tangney, Baumeister, and Boone (2004). It includes 13 items, for example: 'I often do things without really thinking about it in advance'. The participants could reply on a 5 point Likert-scale, from 1 = never to 5 = very often. For the analysis, four items have been recoded, so that a high score on all items, and thus the sum score, showed a low score on self-control. The reliability of this scale in this dataset was good, Cronbach's $\alpha = .82$.

The other moderator *educational level* was measured by the question: 'What kind of education do you follow?' There were six options, but in the dataset the participants were divided in three groups: VMBO, HAVO and VWO. Because it was not possible to do a regression with an ordinal variable like this one, it was recoded into dummy variables. VMBO was the bassline and two dummy variables were made, one for HAVO and one for VWO.

Age and *gender* were taken into account as control variables. *Age* was measured at a continuous scale by asking the participants their date of birth. *Gender* was dichotomous, recoded so boys have the value 0 and girls have the value 1.

Data analysis

To test the hypotheses of this current study, statistical analyses were done with IBM SPSS Statistics 24. Participants who missed data on a variable that was taken into account in this study, were excluded

from all further analyses. Then the descriptive statistics of all relevant variables were analysed. In this study a p-value of <.05 was used for testing the significance.

Because the dependent variable *alcohol use* consist of three factors, several regression analyses have been done. Firstly a linear regression was done with *parental divorce* as independent variable and *age* and *gender* added as control variables, with *age of alcohol initiation* as independent variable. For the second model the moderators were included by making interaction variables of *self-control x parental divorce* and *educational level x parental divorce*. Two more linear regressions have been done with *frequency of drinking alcohol* and *quantity of drinks* as independent variables.

Results

Before carrying out the regressions, the assumptions were checked. There were 21 outliers, with 7 of them having extreme values. The outliers have been kept in for the regression analyses, because the Cook's distances were always less than 1, so they were not influential. Furthermore, all outliers had legitimate values that were probably serious answers from the participants. Lastly, excluding the outliers did not have an effect on the outcomes of the regression or the other assumptions. Durbin-Watson values were all between 1 and 2, so there was no autocorrelation in the sample. Even though the Tolerance/VIF values for 'parental divorce' were quite high (.331, 3.017), there was no real indication of multicollinearity. Lastly, histograms did not always show perfectly normal distributed data. However, the most extreme skewness values were -1.070 (SD = .082) for *quantity* and 1.294 (SD = .084) for *parental divorce*, and the most extreme kurtosis values were -1.533 (SD = .164) for *frequency* and -2.002 (SD = .164) for *gender*. Because this is not (much) lower than -2 or higher than 2, and because it is a large dataset, regression analyses could still be done (Field, 2013). Altogether, the assumptions were sufficiently met, so the regression analyses were carried out without transforming the data.

Descriptive statistics

After excluding participants from the analyses that had missing data on the questions about self-control (n=31), 853 participants remained. The percentages of boys, divorced parents and the different educational levels remained almost the same as before excluding participants (see Table 1). The mean age also stayed the same, whilst the mode showed that most participants were 13.5 years old (see Table 2). Descriptive statistics of the other variables are visible in Table 2 as well. Self-control could be a value between 1 and 5, with a high score indicating low self-control, so the mean and mode (both 2.62) showed that most participants did have relatively high levels of self-control. The mode values of age of alcohol initiation (7), frequency (1) and quantity (11) pointed out that most participants did not have their first alcoholic drink yet. However, the mean score of frequency (6.02) indicated that there were also participants who did drink alcohol quite often during their lifetime.

Table 1: Descriptive statistics of gender, parental divorce and educational level

Variables:	N(%)
Total	853 (100%)
Gender	
Male	439 (51.5%)
Female	414 (48.5%)
Parental divorce	
Intact family	633 (74.2%)
Divorced parents	186 (21.8%)
Education level	
VMBO	171 (20.0%)
HAVO	427 (50.1%)
VWO	255 (29.9%)

N = Number of participants

Table 2: Descriptive statistics of age, self-control, age of alcohol initiation, frequency and quantity

Variables:	M	SD	Mode
Age	15.25	1.42	13.48
Self-control	2.62	.58	2.62
Age of alcohol initiation	5.98	1.23	7
Frequency	6.02	5.39	1
Quantity	9.00	2.81	11

