

Alcohol Consumption among Slovak Schoolchildren: Evaluation of the Effectiveness of the Unplugged Programme

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BACKGROUND: Developing data-based interventions to address drug use prevention among schoolchildren is critically important because research has consistently demonstrated that adolescence is the main period for experimenting with alcohol and other drugs.

AIMS: To explore the changes in 30-day prevalence rates of alcohol consumption (AC) in schoolchildren and to look into the (in-)direct effect of the Unplugged programme as one of the independent variables of an equation that contained the strongest psychosocial predictors of AC at four follow-ups, as well as to examine the moderating effect of gender. **DESIGN AND MEASUREMENTS:** The study was carried out as a cluster randomized controlled trial with five

measurement points (before the implementation of the programme^{T1}, immediately after the implementation^{T2} and then three months^{T3}, 12 months^{T4}, and 18 months^{T5} after the implementation). **SAMPLE:** The sample included 1283 schoolchildren ($M = 11.52$; 46.8% of them boys) from 63 schools. **RESULTS:** The impact of Unplugged on AC was moderated by a baseline measure of AC at T4 and T5 and a partial indirect effect of Unplugged on AC through descriptive normative belief change was found at T4 among the girls. **CONCLUSIONS:** The findings obtained generally emphasize the need to make provisions for a baseline AC and gender that can modify the effects of interventions.

Keywords | School-Based Intervention – The Unplugged Programme – Schoolchildren – Alcohol Consumption

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● 1 BACKGROUND

Universal school-based alcohol and other drug use prevention programmes are primarily aimed at preventing or delaying the onset of alcohol consumption. The results of the ESPAD (European School Survey Project on Alcohol and Other Drugs) and HBSC (Health Behaviour in School-aged Children) surveys support the importance of data-based alcohol use prevention programmes among Slovak schoolchildren. On the evidence of the ESPAD results, alcohol use during the last 30 days among Slovak students was approximately at the same level as the ESPAD average and heavy episodic drinking in the last 30 days was seven percentage points above the average of the ESPAD countries (ESPAD Group, 2016). The results of the analyses of the HBSC data in adolescents in Slovakia from 2006 to 2014 confirmed the decreasing trend in the commencement of drinking under the age of 13 (Baška et al., 2016). Slovakia, as well as Hungary, Ireland, Romania, and Ukraine, reported an increase in current alcohol use of five or more percentage points between 2015 and 2019 (ESPAD Group, 2020).

The provision of high-quality empirical evidence for the effectiveness of school-based prevention programmes globally is an essential step for data-based and scientifically proven prevention in schools as a means for creating a protective environment for children (Sloboda & Ringwalt, 2019). However, this field faces important challenges because of the extensive heterogeneity on many fronts. This heterogeneity can be seen in the variety of universal school-based prevention programmes, the variety of populations studied, the relatively common phenomenon of using different outcome measures in individual studies, and finally, the problem of incomplete datasets. All these factors may have contributed significantly to the observed inconsistencies in the findings regarding the effectiveness of previously studied interventions (Foxcroft & Tsertsvadze, 2011). On the other hand, united international efforts exist and have tried to overcome these shortcomings, showing that generic psychosocial and developmental prevention programmes such as the Unplugged programme can be effective (Foxcroft & Tsertsvadze, 2011). Agabio et al. (2015) published a systematic review of school-based alcohol and other drug prevention programmes and concluded that the Unplugged programme appears to show the best evidence of effectiveness in European studies.

Developing data-based interventions to address drug use prevention in different cultural contexts is critically important. This study reports specifically on the outcomes of a school-based effectiveness research on the Unplugged programme conducted among Slovak schoolchildren. In particular, it addressed the research-based prevention need to target schoolchildren prior to engaging in drug use, especially regarding smoking and alcohol use. Such effectiveness-oriented research helps to reduce the gap and strengthens good practice in delivering drug use prevention programmes in Slovak schools. As a result, this effectiveness study reflects important elements of good practice analyses (Thom, 2017).

The current study explored a model of predictors of schoolchildren's early alcohol consumption. Specifically, it addressed the effect of the school-based Unplugged prevention programme, gender, baseline alcohol consumption, schoolchildren's perception of parental knowledge regarding their behaviour, descriptive normative beliefs, and the perceived availability of alcohol. These predictors have been identified as important in substance use initiation (Jackson et al., 2016).

