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**Explaining educational differences in truancy: testing the possible mediating role
of substance use, family factors and unsafety in the school environment**

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Abstract

Objective: Adolescent educational level is clearly linked to truancy, while it is unclear which factors may explain this linkage. Therefore, this study examines educational differences in truancy within a nationally representative sample of Dutch adolescents. With substance use, family factors, and perceived unsafety in the school environment as possible mediators. **Methods:** Data from the 2017 HBSC-study were used, in which complete data were available from 5999 participants aged 11-18 ($M = 13.72$, $SD = 1.35$), attending the first four years of secondary education. **Results:** Binary logistic regressions showed educational differences for all substances, which in turn, showed higher chances of reporting truancy. No educational differences were found for the student-teacher relationship. Employment of the parents, family affluence, and classroom atmosphere were not related to truancy. **Conclusion:** Students in lower educational levels were more likely to report truancy. The final model tested cannabis use, alcohol use, smoking, growing up in a one-parent household, and being bullied as possible mediators, which could partially explain educational differences. Remarkable is the direct relationship between substance use and truancy, which is much stronger than the direct link tested in this study. Future research should therefore focus on the mechanisms behind substance use and truancy.

Keywords: Educational level, truancy, substance use, family factors, unsafe school environment.

Samenvatting

Introductie: Het opleidingsniveau van adolescenten hangt duidelijk samen met spijbelen, maar het is onduidelijk welke factoren dit verband kunnen verklaren. In dit onderzoek wordt daarom gekeken naar opleidingsverschillen in spijbelen, binnen een landelijk representatieve steekproef van Nederlandse adolescenten, met middelengebruik, gezinsfactoren en ervaren van onveiligheid in de schoolomgeving als mogelijke mediators. **Methoden:** Nederlandse gegevens uit de HBSC-studie van 2017 werden gebruikt, waarin volledige gegevens beschikbaar waren van 5999 participanten in de leeftijd van 11-18 ($M = 13,72$, $SD = 1,35$), die de eerste vier jaar van het voortgezet onderwijs volgden. **Resultaten:** Binaire logistische regressies lieten opleidingsverschillen zien voor alle middelen die op hun beurt een hogere kans op spijbelen lieten zien. Er werden geen opleidingsverschillen gevonden voor de relatie tussen leerling en leraar. Werk van de ouders, gezinswelvaart en sfeer in de klas waren niet gerelateerd aan spijbelen. **Conclusie:** Leerlingen in de lagere opleidingsniveaus spijbelde meer. Het uiteindelijke model testte cannabisgebruik, alcoholgebruik, roken, opgroeien in een eenoudergezin en gepest worden als mogelijke mediators. Deze konden opleidingsverschillen slechts gedeeltelijk verklaren. Opmerkelijk is het directe verband tussen middelengebruik en spijbelen, dat veel sterker is dan het directe verband dat in deze studie is getest. Toekomstig onderzoek moet zich daarom richten op de mechanismen achter middelengebruik en spijbelen.

Sleutelwoorden: Opleidingsniveau, spijbelen, middelengebruik, gezinsfactoren, onveiligheid in de schoolomgeving.

Explaining educational differences in truancy: testing the possible mediating role of substance use, family factors and unsafety in the school environment

All children have the right to education according to article 28 of the United Nations Convention on the Rights of the Child 1990. Education contributes to the child's healthy development and is related to various positive outcomes, like improved health and opportunities for higher education (Bhardwaj, 2016; Janks, 2014). Strong school attendance (i.e., more than 95% per school year, or one day of absence per half term) and graduation are key elements for achieving those positive outcomes (Allison & Attisha, 2019; Fichten et al., 2012). In contrast, not attending school can be a risk factor for unhealthy child development (Rasasingham, 2015).

Truancy is a form of failing to attend school and is described by Dembo et al. (2014) as 'Unauthorized, intentional absence from compulsory schooling'. Current literature relates truancy to many negative outcomes, such as academic failure, disengagement with school, school drop-out, delinquency, low self-esteem, and social anxiety (Bistaman et al., 2019; Rocque et al., 2017; Zhang et al., 2010). Truancy rates in the Netherlands have been relatively stable since 2005 (i.e., 13% of the Dutch high school students missed at least 1 hour per four weeks), however, a small increase among girls from 8% to 12% has been found between 2013 and 2017 (Stevens et al., 2017). The latest report from the Dutch HBSC study shows clear differences in truancy rates across educational levels, in which VWO students are less likely to skip classes than VMBO-B and HAVO students (10% versus respectively 17% and 16%) (Stevens et al., 2017). Research that explains these differences in truancy across levels of education is scarce. Due to the serious consequences of truancy we need to know more about the underlying mechanisms to develop more targeted interventions.