M = Mean; SD = Standard deviation

Age of alcohol initiation

The first multivariate linear regression was done with *age of alcohol initiation* as the dependent variable (see Table 2). Model 1, with only *parental divorce* and the control variables, explained 2.5% of the variance. In Model 2 *self-control, educational level (HAVO and VWO, with VMBO as bassline)* and the interaction variables *self-control*parental divorce, HVO*parental divorce, and VWO*parental divorce* were added. The second model explained 11.2% of the variance in *age of alcohol initiation*, therefore it was an improvement over the first model, however, they were both significant and both had a significant F change. *Age* had a significant negative effect on *age of alcohol initiation* in Model 1 (β = -.128, p = .000) and Model 2 (β = -.116, p = .001). So the older the participants were, the younger they were when they had their first alcoholic drink. This is probably explained by the fact that a lot of younger participants have not drunk alcohol yet. In the first model, *parental divorce* had a significant negative effect (β = -.085, p = .014), which means that participants who have experienced a parental divorce were significantly younger when they had their first alcoholic drink. This is consistent with the hypothesis (H1). However, this relation did not remain

significant when *self-control*, *educational level*, and the interaction variables were added to the model. Directly, *self-control* did have a negative significant effect on the *age of alcohol initiation* (β = -.267, p = .000), however, as an interaction variable together with parental divorce, it did not. Meaning that participants with lower self-control were significantly younger when they had their first alcoholic drink, but self-control did not weaken or strengthen the relationship between parental divorce and age of alcohol initiation. Hypothesis H4 was therefore rejected. *Educational level* on itself did not have any significant effects on the age of alcohol initiation, but the interaction variable of *VWO*Parental divorce* did (β = -.131, p = .009). So a high educational level (*VWO*) did indeed moderate the relationship between experiencing a parental divorce and the age of alcohol initiation. However, instead of protecting the relationship between parental divorce and age of alcohol initiation, a combination of experiencing a parental divorce and following a high educational level indicated participants being significantly younger at their age of alcohol initiation. This was in contrast with hypothesis H5.

Table 3: Multivariate linear regression analysis: the relationship between parental divorce and age of alcohol initiation, selfcontrol & educational level as moderators, controlling for age & gender

	Age of alcohol initiation				
Variables	B	SE	β	BI 95%	R^2
Model 1					.025***
Age	-.108	.0.29	-.128***	[-.165, -.050]	
Gender	-.038	.083	-.016	[-.201, .125]	
Parental divorce	-.243	.099	-.085*	[-.437, -.048]	
Model 2					.112***
Age	-.098	.029	-.116**	[-.154, -.041]	
Gender	-.021	.080	-.009	[-1.78, .136]	
Parental divorce	.155	.193	.054	[-.224, .535]	
Self-control	-.548	.079	-.267***	[-.702, -.393]	
HAVO	.096	.130	.040	[-.159, .352]	
VWO	.265	.140	.102	[-.010, .540]	
Selfcontrol*Parental divorce	-.100	.163	-.203	[-.420, .221]	
HAVO*Parental divorce	-.344	.235	-.091	[-.806, .117]	
VWO*Parental divorce	-.730	.278	-.131**	[-1.276, -.185]	

*p<.05, **p<.01, ***p<.001

Lifetime frequency of drinking alcohol

Secondly, a multivariate linear regression was done with *lifetime frequency of drinking alcohol* as the dependent variable (see Table 3). Model 1, with only *parental divorce* and the control variables, explained 34% of the variance. The rest of the variables were added in Model 2, this model explained 42% of the variance in *frequency*. This was an improvement over the first model, both of the models were significant and had significant F changes though. *Age* was positively significant in Model 1 (β = .578, p = .000) and Model 2 (β = .588, p = .001), meaning that older participants had drunk alcohol significantly more often than younger ones. For this analysis, *parental divorce* had no significant effect on the dependent variable in both models. Therefore, hypothesis H2 was rejected. The direct effect of *self-control* on *frequency* was positively significant (β = .241, p = .000), meaning that participants with lower self-control had alcoholic drinks more frequently. As moderators, *self-control* and *educational level* were not significant, so there was no protective effect of high self-control or high educational level on the relationship between parental divorce and frequency of drinking alcohol. Hypotheses H4 and H5 have therefore been rejected. However, directly, a high educational level (*VWO*) had a negative significant effect on *frequency* (β = -.142, p = .004), indicating that the higher educated participants had a drink less frequently.