Recent studies have focused on social norms within the school context and the finding that social norms in schools are linked with increases in adolescent substance use (Lombardi et al., 2019). Descriptive norm education could be an effective method in changing adolescents' inaccurate perceptions or self-confirming assumptions about others' alcohol drinking (François et al., 2017). Normative beliefs have been targeted as one of several mediators of Unplugged (Vadrucci et al., 2016). Several units of Unplugged also focus on the reflection of normative beliefs in behaviours, the correction of misperceptions of substance use among peers and adults, and changing normative beliefs. Schoolchildren's normative beliefs about alcohol consumption among friends were explored as one of the factors of an equation that could predict the probability of alcohol consumption, as well as mediating the effect of the Unplugged programme on schoolchildren's alcohol consumption in this study.

Previous research has provided support for a link between low levels of parental monitoring and adolescent alcohol use (Ryan, Jorm, & Lubman, 2010; McCann et al., 2016; Savage et al., 2018). Greater parental monitoring has been shown to be associated with early alcohol initiation and lower levels of later alcohol use (Ryan, Jorm, & Lubman, 2010) and binge drinking (Inguglia et al., 2019). It must be noted that an interactive effect between parental monitoring and children's drinking may also be the case (Keijsers, 2016; McCann et al., 2016). Previous findings have supported the investigation of the moderating effect of gender in the relationship between schoolchildren's perception of parental knowledge and alcohol consumption (Laten-dresse et al., 2010). Recent research has further suggested a positive association between perceived access to alcohol and the risks of alcohol use (Cox et al., 2019; Noel, 2019; Lipperman-Kreda, Finan, & Grube, 2018).

To sum up, early cross-sectional studies have shown associations between descriptive normative beliefs, parental knowledge, the availability of alcohol, and young adolescents' alcohol consumption. The studies specific to the Unplugged programme have provided additional evidence for the effect of this school-based drug intervention programme for schoolchildren.

● 2 AIMS

The present study is based on data from the Unplugged programme implemented in Slovak schools and examines the following issues: (i) the change in the 30-day prevalence

rates of alcohol consumption among schoolchildren; (ii) the (in-)direct effect of the Unplugged programme as one of the independent variables of an equation that contained the strongest psychosocial predictors on alcohol consumption at four follow-ups.

● 3 DESIGN AND MEASUREMENTS

3.1 Research design

This study is a cluster randomized controlled trial with data collection immediately before the implementation of Unplugged (T1), immediately after the implementation of Unplugged (T2), and three months (T3), 12 months (T4), and 18 months (T5) after the implementation of Unplugged. The schools were randomly selected and assigned to either the experimental or the control group. The sampling used a list of primary and middle schools in Slovakia in 2011 retrieved from the Institute of Information and Prognosis of Education. The schools were selected from different municipalities on the basis of their geographical locations in East, Central, and West Slovakia with six clusters based on the population size.

The protocol of this study was reviewed and approved by the Ethics Committee of the Faculty of Arts of P. J. Šafárik University. The committee reviewed the content of the protocol and concluded that it meets the required ethical standards. This study was carried out with the support of the Ministry of Education, Science, Research, and Sport of the Slovak Republic. The consent of parents was obtained as a basic requirement for schoolchildren's involvement in this study. The parents were presented with the opportunity to opt out of the study if they did not wish their child to take part. All the data that was collected was anonymized.

3.2 Research sample

The sample consisted of 1283 participating schoolchildren (*mean age* 11.52; 46.8% boys) at the baseline. In total 63 schools took part in the study; 32 schools were allocated to the exper-

imental group ($n = 622$) and 31 served as the control group ($n = 661$). In each school, a single class of those in the sixth year was involved in this research. The experimental group was exposed to the Unplugged programme. Twelve lessons of Unplugged were taught once a week during the 2013/2014 school year. Unplugged was delivered through lectures by teachers who had undergone a three-day training course.