Truancy as a result of expressing risk behavior vs. As a result of social vulnerability

Previous literature identifies several predictors for truancy, which in turn can be linked to levels of education. These predictors can be clustered into, substance use, family factors, and the perceived unsafety in the school environment. There are two possible underlying mechanisms for why students report truancy, namely truancy as a result of expressing risk (substance use) or as a result of social vulnerability (adverse family factors and an unsafe school environment).

Substance use

Substance use among adolescents differs by educational level (Rombouts et al., 2020), with those from the lower levels using more substances. For instance, Schrijvers et al. (2010) found that a lower level of education indicated a higher prevalence of substance use (e.g.,

alcohol, cannabis, and tobacco) among Dutch adolescents. Moreover, educational differences were found in both the onset and level of substance use (Rombouts et al., 2020). A possible explanation for this association is that students in higher educational levels are found to have a more realistic perception of the risks that come with substance use (Smit et al., 2018). Substance use can, in turn, be a risk factor for truancy, for which Flaherty (2012) provides a possible explanation by stating that as a result of substance use, the adolescent can adopt a lifestyle that does not focus on education, which contributes to difficulties experienced at school (e.g., truancy or lower academic performance). Indeed, research found that the use of alcohol, cannabis, and tobacco, predicts adolescent truancy (Allen, 2018; Gubbels et al., 2019; Henry, 2007; Pengpid, & Peltzer, 2017; Pengpid, & Peltzer, 2019; Seidu, 2019).

Family factors

Several family characteristics have been related to adolescent educational level, where students in the lower educational levels are more likely to come from one-parent households (Westerman et al., 2015), families with a lower socioeconomic position, or families in which at least one of the parents is unemployed (Van Gaalen et al., 2015). The association between these family characteristics and adolescent educational level can be explained by, for example, parents being less capable to help with homework or not being financially able enough to offer their child extra study guidance (Van Spijker et al., 2017). These family characteristics can, in turn, be related to truancy, as growing up with a lower socioeconomic status often results in a context in which there's less focus on (the importance of) school, those adolescents may be more likely to report truancy (Ready, 2010). These findings are supported by previous research, as growing up in a one-parent household, having a lower socioeconomic position, and the unemployment of parents are found to be predictive of adolescent truancy (Allen et al., 2018; Henry, 2007; Hunt et al., 2009; Ingul et al., 2012; Maynard et al., 2017; Reid, 2005).

Unsafe school environment

For almost all aspects of school perception (including classroom atmosphere and student-teacher relationship) and bullying, there are educational differences, with students at the highest-level scoring most favorably (Stevens et al., 2017). Salmivalli et al. (1997) describe that students in lower educational levels place more value on their social status compared to students in higher educational levels. Bullying is used to achieve this higher social status, as you bring down the status of others and raise your status at the same time because others are likely to look up to you (Salmivalli et al., 1996). Bullying is seen as one of the biggest causes of a poor classroom atmosphere (Cerezo et al., 2010). In addition, students find it harder to achieve a good student-teacher relationship if they do not feel comfortable at school

(McCreery, 2016). Getting bullied, experiencing a bad classroom atmosphere and poor student-teacher relationships are indicators of perceiving the school environment as unsafe (Ripsky et al., 2009). A possible underlying mechanism between this perceived lack of safety in the school environment and truancy can be explained by the cost-benefit analysis of Burgess et al. (2002), which states that the adolescent weighs the positive and negative aspects of attending school, in which the unsafe school environment outweighs the positive aspects. Indeed, research found that being bullied (once or multiple times throughout their school career), experiencing a bad classroom atmosphere and poor student-teacher relationship are predictive of truancy (Gubbels et al., 2019; Henry et al., 2007; Ingul et al., 2012; Ishak et al., 2015; Rasasingham, 2015).

Current study

This study aimed to investigate the mediating role of substance use, family factors, and an unsafe school environment on the link between educational level and truancy, among a representative sample of Dutch adolescents in the first four years of secondary school. The corresponding hypotheses are, H1: A lower level of education is associated with higher truancy rates, H2: A lower level of education is associated with more substance use, which in turn is related to more truancy, H3: A lower level of education is associated with more adverse family factors (i.e. lower socioeconomic position, higher unemployment of parents, and more growing up in a one-parent household), which in turn is related to more truancy, H4: A lower level of education is associated with more perceived feelings of unsafety in the school environment (i.e. been bullied more, worse classroom atmosphere, poor student-teacher relationship), which is related to more truancy.