Table 4: Multivariate linear regression analysis: the relationship between parental divorce and frequency of drinking alcohol, self-control & educational level as moderators, controlling for age & gender

Frequency of drinking alcohol (lifetime)					
Variables	B	SE	β	BI 95%	R^2
Model 1					.340***
Age	2.217	.119	.578***	[1.983, 2.451]	
Gender	.227	.345	.020	[-.450, .905]	
Parental divorce	.638	.417	-.048	[-.181, 1.458]	
Model 2					.420***
Age	2.253	.116	.588***	[2.025, 2.481]	
Gender	.158	.328	.014	[-.485, .801]	
Parental divorce	.836	.820	.062	[-.774, 2.445]	
Self-control	2.293	.321	.241***	[1.664, 2.922]	
HAVO	-.531	.551	-.048	[-1.613, .551]	
VWO	-.1690	.590	-.142**	[-2.849, -.531]	
Selfcontrol*Parental divorce	-.429	.682	-.021	[-1.768, .910]	
HAVO*Parental divorce	-.543	.992	-.030	[-2.491, 1.404]	
VWO*Parental divorce	-1.270	1.137	-.051	[-3.502, .962]	

*p<.05, **p<.01, ***p<.001

Quantity of alcoholic drinks

Lastly, a multivariate linear regression was done with *quantity of alcoholic drinks* (on an average weekend day) as the dependent variable (see Table 4). Both models were significant again and had significant F change values. Model 1, with only *parental divorce* and the control variables, explained 27% of the variance. The rest of the variables were added in Model 2 and this model explained 32% of the variance in *quantity*, so there was a small improvement. As with the two other dependent variables, *age* was significant again in Model 1 (β = -.516, p = .000) and Model 2 (β = -.518, p = .001). So older participants did drink significantly more on a average weekend day. *Parental divorce* had no significant effect on *quantity* in both models. Hypothesis H3 is therefore rejected. Directly, *self-control* did have a negative significant effect again (β = -.213, p = .000), which indicates that participants with lower self-control drink significantly more alcohol on a weekend day. A high educational level (*VWO*) did have a positive significant effect (β = .118, p = .012), meaning that participants with a high educational level have less alcoholic drinks on a weekend day than participants with a lower educational level. However in this study the focus was on *self-control* and *educational level* as moderators, and as interaction variables they were not significant. Therefore, hypotheses H4 and H5 have been fully rejected.

Table 5: Multivariate linear regression analysis: the relationship between parental divorce and quantity of alcoholic drinks on a weekend day, self-control & educational level as moderators, controlling for age & gender

Quantity of alcoholic drinks (average weekend day)					
Variables	B	SE	β	BI 95%	R^2
Model 1					.269***
Age	-1.012	.059	-.516***	[-1.128, -.897]	
Gender	-.188	.167	-.034	[-.517, .140]	
Parental divorce	-.163	.200	-.024	[-.555, .230]	
Model 2					.321***
Age	-1.017	.058	-.518***	[-1.131, -.902]	
Gender	-.176	.162	-.031	[-.494, .143]	
Parental divorce	.055	.392	.008	[-.716, .825]	
Self-control	-1.021	.159	-.213***	[-.1.334, -.708]	
HAVO	.113	.264	.020	[-.406, .632]	
VWO	.713	.284	.118*	[.155, 1.271]	
Selfcontrol*Parental divorce	.081	.331	.008	[-.569, .732]	
HAVO*Parental divorce	-.098	.477	-.011	[-1.033, .838]	
VWO*Parental divorce	-.106	.564	-.008	[-1.213, 1.000]	

*p<.05, **p<.01, ***p<.001

Discussion

The current study tried to answer to what extent experiencing a parental divorce can predict alcohol use among Dutch adolescents, and whether high levels of self-control and education can act as protective factors. The results showed that participants who have experienced a parental divorce were significantly younger when they had their first alcoholic drink than the participants from intact families. However, a parental divorce did not have an effect on the quantity and frequency of alcohol use. Contrary to expectations, the only moderating effect that was found was that participants with a high educational level in combination with experiencing a parental divorce were significantly younger at their age of alcohol initiation. It can be concluded that experiencing a parental divorce does not really predict adolescents' alcohol use, and a high self-control and high educational level do not have a protective effect either.