3.3 Measures

A Slovak version of the 2011 ESPAD questionnaire (Hibbel et al., 2012) was used to collect the demographic data, normative beliefs, perceived availability, parental knowledge, and outcome variables. The outcome variables measuring the 30-day prevalence rates of alcohol consumption were assessed on a dichotomous level (had drunk or had not drunk alcohol in the past 30 days). Descriptive normative beliefs (*Table 1*) about alcohol consumption among friends were explored using the question: "According to your estimation, how many of your friends drink alcoholic beverages (beer, wine, hard liquor)?" This item was assessed on a five-point scale from 1 – None to 5 – All. The changes in descriptive normative beliefs were based on the difference between the baseline measurement and the follow-up. Regarding the perceived availability of alcohol, the respondents were asked to indicate its accessibility using the question: "How difficult do you think it would be for you to get alcohol if you wanted?", which were measured on a six-point scale: 1 – Impossible, 2 – Very difficult, 3 – Fairly difficult, 4 – Fairly easy, 5 – Very easy, 6 – Don't know. The "don't know" answers were excluded from the analyses (see *Table 1*). Parental knowledge regarding schoolchildren's behaviour was explored using the question "Do your parents know where you spend Saturday nights?", with a four-point response scale from 1 – Always know to 4 – Usually don't know. The answers were recoded in such a way that a higher score indicated more knowledge (see *Table 1*). The self-report questionnaires were completed under the supervision of a trained research assistant in less than 90 minutes. Unique participant codes allowed the researchers to match individual questionnaires across the follow-ups and protect the respondents' confidentiality.

	PK	PA	DNB	
			Alcohol consumptionEG	Alcohol consumptionCG
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
T1	3.59 (0.80)	1.79 (1.25)	1.46 (0.75)	1.42 (0.76)
T2	3.54 (0.89)	2.19 (1.40)	1.61 (0.88)	1.51 (0.77)
T3	3.50 (0.91)	2.33 (1.49)	1.58 (0.84)	1.63 (0.89)
T4	3.47 (0.94)	2.62 (1.54)	1.66 (0.83)	1.80 (0.99)
T5	3.50 (0.88)	2.97 (1.55)	1.82 (0.99)	1.86 (1.05)

Table 1 | Descriptive characteristics of the sample

Notes: PK = Perceived parental knowledge, PA = Perceived availability of alcohol, DNB = descriptive normative beliefs, EG = Experimental group, CG = Control group, T1 = baseline measure, T2 = immediately after the implementation of the Unplugged programme, T3 = three months after the implementation of the Unplugged programme, T4 = 12 months after the implementation of the Unplugged programme, T5 = 18 months after the implementation of the Unplugged programme

3.4 Statistical processing

The Cochran Q and McNemar post-hoc tests were used to identify the changes in alcohol consumption from the baseline throughout the follow-ups.

Direct logistic regression was performed to assess the impact of a number of factors on the likelihood that the schoolchildren would report alcohol consumption at four follow-ups. The model contained five independent variables (gender, baseline 30-day prevalence of alcohol consumption, perceived parental knowledge, descriptive normative beliefs, and perceived availability of alcohol). The respondents were compared with regard to the number of waves in which they participated. Firstly, the descriptive analysis showed that 5% of the respondents participated only in one wave, 7.4% in two waves, 16% in three waves, 31.3% in four waves, and 40.3% of the respondents participated in all five waves. There were no significant differences in alcohol consumption, normative beliefs, availability of alcohol, and parental monitoring between the respondents who took part

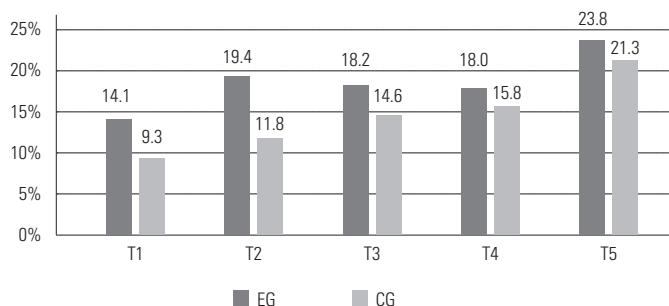


Figure 1 | The 30-day prevalence of alcohol consumption (drinking during the past 30 days) in the experimental group (EG) and control group (CG) at the baseline (T1) and the follow-ups (T2 = immediately after the implementation of the Unplugged programme, T3 = three months after the implementation of the Unplugged programme, T4 = 12 months after the implementation of the Unplugged programme, T5 = 18 months after the implementation of the Unplugged programme)

in different numbers of waves (i.e. participated only in the first wave, or up to all five waves).