Methods

Sample

In this study, the Dutch data of the 2017 'Health Behavior in School-aged Children' (HBSC) study is used. This is a national representative, cross-sectional, quantitative study in which insight is gained into the well-being of 11-18-year-old adolescents, their health behaviors, and their social context. Both primary and secondary schools were included, however, given the focus on the educational level in the current study, only secondary school data from the first four years was used. Obtaining the data began with a random sample of Dutch schools, which were stratified based on urbanization-level. Eventually, 37% of the approached schools participated (N = 85). In total, 7450 secondary school students were requested to participate. Due to 58 missing's and/or extremely unreliable values, complete data were available from 7392 participants. Only first- to fourth-year students were included here, which made N = 6258. The number of participants among the educational levels was distributed

as follows: 1136 participants from VMBO-B, 2035 from VMBO-T, 1465 from HAVO, and 1622 from VWO. Participants were aged 11-18 ($M = 13.72$, $SD = 1.35$) from which 48.9% were male, and 21.6% had a non-western immigrant background.

The questionnaires were administered classically in October and November of 2017 by research assistants, which had been instructed about the procedure. Parents, legal guardians and students received an information letter about the purpose and content of the study. Passive consent was given by the parents, and active consent was asked from the students. Ethical approval was gained from the Ethics Committee of the Faculty of Social Sciences at Utrecht University in 2017 (FETC17-079).

Instruments

Educational level

Level of education was measured with four categories (1 = VMBO-B, 2 = VMBO-T, 3 = HAVO, 4 = VWO). When a student was in a combined level (e.g., HAVO/VWO), the lowest educational level was coded.

Truancy

Adolescents were asked whether they skipped a class over the last four weeks, which was measured using a six-point Likert-type scale (ranging from 1 = 0 class hours till 6 = 7 class hours or more). For this study, truancy was dichotomized (0 = no truancy, 1 = skipped a class at least once in the last four weeks).

Substance use

Three variables were used to measure substance use. For alcohol use, the last month's use was considered, and for cannabis use and smoking the lifetime prevalence was measured. These three variables were all questioned using a seven-point Likert-type scale (ranging from 1 = never used till 7 = used 30 days or more). For this study, they were all dichotomized with 0 = didn't use and 1 = did use.

Family factors

The Family Affluence Scale (FAS) was used to measure the family's affluence, using 6 questions. Sample items are about car ownership or having your own bedroom. These six items are measured on a scale from 0-13, which shows the prosperity of the family, with a score of 13 being high prosperity. For this study, the scale was transformed into a dichotomous family affluence score (range 0-1; mean: 0,5), in which a higher score indicates more material assets (Elgar et al., 2017). According to Torsheim et al. (2016), the FAS instrument is reliable and valid. The second variable is the employment of the parents, which was measured using three categories (1 = at least one of the parents is employed, 2 = both parents are unemployed, 3 =

unknown). For this study, the employment was dichotomized, with 1 = at least one of the parents is employed, and 2 = both parents are unemployed. The third variable is about whether the student grew up in a one-parent household. This was measured by looking at the family composition, in which the student could check off whether they lived with mother, father, stepmother, stepfather, and siblings. For this study, this variable was dichotomized with 0 = pupil does not live with both parents, 1 = pupil lives with both parents.