Parental divorce as predictor of adolescents' alcohol use

In this study, alcohol use was measured by looking at the age of alcohol initiation, the frequency of drinking alcohol and the quantity of alcoholic drinks. Various studies on each of these dependent variables showed that there is reason to believe that experiencing a parental divorce predicts adolescents' alcohol use. The strongest effects were found among studies that looked at age of alcohol initiation (Fletcher, & Sindelar, 2012; Isohanni, Oja, Moilanen, & Koiranen, 1994; Jackson, Rogers, & Sartor, 2016; Kuntsche et al., 2006). Most of these effects remained when controlling for other variables. In the current study the only significant effect was indeed that participants from divorced families had a younger age of alcohol initiation. However, this relationship was only present when controlling for age and gender. When educational level, self-control and their interaction variables were added to the analysis, parental divorce did no longer have a significant effect.

When looking at the frequency of drinking alcohol, there were no significant effects of parental divorce on frequency. This means that participants who have experienced a parental divorce did not drink alcohol significantly more often than participants from intact families. Even though previous studies did show significant effects, these were less strong than the effects on age of alcohol initiation. In previous studies, the degree of conflict between the parents or having a loving relationship with the parents reduced the effect of a parental divorce on the frequency of drinking alcohol (Kristjansson, Sigfusdottir, Allegrante, and Helgason, 2008; Ledoux, Miller, Choquet, & Plant, 2002). This is something that has not been included in the current study.

Lastly, to get a complete picture of alcohol use, the quantity of alcoholic drinks was taken into account. In this study, adolescents from divorced families did not drink significantly more on a weekend day than adolescents from intact families, contrary to previous findings (Isohanni et al., 1994, Bjarnason et al., 2003). Other studies did find that divorce effects were persistent for alcohol consumption and binge drinking only for girls (Gustavsen, Nayga Jr., and Wu, 2015), or that a divorce

greatly increases the likelihood of being for a problem drinker only for men (Wolfinger, 1998). In the current study, gender did not have a significant effect on the age of alcohol initiation, the frequency of drinking alcohol or the quantity of drinks.

Contrary to expectations, experiencing a parental divorce does not really predict adolescents' alcohol use. One reason why there were almost no (strong) significant effects, in contrast to previous studies, can be that the variables are operationalized differently in all the studies. Maybe these data would also have significant effects when looking at the frequency during the last 30 days instead of lifetime or when looking at binge drinking. Another alternative explanation is that the previous studies were done in various countries, but not in the Netherlands. Maybe it is not so much the divorce itself that influences the alcohol use, but the stressful situation that comes with it, because of the conflicts and being raised by only one parent afterwards. In the Netherlands, children are often raised by both parents after a divorce. Maybe there are also fewer 'fight separations' than in other countries. This could explain why a parental divorce has no real significant effect on alcohol use with this dataset.

These alternative explanations could be taken into account for future research. To get the most complete picture, all possible variables regarding alcohol use should be studied. Furthermore, for future research the amount of family-conflict and the living situation after the divorce could be added to the model. This way it is more clear what 'part' or consequence of a parental divorce could be influential. Additionally, the degree of 'fight separations' and family conflicts in different countries could be compared, to find out if that explains the differences in adolescents' alcohol use between countries. Lastly, in future research there could also be a focus on how long the parents have been divorced or how old the child was during the divorce, because that could have an influence (Jeynes, 2001),

Self-control as moderator

The expectation was that high self-control could protect the effect of a parental divorce on the alcohol use of adolescents. Various studies showed that high self-control is related to less alcohol use (Desmond et al., 2013; Koning et al., 2014; Tangney, Baumeister, & Boone, 2004; Wills & Stoolmiller, 2002). The data of the current study indeed showed high significant effects of self-control. Adolescents with higher self-control were significantly older when they had their first drink, they drank significantly less often and they had significantly less alcoholic drinks than participants with lower self-control.