In order to explore the moderating role of gender, the baseline characteristic of alcohol consumption, and parental knowledge, the interactions were included in the regression models. The indirect effects of the Unplugged programme on alcohol consumption at the four follow-ups through changes in the descriptive normative beliefs were explored using *Hayes' PROCESS tool* controlling for the 30-day prevalence of alcohol consumption at the baseline. In order to explore whether the indirect effect was moderated by gender, separate analyses were performed on each respective part of the data. The analyses were conducted using SPSS 23.

4 RESULTS

4.1 The changes in the 30-day prevalence of alcohol consumption

The prevalence rates of alcohol consumption at the follow-ups increased from 14.1% vs. 9.3% at the baseline to 19.4% vs. 11.8%^{T2}, 18.2% vs. 14.6%^{T3}, 18.0% vs. 15.8%^{T4}, and to 23.8% vs. 21.3%^{T5} in the experimental vs. the control group (*Figure 1*). The Cochran Q test determined that there were statistically significant differences in the proportion of schoolchildren in the experimental group ($\chi^2(4) = 12.358$, $p \leq .05$) and control group ($\chi^2(4) = 44.263$, $p \leq .001$) who reported alcohol consumption over time.

A McNemar's test determined that there was a statistically significant difference in the proportion of alcohol users at the baseline (T1) vs. the last follow-up (T5) among the schoolchildren in the experimental group, $p \leq .001$ (*Table 2*). Among the schoolchildren in the experimental group a change from a non-alcohol user ("No")^{T1} to an alcohol user ("Yes")^{T5} (14.7%) vs. a change from an alcohol user^{T1} to a non-alcohol user^{T5} (5.5%) was observed. However, the McNemar's test determined that there was a statistical-

	T1		T2		T3		T4		T5						
	n	%	n	%	n	%	n	%	n	%					
EG	84/511	14.1	EG	95/395	19.4	EG	94/423	18.2	EG	75/342	18.0	EG	107/342	23.8	
CG	57/553	9.3	CG	57/426	11.8	CG	71/415	14.6	CG	68/363	15.8	CG	82/303	21.3	
Boys	EG	38/231	14.1	EG	49/162	23.2	EG	52/182	22.2	EG	32/150	17.6	EG	49/139	26.1
Girls	EG	46/280	14.1	EG	46/233	16.5	EG	42/241	14.8	EG	43/191	18.4	EG	58/203	22.2
Boys	CG	36/247	12.7	CG	27/195	12.2	CG	37/182	16.9	CG	35/144	19.6	CG	43/128	25.1
Girls	CG	21/306	6.4	CG	30/230	11.5	CG	34/232	12.8	CG	33/218	13.1	CG	39/174	18.3

Table 2 | 30-day prevalence of alcohol consumption (during the past 30 days) at the baseline and at the follow-ups

Notes: T1 = baseline measure, T2 = immediately after the implementation of the Unplugged programme, T3 = three months after the implementation of the Unplugged programme, T4 = 12 months after the implementation of the Unplugged programme, T5 = 18 months after the implementation of the Unplugged programme, EG = Experimental group. CG = Control group

ly significant difference in the proportion of alcohol users at the baseline (T1) vs, the last three follow-ups, $p \leq .01^{T3}$, $p \leq .001^{T4}$, and $p \leq .001^{T5}$, among the schoolchildren in the control group (see Table 2). Among the schoolchildren in the control group, a change from a non-alcohol user^{T1} to an alcohol user at the follow-ups (11.4%^{T3}, 13.7%^{T4}, 17.7%^{T5}) vs. a change from an alcohol user^{T1} to a non-alcohol user at the follow-ups (5.5%^{T3}, 5.6%^{T4}, 4.9%^{T5}) was observed.

Further analyses according to gender confirmed a statistically significant difference in the proportion of alcohol users at the baseline (T1) vs. the last three follow-ups (T3, T4, T5) among the girls in the control group ($p \leq .01^{T3}$, $p = .001^{T4}$, $p \leq .001^{T5}$). A statistically significant difference in the proportion of alcohol users at the baseline (T1) vs. the last follow-up (T5) was observed among the boys in the experimental group ($p = .001$), as well as in the control group ($p \leq .01$).

4.2 The (in-)direct effect of the Unplugged programme on schoolchildren’s alcohol consumption

The main effect of the group (experimental/control) on alcohol consumption was confirmed at the first follow-up test (T2) when the two groups were compared. The impact of the Unplugged programme on alcohol consumption was moderated by the baseline measure of alcohol consumption at the long-term follow-up tests conducted 12 months (T4) and 18 months (T5) after the Unplugged programme was implemented (Table 3, Figure 2). The percentage of schoolchildren who reported alcohol consumption at the follow-ups (T4, T5) and did not report alcohol consumption at the baseline (T1) was higher among the schoolchildren in the control group compared to the experimental group (Figure 2).