Unsafe school environment

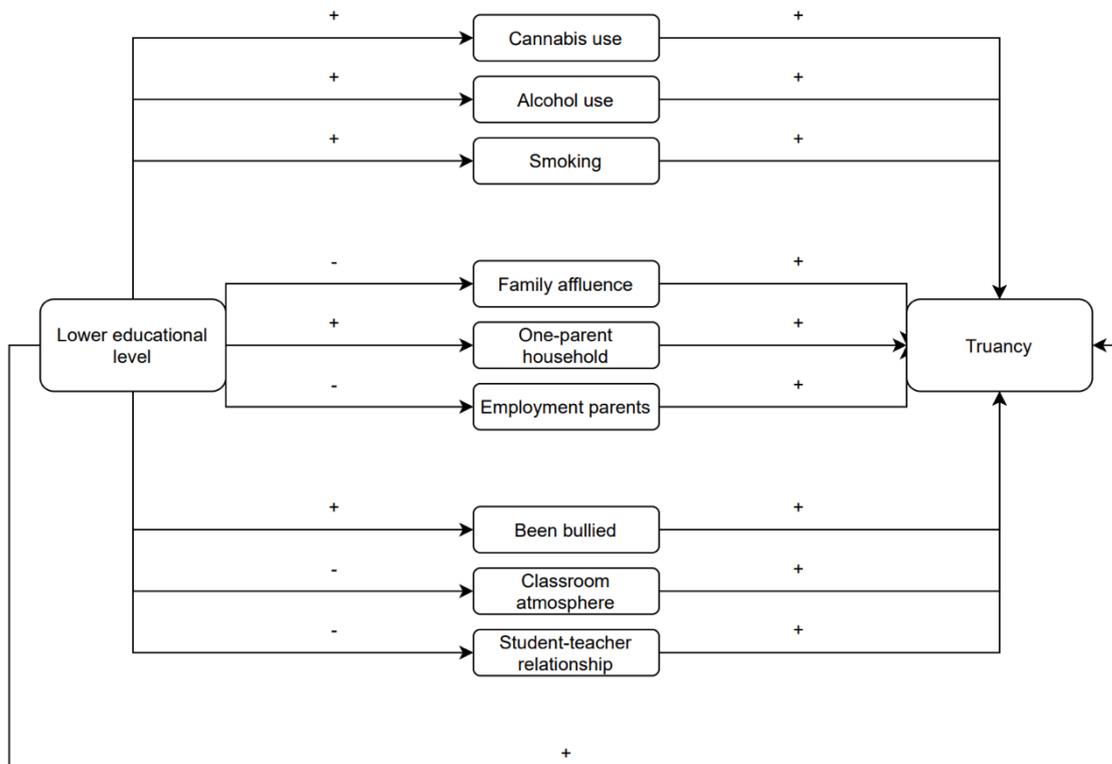
Being bullied is measured using a five-point Likert-type scale (ranging from 1 = never been bullied till 5 = a few times a week). As this variable is dichotomized a cut-off point of two or three times per month was used, which is in line with previous studies (Stevens et al., 2019). The classroom atmosphere was assessed using three questions about the relationship with classmates (e.g., Do you like to be with your classmates?). These questions were measured using a range from 1 = totally agree to 5 = totally disagree. For this study this variable was made dichotomous, with a cut-off point at 2.5 (0 = >2.5, 1 = < 2.5). Then, the student-teacher relationship is also assessed using three questions, which were measured using a range from 1 = totally agree to 5 = totally disagree and was made dichotomous by using a cut-off point at 2.5 (0 = > 2.5, 1 = < 2.5).

Control variables

In the analyses, gender and age were included as control variables. Gender was measured with 1 = boy and 2 = girl. Age was measured in years (rounded down).

Data analyses

The data analyses were performed using the statistical computer program SPSS statistics 27. As the outcome and mediating variables were dichotomized, logistic regressions were performed for each mediating cluster, following the mediation steps from Baron and Kenny (1986). First, the association between educational level and truancy was assessed. After which, the association between educational level and the separate substances, family factors, and school-environment factors were examined. Educational level was categorized, with reference category VWO. Thirdly, substance use, family factors, and school-environment factors in relation to truancy were examined, in which separate analyses were performed for each mediating factor. Age and gender were included as control variables in all analyses. The variables that showed significance in the expected direction on both relationships were included in the final model, in which the main effect was tested after separately adding the potential mediating factors to the analyses. Afterward, the potential mediating factors were added at once to see what would happen to the main effect.

Figure 1*Research model*

Results

In the analyses 6258 participants were included, however, complete data were available from 5999 participants, in which truancy was prevalent among 14.1% ($N = 726$). Associations between all study variables, besides educational level, were assessed with Pearson correlation coefficients (Table 1). A significant, strong positive correlation was present between cannabis use and smoking ($r = .63; p < .001$). Older male adolescents, those that smoked, used cannabis or alcohol, were bullied, or experienced a negative student-teacher relationship were more likely to report truancy. Adolescents that reported substance use, were likely to report the use of multiple substances. Additionally, those with lower family affluence were likely to come from one-parent households and to report unemployment of at least one of the parents. Lastly, adolescents who were bullied frequently were less likely to report a positive classroom atmosphere and less likely to report a positive student-teacher relationship.