However, as an interaction variable together with parental divorce, self-control did not have a significant effect. This means it is not a moderator between parental divorce and adolescents' alcohol use. So self-control does not weaken or strengthen the relationship between parental divorce and adolescents' alcohol use. This could be explained by the fact that there were no (strong) significant effects between parental divorce and the dependent variables, so there was no relation that self-control could weaken or strengthen. Furthermore, it was hard to find earlier studies that had self-control as a

moderator in their model, so maybe it is an important direct variable, but it does not really moderate relations.

Educational level as moderator

The last hypothesis was that a high educational level would protect the effect of a parental divorce on adolescents' alcohol use. The educational levels consisted of VMBO, HAVO and VWO, with VWO as the highest one and VMBO as reference category in the analyses. The direct effect of the highest educational level, VWO, was significant for both frequency of drinking alcohol and quantity of alcoholic drinks. This is consistent with results from de Looze et al. (2014) and van Dorsselaer et al. (2016), who also found that students with a higher educational level drink less (often) than students with lower educational levels in the Netherlands. A high educational level on itself had no significant effect on age of alcohol initiation. However, this was the only dependent variable where the interaction variable of VWO and parental divorce had a significant effect. Contrary to expectations, the results show that the combination of experiencing a parental divorce and following a high educational level leads to participants being significantly younger at their age of alcohol initiation. So a high educational level strengthens the effect of a parental divorce on adolescents alcohol use instead of protecting it.

This is in line with a study from Loeber et al. (2012) who did research on the age-crime curve, with IQ as a moderator. They found that a high cognitive impulsivity in combination with a high IQ was associated with a greater escalation in the prevalence of offending during early adolescence. In contrast, there was no evidence that cognitive impulsivity independently influenced criminal offending at any developmental period for boys with low IQ. Even though the dependent and independent variables are slightly different, both the study of Loeber et al. (2012) and the current study show that a high educational level can moderate an effect on delinquent behaviour negatively.

Limitations and strengths

The strength of this study is that new moderators have been added into the debate about the relation between parental divorces and alcohol use. Furthermore, there have not been many similar studies in the Netherlands, and the large dataset increases the power of the study. However, the current study has a number of limitations that must be taken into account when interpreting the findings.

The first limitation is that the sample is not truly representative. The participants are not randomly selected and they are from the same classes and schools, so that the condition of independent observations is not fully met. To overcome this problem, follow-up research will have to make use of a multilevel analysis (Field, 2013). This means for the current study that conclusions cannot be made about adolescents in general. Because the sample did have students from different ages and educational levels, you could probably say something about Dutch high-school students, however results can still be very different in another part of the Netherlands.

Another limitation of the current study is that it is a cross-sectional study. With this kind of

design, no causal statements could be made. Longitudinal data is needed to determine whether experiencing a parental divorce actually predicts higher alcohol use by adolescents.

Lastly, the data is collected through self-report, which means that participants could have given dishonest answers. By guaranteeing anonymity this is hopefully not really the case. However, certainly with questions about alcohol use, participants could give socially desirable answers, or they for example do not know themselves how many alcoholic drinks they have had during their lifetime. This may have led to underreporting or overreporting of alcohol use. However, there is not really a better or more objective way to collect data about alcohol use and all previous studies worked with questionnaires as well. Because of the big dataset and it having no influential outliers, it is assumed that this has not biased the results.

Conclusion and implications

Concluding, even though there is a small significant effect of parental divorce on age of alcohol initiation, there is no further evidence that experiencing a parental divorce predicts the alcohol use of Dutch adolescents. The participants from divorced families did not drink significantly more frequent or more alcoholic drinks than the participants from intact families and they were not significantly younger when they had their first drink when controlling for self-control and educational level. For practice this means that in the Netherlands there does not have to be an extra focus on children from divorced families when making interventions and policies for (underage) alcohol use. On the other hand, the results substantiate the influence of self-control and educational level on adolescents' alcohol use. This is something that can be taken into account for practice. Interventions could be made for improving adolescents' self-control, or specific interventions on alcohol use could be implemented in lower educational level high schools especially.

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