The strongest predictors of reporting alcohol consumption were descriptive normative beliefs and the availability of alcohol (see Table 3). Schoolchildren with a higher level of descriptive normative belief change and availability of alcohol were twice as likely to report alcohol consumption at the follow-ups. A decrease in parental knowledge (at the T2 and T3 follow-ups) increased the likelihood of schoolchildren reporting 30-day prevalence of alcohol consumption at the follow-up tests.

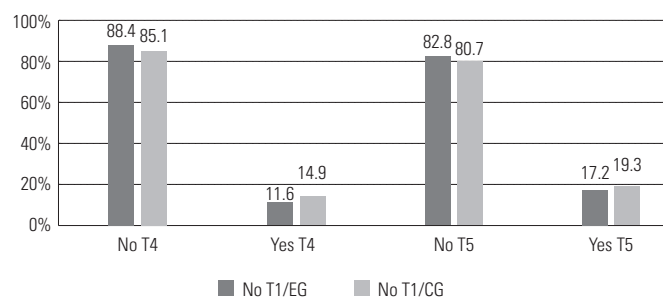


Figure 2 | Alcohol consumption among schoolchildren in the experimental group (EG) and control group (CG) at the baseline (T1) and the follow-ups (T4 = 12 months after the implementation of the Unplugged programme, T5 = 18 months after the implementation of the Unplugged programme)

The results of the regression model for alcohol consumption (see Table 3) indicated that the two interactions “gender x Unplugged” and “gender x parental knowledge” were not statistically significant.

Partial indirect effects of the group (experimental/control) in the 30-day prevalence of alcohol consumption through descriptive normative belief change were found at the third follow-up test (12 months after the implementation of the Unplugged programme^{T4}) among the girls, $b = 0.198$, BCa CI [0.070, 0.378].

T1			T2			T3			T4			T5		
OR	95% C.I.for EXP(B)		OR	95% C.I.for EXP(B)		OR	95% C.I.for EXP(B)		OR	95% C.I.for EXP(B)		OR	95% C.I.for EXP(B)	
	Lower	Upper		Lower	Upper		Lower	Upper		Lower	Upper		Lower	Upper
			ACT1	2.78**	1.36 5.70	ACT1	6.96***	3.32 14.58	ACT1	7.33***	3.11 17.24	ACT1	8.80***	4.12 18.82
G	4.92	0.80 30.10	G	1.40	0.29 6.85	G	0.58	0.12 2.85	G	2.54	0.45 14.53	G	1.88	0.39 9.13
E/C	1.01	0.53 1.92	E/C	0.44*	0.20 0.97	E/C	0.77	0.39 1.52	E/C	1.51	0.67 3.43	E/C	1.47	0.76 2.85
PK T1	0.97	0.68 1.38	PK T2	0.61**	0.44 0.84	PK T3	0.64**	0.48 0.86	PK T4	0.84	0.59 1.20	PK T5	0.82	0.60 1.11
NB T1	1.87***	1.41 2.47	NB T2-T1	1.41*	1.07 1.84	NB T3-T1	1.38**	1.10 1.74	NB T4-T1	1.54***	1.21 1.97	NB T5-T1	1.45***	1.20 1.75
PA T1	1.69***	1.44 1.98	PA T2	1.67***	1.42 1.98	PA T3	1.87***	1.59 2.20	PA T4	2.18***	1.77 2.68	PA T5	1.88***	1.58 2.24
Gx E/C	0.47	0.18 1.20	Gx E/C	1.87	0.71 4.96	Gx E/C	2.35	0.94 5.90	Genderx E/C	0.61	0.21 1.73	Gx E/C	1.03	0.43 2.46
			ACT1x E/C	0.59	0.17 2.01	ACT1xE/C	0.38	0.12 1.23	ACT1x E/C	0.19*	0.05 0.76	ACT1x E/C	0.23*	0.07 0.75
GxPK T1	0.68	0.42 1.11	GxPK T2	0.91	0.58 1.42	GxPK T3	1.01	0.65 1.58	GxPK T4	0.84	0.52 1.36	GxPK T5	0.76	0.49 1.18
R2	0.23		R2	0.28		R2	0.36		R2	0.38		R2	0.36	