Table 1

Correlation matrix between all research variables (besides educational level)

	1	2	3	4	5	6	7	8	9	10	11	12
1 Truancy	-	-	-	-	-	-	-	-	-	-	-	-
2 Cannabis	.333**	-	-	-	-	-	-	-	-	-	-	-
3 Alcohol	.027*	.420**	-	-	-	-	-	-	-	-	-	-
4 Smoking	.108**	.630**	.443**	-	-	-	-	-	-	-	-	-
5 FAS	.006	-.016	-.038**	.008	-	-	-	-	-	-	-	-
6 Employment parents	-.001	-.020	-.034**	.013	.170**	-	-	-	-	-	-	-
7 One-parent household	.020	.108**	.055**	.084**	.141**	.086**	-	-	-	-	-	-
8 Bullying	.057**	-.020	-.032**	-.006	.031**	.035**	-.014	-	-	-	-	-
9 Classroom atmosphere	-.021	.051**	-.039**	-.061**	-.073**	-.038**	-.082**	-.190**	-	-	-	-
10 Relationship teacher	.057**	-.097**	-.165**	-.137**	-.019	-.008	-.041**	-.005	.238**	-	-	-
11 Age	-.303**	.347**	.497**	.312**	.001	.043**	.052**	-.079**	-.049**	-.208**	-	-
12 Gender	-.028*	-.093*	-.032**	-.036**	0.043**	.003	.013	-.009	-.015	-.019	-.009	-

Note: * $p < .05$, ** $p < .01$. With male as the reference category for gender.

The association between level of education and truancy

To test the possible mediating effect of substance use, family factors, and the unsafe school environment on the link between educational level and truancy rates, a series of binary logistic regression analyses were run. First, the total effect of educational level and truancy were tested (see Table 2.). VWO students were less likely to be truant than students from the other educational levels (HAVO: $OR = 1.63$; $p < .001$, VMBO-T: $OR = 1.37$; $p = .008$, and VMBO-B: $OR = 1.76$; $p < .001$). Differences seem smallest for VMBO-T students. Although we expected the odds ratios to increase the lower the educational level of the adolescent, results were not in line with that idea.

Table 2

Binary logistic regression between educational level and truancy

	B	S.E.	Exp (B)	95% CI
VWO	-	-	1.00	-
HAVO	.49	.13	1.63**	[1.28 – 2.08]
VMBO-T	.31	.12	1.37*	[1.09 – 1.73]
VMBO-B	.57	.13	1.76**	[1.37 – 2.26]

Note: * $p < .05$, ** $p < .01$. Controlled for age and gender, with VWO as reference category.

Substance use in the link between educational level and truancy

First, the link between educational level and substance use was tested controlling for age and gender. Table 3 shows the odds ratios per educational level, showing that cannabis use is more prevalent among VMBO-B students ($OR = 1.69$; $p < .001$), compared to VWO-students. For alcohol use, students from HAVO ($OR = 1.54$; $p < .001$), VMBO-T ($OR = 1.40$; $p < .001$), and VMBO-B ($OR = 1.91$; $p < .001$) were more likely to use alcohol as compared to students at the VWO level. Then lastly for smoking, students at HAVO ($OR = 1.54$; $p = .010$), VMBO-T ($OR = 2.03$; $p < .001$), and VMBO-B ($OR = 4.04$; $p < .001$) showed a greater likelihood of smoking as compared to VWO students.

Because all substance use variables were associated with educational level, the association between substance use and truancy was investigated using binary logistic regression (see Table 4). All three substances showed a statistically significant relation with truancy, cannabis use ($OR = 5.73$; $p < .001$), alcohol use ($OR = 3.47$; $p < .001$), and smoking

($OR = 4.99$; $p < .001$). Adolescents who used cannabis, alcohol, or smoked were considerably more likely to be truant.

Table 3

Odds ratios between the levels of education and all mediators

	VWO	HAVO	VMBO-T	VMBO-B
Model 1: Substance use				
Cannabis	1.00	1.05	.90	1.69**
Alcohol	1.00	1.54**	1.40**	1.91**
Smoking	1.00	1.54*	2.03**	4.04**
Model 2: Family factors				
FAS	1.00	1.51*	2.63**	4.63**
Employment parents	1.00	.77	2.36**	1.85*
One-parent household	1.00	1.45**	2.23**	2.82**
Model 3: Unsafe school environment				
Been bullied	1.00	1.62*	3.25**	4.31**
Classroom atmosphere	1.00	.34**	.38**	.51**
Relationship teacher	1.00	.88	.95	1.16

Note: * $p < .05$, ** $p < .01$. Controlled for age and gender, with VWO as reference category.