Table 3 | Multiple psychosocial factors of 30-day prevalence of alcohol consumption (during the past 30 days) at the baseline and the follow-ups
 Notes: T1 = baseline measure, T2 = immediately after the implementation of the Unplugged programme, T3 = three months after the implementation of the Unplugged programme, T4 = 12 months after the implementation of the Unplugged programme, T5 = 18 months after the implementation of the Unplugged programme, G = gender, E/C = experimental group/control group, PK = perceived parental knowledge, NB = descriptive normative belief, PA = perceived availability of alcohol, R² = Nagelkerke R Square

● 5 DISCUSSION

The main effect of the Unplugged programme on alcohol consumption was confirmed only at the first follow-up test (T2) in this study. At first glance, this finding could suggest an iatrogenic effect of the programme on schoolchildren's alcohol consumption observed immediately after the Unplugged programme was implemented. However, a more detailed overview shows that the percentage of schoolchildren who moved from the baseline status of a non-alcohol user ("No") to that of an alcohol user ("Yes") at the follow-ups was higher than those who moved from "Yes" to "No" among the schoolchildren in both groups. However, the schoolchildren in the experimental group moved from "No" to "Yes" only in the long-term comparison (T1–T5), while the schoolchildren in the control group moved from "No" to "Yes" in the short-term comparison (T1–T3), as well as in both long-term comparisons (T1–T4, T1–T5).

Additionally, this study has demonstrated that the long-term impact of the Unplugged programme on alcohol consumption was moderated by the baseline alcohol consumption shown in the measurements conducted 12 months (T4) and 18 months (T5) after the implementation. The percentage of the schoolchildren who reported a 30-day prevalence of alcohol consumption at these follow-ups was lower in the experimental group than in the control group.

These results are in line with the findings of the reviewed evidence on the effectiveness of universal school-based prevention programmes. In particular, they reflect the findings concerning the prevention of alcohol misuse in school-aged children up to 18 years of age who reported alcohol use at the baseline, as well as with the finding that gender and ethnicity seem to modify the effects of such interventions (Foxcroft & Tsertsvadze, 2011).

Caria et al. (2011) looked at the effectiveness of Unplugged concerning the patterns of alcohol use among European adolescents and reported that the preventive effects of Unplugged concerned problematic drinking rather than the frequency of consumption. They concluded that baseline non-drinkers and occasional drinkers in the intervention group progressed toward frequent consumption less often than the controls.

This study has shown that the changes in alcohol consumption status are gender-specific. The comparison in the short-term (T1–T3) as well as both long-term comparisons (T1–T4, T1–T5) confirmed an increasing proportion of drinkers among the girls in the control group. However, such a pattern was found among the boys only in the last long-term comparison (T1–T5). Additionally, a statistically significant difference in the proportion of alcohol users at the baseline (T1) vs. at the last three follow-ups was not found among the girls in the experimental group. These results supported previous findings that Unplugged was associated with significant risk reduction among girls aged 12 years (Caria et al., 2011).

Consistently with previous findings (Yap et al., 2017; Tebes et al., 2011), this study has demonstrated that lower levels of parental knowledge measured immediately after Unplugged was implemented and three months after the implementation of the programme increased the likelihood of schoolchildren reporting drinking. As Yap et al. (2017) summarized, parental monitoring was identified as one of the longitudinal predictors of both the initiation of alcohol use and the levels of later alcohol use/misuse.

Gender, as a moderator between perceived parental knowledge and the schoolchildren's alcohol consumption, was found to be insignificant. Previous studies proposed some inconsistencies related to the moderating effect of gender between parental knowledge and schoolchildren's drug use (Yap et al., 2017; Tebes et al., 2011; Latendresse et al., 2010).