Adverse family factors in the link between educational level and truancy

Table 3 shows that a lower educational level is associated with higher odds of having low family affluence HAVO ($OR = 1.51$; $p = .002$, VMBO-T ($OR = 2.63$; $p < .001$), and VMBO-B ($OR = 4.63$; $p < .001$). The lower the educational level of the student, the lower the family affluence. Next, HAVO students were less likely ($OR = .77$; $p = .396$) to have unemployed parents in comparison to VWO students. VMBO-T ($OR = 2.36$; $p < .001$) and VMBO-B ($OR = 1.85$; $p = .021$) students, however, were more likely to have unemployed parents, than those at the VWO level. Finally, growing up in a one-parent household was less likely for students at the VWO level than at all other levels (HAVO: $OR = 1.45$; $p < .001$); VMBO-T: $OR = 2.23$; $p < .001$; VMBO-B: $OR = 2.82$; $p < .001$).

Associations between family factors and truancy were also assessed (see Table 4). Growing up in a one-parent household was associated with a higher likelihood of truancy ($OR = 1.24$; $p < .001$). However, family affluence ($OR = 1.06$; $p = .442$) and having unemployed

parents ($OR = 1.22$; $p = .376$) were not significantly associated with truancy. Because no associations were found between family affluence, employment of the parents, and truancy, these variables were excluded from the final model in which the mediating role of family factors was assessed (see below).

An unsafe school environment in the link between educational level and truancy

Table 3 shows that the odds of being bullied increase when the level of education gets lower, HAVO ($OR = 1.62$; $p = .046$), VMBO-T ($OR = 3.25$; $p < .001$), and VMBO-B ($OR = 4.31$; $p < .001$). Also, the atmosphere between classmates was less positive for students at HAVO ($OR = .34$; $p < .001$), VMBO-T ($OR = .38$; $p < .001$), and VMBO-B ($OR = .51$; $p < .001$), than for VWO-students. Lastly, no differences were found for the student-teacher relationship compared to VWO students (HAVO: $OR = .88$; $p = .345$, VMBO-T: $OR = .95$; $p = .287$, VMBO-B: $OR = 1.16$; $p = .311$). As the student-teacher relationship showed non-significant results for all educational levels, no further analyses were run for this variable.

Next, associations between being bullied, classroom atmosphere, and truancy were assessed (see Table 4). Truancy was associated with being bullied more often ($OR = 1.49$; $p = .027$). Classroom atmosphere, however, showed no significance in relation to truancy ($OR = .93$; $p = .287$), and was therefore deleted from the final model.

Table 4

Binary logistic regressions between mediating variables and truancy

	B	S.E.	Exp (B)	95% CI
Model 1: Substance use				
Cannabis	1.75	.11	5.73**	[4.61 – 7.12]
Alcohol	1.25	.09	3.47**	[2.91 – 4.14]
Smoking	1.61	.10	4.99**	[4.07 – 6.11]
Model 2: Family factors				
FAS	.06	.09	1.06	[.90 – 1.25]
Employment parents	.20	.22	1.22	[.79 – 1.88]
One-parent household	.21	.06	1.24**	[1.10 – 1.39]
Model 3: Unsafe school environment				
Been bullied	.39	.18	1.49*	[1.05 – 2.12]
Classroom atmosphere	-.07	.06	.93	[.83 – 1.04]

Note: * $p < .05$, ** $p < .01$. Controlled for age and gender, with VWO as reference category.

Final model

Based on the results of the first two binary logistic regressions, four variables were left out of the final model (FAS, employment parents, student-teacher relationship, and classroom atmosphere). Cannabis use, alcohol use, smoking, one-parent household, and being bullied were assessed in the final model, as they all showed significance on the first steps as posed by Baron and Kenny (1986). Table 5 shows the final model, in which the mediating variables were added to the main effect. Model 2 shows the results for when the substance use variables were added, in which significance remains for both HAVO ($OR = 1.51; p < .001$), and VMBO-B ($OR = 1.46; p < .001$). Meaning that partial mediation is found for substance use in the link between educational level and truancy. Noticeable, however, is that the odds ratios between each substance and truancy are rather high, emphasizing the importance of the relationship between substance use and truancy.

In model 3, growing up in a one-parent household was added to the main effect, in which significance remains for all three educational levels. As the odds ratio's only changed minimally when adding one-parent household to the main effect, a Sobel-test, as posed by Sobel (1982) was performed to determine a significant difference in increased truancy among students from one-parent households. The Sobel-test confirmed significance for all three educational levels with VWO as reference category (HAVO: Sobel $Z = 2.69, p < .001$; VMBO-T: Sobel $Z = 3.16; p < .001$; VMBO-B: Sobel $Z = 3.19; p < .001$). Therefore, a partial mediating effect is found, implicating that growing up in a one-parent household partially explains educational differences in truancy. In model 4, being bullied was added to the main effect, in which significance remained for all three educational levels. Again, the odds ratios changed minimally, hence a Sobel-test was conducted to test increased truancy among bullied students. The Sobel-test confirmed significance for VMBO-T (Sobel $Z = 2.94; p < .001$) and VMBO-B (Sobel $Z = 3.11; p < .001$), however non-significance was found for HAVO (Sobel $Z = 1.67; p = .094$). Indicating that a partial mediating effect of being bullied is found for VMBO-T and VMBO-B, however, no mediating effect is found for HAVO.

When all mediating factors were tested in one model, partial mediation remained for educational differences in truancy among all educational levels.

Table 5*Final model, the link between educational level and truancy controlled for the mediators*

	Model 1			Model 2			Model 3			Model 4		
	B	S.E.	Exp (B)									
HAVO	.49	.13	1.63**	.41	.09	1.51**	.47	.09	1.60**	.43	.09	1.63**
VMBO-T	.32	.12	1.37*	.30	.11	1.35	.31	.10	1.36**	.34	.10	1.38**
VMBO-B	.57	.13	1.76**	.38	.12	1.46**	.56	.11	1.75**	.59	.11	1.81**
Cannabis				.91	.11	2.49**						
Alcohol				.78	.09	2.19**						
Smoking				.64	.11	1.89**						
One-parent household							.29	.08	1.34**			
Been bullied										.37	.17	1.45*

Note: * $p < .05$, ** $p < .01$. Controlled for age and gender, with VWO as reference category.

Discussion

As far as we know, this is the first study that examined explanations for the link between educational level and truancy. To find possible explanations for this linkage, three clusters of mediators were tested, which were identified as potential mediators in previous research. Two possible underlying mechanisms were hypothesized, namely truancy as a result of expressing risk behavior or truancy as a result of social vulnerability. Results showed that VWO students are less likely to report truancy compared to all three other educational levels, in which differences seem smallest for VMBO-T students. Next, results showed that higher levels of truancy in the lower educational levels could for a very small part be explained by the higher use of all three substances. Family-related factors, particularly the employment of the parents and family affluence could not explain the linkage between educational level and truancy, as these factors were not associated with truancy. Only growing up in a one-parent household was able to explain some of the educational differences in truancy, which was confirmed by a Sobel-test. The student-teacher relationship and classroom atmosphere could not mediate the association between educational level and truancy, where bullying did show significant results. A Sobel-test for bullying showed that for VMBO-T and VMBO-B bullying could partially explain the association with truancy, however, for HAVO no mediation was found. Eventually, all possible mediating factors were added to the model simultaneously, showing that educational differences could still be partially explained.

The first hypothesis entailed that students from lower educational levels would be more likely to be truant (see Dorsselaer et al., 2007; Dorsselaer et al., 2010; De Looze et al., 2014). In line with the hypothesis, our results indicate that students from HAVO, VMBO-T, and VMBO-B all have a higher likelihood of truancy when compared to VWO students. VMBO-T students showed the lowest chances as compared to VWO students, which is remarkable as we expected truancy rates to increase the lower the educational level. For this deviating finding, other Dutch studies sometimes suggest that there are relatively many smart students in the HAVO-level who are less motivated to actively participate in their own learning process (Kuyper et al., 2000). Yet, this is not an immediate result that we find reflected in our other mediators. Therefore, it is unknown to what extent this possible explanation connects to this data.