One of the two strongest predictors of alcohol consumption was the descriptive normative beliefs about alcohol consumption among friends. A partial indirect effect of Unplugged on alcohol consumption through descriptive normative belief change among the girls was found 12 months after Unplugged was implemented. The current findings correspond with those of Melnyk et al. (2019), who conducted a meta-analysis and argued that descriptive norms directly influence behaviour. Moreover, this influence is more likely when the source of the social norm is psychologically close to individuals (e.g. a partner or friends) than when the source is more distant or abstract (e.g. authority figures or people in general). They also reported that there is no consistent pattern of gender differences in the effectiveness of social norms and argued that it could be due to the differential mechanism of this effect. Women tend to be more loyal to individuals in order to maintain a mutual relationship, while men concentrate their loyalty more at the group level in order to be a part of the group (Melnyk et al., 2019). Furthermore, in this research the schoolchildren with a higher level of availability of alcohol were twice as likely to report alcohol consumption at the follow-ups. The results of this study consistently support the findings of Kudre, Vorobjov, and Pärna (2020), who reported the association between monthly alcohol use and perceived availability of alcohol, and parents' knowledge about children's whereabouts on Saturday nights among adolescents in Estonia, Latvia, Lithuania, Finland, and Sweden.

The findings of the current study support the conclusions of intervention research underlining the importance of delaying the onset of drinking among early adolescents (Koning et al., 2013). It further highlights the importance of intervention strategies which focus on changing normative beliefs regarding individuals' perceptions about the prevalence of risky behaviour. At the same time, it must be emphasized that correcting misperceptions regarding descriptive norms may produce different effects in different populations of pupils and not necessarily result in reduced alcohol consumption, as would be expected. Various factors are involved, such as the role of outcome expectations and group identity (Rimal & Real, 2005). Peer communication also plays an undeniably crucial role in the formation of

social norms which, in turn, affect risk behaviour. And finally, the health-promoting potential and intervention effect of the communication depends on its actual content (Geber, Baumann, & Klimmt, 2019).

A protective effect of the intervention could be achieved through increasing schoolchildren's awareness of the descriptive norms for their behaviour (Miller et al., 2019) in the context of their life among their peers. The current findings correspond with those of Rhodes, Shulan, and McClaran (2020) and Geber and Hefner (2019), who noted the importance of communication strategies. The exposure of people to normative information increases the likelihood that their behaviour will be consistent with this information. From this point of view, the content of information and the way this information is delivered, as well as the communication strategies of teachers/implementors of interventions to schoolchildren, seem to be crucial to reaching the expected protective intervention effect. The results of this study support the importance of reducing social access to alcohol for alcohol prevention efforts (Hearst et al., 2007), and a bidirectional model of parent-child interactions (Stattin & Kerr, 2000).

However, it is important to point out some limitations of this study. These limitations concern the following issues: (i) the randomization process (assigning experimental and control groups) was based at the school level and not the class level; (ii) the socio-cultural contexts in which Unplugged was tested, (iii) some effects were observed at different stages of the implementation only for one gender, which may be responsible for the baseline differences in the prevalence of alcohol consumption among the groups. However, the four follow-ups identified the changes in alcohol consumption among the schoolchildren. These weaknesses of intervention research have also been acknowledged by previous studies (Sanchez et al., 2016; Faggiano et al., 2010). Additionally, the risk of the iatrogenic effect of the Unplugged programme requires further exploration, especially by incorporating some contextual factors, e.g. implementation fidelity.

The strengths of this study must also be highlighted. The findings of this study contribute to the growing body of evidence of the need to systematically evaluate school-based drug use prevention programmes. This study is the first

to use a cluster randomized controlled trial conducted in Slovak primary and middle schools to test the impact of a universal, school-based drug use prevention programme with short-term and long-term follow-up measures.

● 6 CONCLUSION

The change in alcohol consumption status was gender-specific in this study. The main effect of Unplugged on alcohol consumption was confirmed only immediately after the programme was implemented, when an increase was observed in the experimental group. The impact of the Unplugged programme on alcohol consumption was moderated by the baseline measure of alcohol consumption at the long-term follow-up tests conducted 12 months and 18 months after the implementation of Unplugged. A partial indirect effect of Unplugged on alcohol consumption through descriptive normative belief change was found among the girls 12 months after the implementation of the Unplugged programme.

In terms of implications for the future, keeping gender differences in mind, the quality of teacher-student communication, as well as future adaptation of the programme to the educational possibilities and environment of Slovak primary and middle schools, is recommended. It is suggested that teachers consider it important for all schoolchildren to understand the risk of alcohol use in an active and meaningful way. It is important for teachers to be sensitive to schoolchildren's variety of perceptions and interpretation of new knowledge and experiences and to gender norms and needs during the programme implementation process.

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Bačíková-Šlěšková, Jozef Benka, and Jozef Bavoľár supervised the statistical analysis and participated in the preparation of the manuscript. All authors contributed to the article and approved the final version of the manuscript.

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