Consistent with previous research (Rombouts et al., 2020; Schrijvers et al., 2010) and our hypotheses, results showed that alcohol use, cannabis use, and smoking were higher for students in the lower educational levels. In fact, educational differences in substance use were rather large, with VMBO-B students being 4.04 times more likely to smoke than VWO students. Substance use in turn constitutes a risk for truancy, as was also stated in previous literature (Allen, 2018; Gubbels et al., 2019; Henry, 2007; Pengpid, & Peltzer, 2017; Pengpid, & Peltzer, 2019; Seidu, 2019). These results suggest that truancy should be seen as a result of expressing risk behavior and point toward the importance of focusing on substance use when targeting truancy. However, the effect of educational level on truancy could only be partially explained by substance use, meaning that there are additional factors that explain the linkage between educational level and truancy.

In line with earlier findings (Westerman et al., 2016; Van Gaalen et al., 2015), results showed that students from the lower educational levels are more likely to come from families with lower family affluence, higher unemployment rates among parents, or from one-parent households. Especially strong educational differences were found for family affluence. Inconsistent findings, however, were found for the relationship between family affluence, parental unemployment, and truancy. Where previous literature stated that coming from families with a lower socioeconomic position or having unemployed parents (Allen et al., 2018; Henry, 2007; Ingul et al., 2012) would be a risk factor for truancy, we did not find this. In fact, in this study no association was found between family affluence and truancy, the same accounted for parental unemployment and truancy. The discrepancy in findings could be explained by the overall relatively small differences in socioeconomic status in the Netherlands (Weinberg et al., 2021). Significant results were found for the association between growing up

in a one-parent household and truancy rates, therefore this variable was tested in the final model. Results from the final model showed very small, yet significant, differences, therefore a Sobel-test was conducted. Results from the Sobel-test confirmed significance for all educational levels, indicating that growing up in a one-parent household explains some educational differences in truancy.

Based on earlier findings the last hypothesis expected that bullying, negative classroom atmosphere, and a poor student-teacher relationship would be more present among students in the lower levels of education (Stevens et al., 2017). In turn, these variables were also found to be risk factors for reporting truancy (Gubbels et al., 2019; Henry et al., 2007; Ingul et al., 2012; Ishak et al., 2015; Rasasingham, 2015). Following previous research and the hypothesis, bullying was indeed more prevalent among students in the lower educational levels, and truancy rates were higher among those being bullied. No educational differences, however, were found for the student-teacher relationship. Classroom atmosphere did show educational differences but was not significantly related to truancy, which is contrary to earlier findings (Gubbels et al., 2019; Henry et al., 2007; Ingul et al., 2012; Ishak et al., 2015; Rasasingham, 2015). An explanation could be that a negative classroom atmosphere does not mean that the school environment is perceived as unsafe, which is the case when getting bullied. You could also argue that skipping classes is done with others and that a good classroom atmosphere actually increases this risk. Eventually, bullying was tested in the final model, which showed very small significant results. A Sobel-test, however, confirmed the significance for VMBO-T and VMBO-B, but not for HAVO. Indicating that bullying only partially explains truancy for VMBO-T and VMBO-B.

Strengths and Limitations

Several limitations have to be taken into account when interpreting the findings. To begin with the cross-sectional body of this data, which makes that no causal links between research variables can be established. While the literature has mainly suggested a causal link between substance use and truancy, future studies should be longitudinal to examine the mechanism behind this association. Also, the prevalence of students reporting truancy was fairly low, so it would be interesting to see if the outcomes would change within a high-risk sample. Additionally, the concept of truancy is now measured with one question, a broader assessment of this concept could also provide a broader perspective on truancy. Another limitation would be that the HBSC study used self-reported measures in which there is a possibility that the answers are incorrect as a result of social desirability (Krumpal., 2010) or because the situations were not remembered correctly. Besides the limitations, there are also

some strengths to be mentioned in this research. Starting with the big nationally representative sample of the HBSC study, which makes it easier to generalize the outcomes to the adolescent population within the Netherlands. Additionally, this is the first study in which several different indicators were chosen that could be clustered, and the effects for the indicators within a cluster can be compared, but beyond that, the clusters can also be compared with each other.

Conclusions and Implications

The overall conclusion is that there are educational differences in truancy, in which more truancy is found in lower educational levels. Factors were found to partially explain this association, namely all three substances, growing up in a one-parent household, and being bullied. However, these are only partially, relatively weak relationships. Perhaps even more interesting is substance use as a direct predictor of truancy. Compared to educational level, substance use is found to be a much stronger predictor of truancy. Therefore, to address truancy, it is most interesting to focus on students who use substances. This confirms the underlying mechanism of truancy as a result of expressing risk behaviors. Future research should focus on the mechanisms behind the association between substance use and truancy, to understand this link and develop more targeted interventi

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